



THEORY

Posthuman Glossary

ROSI BRAIDOTTI & MARIA HLAVAJOVA

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POSTHUMAN GLOSSARY

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Last but not least, the co-editors wish to acknowledge, through this volume as much as through the many projects in their decade-long collaboration, that the academic and the artistic institutions belong to, and are accountable for, one and the same world.

Series Preface

Theory is back.

Critical theorists of the universal, organic or situated kind used to be defined by their ethical-political commitment to account for power relations at work in the real world, as well as in scientific practice. But their prestige waned throughout the 1990s. The 'theory wars' in the USA targeted critical theory as an outdated ideological activity, dismissing the theorists as 'tenured radicals'. They were replaced by new 'content providers', experts and consultants, in a context of increased privatization of academic research. By the turn of the millennium, with the internet as the only true 'content provider', former theorists were relocated to the market-oriented position of 'ideas brokers' and, in the best cases, 'ideas leaders'. Nowadays, we are all entrepreneurs of the mind. The cognitive character of contemporary capitalism and its high technological mediation paradoxically produced a 'post-theory' mood and intensified attacks on radical thought and critical dissent. This negative mood also resulted in criticism of the social and scholarly value of the Humanities, in a neo-liberal corporate university ruled by quantified economics and the profit motive.

And yet, the vitality of critical thinking in the world today is palpable, as is a spirit of insurgency that sustains it. Theoretical practice may have stalled in the academic

world, but it exploded with renewed energy in other quarters, in media, society, the arts and the corporate world. New generations of critical 'studies' areas have grown alongside the classical radical epistemologies of the 1970s: gender, feminist, queer, race, postcolonial and subaltern studies, cultural studies, film, television and media studies. The second generation of critical 'studies' areas includes animal studies and ecocriticism; cultural studies of science and society; religion studies; disability studies; fat studies; success studies; celebrity studies; globalization studies; and many more. New media has spawned new meta-fields: software studies, internet studies, game studies, digital post-colonial studies and more. The end of the Cold War has generated conflict studies and peace research; human rights studies, humanitarian management; human rights-oriented medicine; trauma, memory and reconciliation studies; security studies, death studies; suicide studies; and the list is still growing. These different generations of 'studies' now constitute a theoretical force to be reckoned with.

Theory is back!

This series aims to present cartographic accounts of these emerging critical theories and to reflect the vitality and inspirational force of ongoing theoretical debates.

Rosi Braidotti

Contributors

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artistic and theoretic agenda within institutional and economical critique has evolved over twenty years, more recently focusing on the early history of capitalism and globalization. As co-curator of such paradigmatic exhibitions as *Messe 20k* (1995), *ExArgentina* (2004) and *The Potosi Principle* (2010), Creischer has developed a specific curatorial practice that correlates with her work as an artist and theorist, including her extensive practice in archive research.

Critical Software Thing is a collective of artists, thinkers and researchers interested in thinking 'thing' from the perspective of Software Studies. The group began as a series of discussions and a shared set of interests around the notion of execution, questioning what exactly execution is and where something like a computer program might be understood to execute. The group has published a book project provisionally titled *Executing Practices* (published by Autonomedia in the DATA browser book series). Contributors to this entry are Audrey Samson, Lea Muldtofte, Winnie Soon, Eric Snodgrass and Francisco Gallardo as part of the Critical Software Thing collective.

Heather Davis is a researcher and writer. She is working on a book called *Plastic: The Afterlife of Oil* for Duke University Press which traces the ethology of plastic and its links to petroculturalism. She is the editor of *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies* (Open Humanities Press) and *Desire Change: Contemporary Feminist Art in Canada* (MAWA and McGill Queen's University Press, 2017). Her writing can be found at heathermdavis.com.

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Rick Dolphijn is a philosopher working at Utrecht University (Humanities). He writes between art and contemporary theory and has a strong interest in all forms of activism and ecology. His writings include *Foodscapes* (2004), *New Materialism* (with Iris van der Tuin, 2012) and *This Deleuzian Century* (ed. with Rosi Braidotti, 2016).

Wander Eikelboom is a writer and cultural critic with an interest in continental philosophy, participatory media cultures and the embodied experiences of interactive media. He reads media studies at the Academy for Multimedia and Communication Design (CMD) in Breda (NL) and is editor in chief of the magazine *Void*. He is the project leader, researcher, writer and editor in chief of the Sense of Smell project that resulted in the *Sense of Smell* book (2014) and *Famous Death* installation.

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Francesca Ferrando, PhD in Philosophy, MA in Gender Studies, is a philosopher of the posthuman; she teaches Philosophy at NYU, Program of Liberal Studies. Dr Ferrando has published extensively on the topic of post-and transhumanism. The Italian edition of her book *Philosophical Posthumanism and*

its Others (ETS 2016) was awarded the philosophical prize "Vittorio Sainati" with the acknowledgment of the President of Italy. She is also one of the founders of the NY Posthuman Research Group.

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Maja and Reuben Fowkes are art historians, curators and co-directors of the Translocal Institute for Contemporary Art, a centre for transnational research into East European art and ecology based in Budapest that operates across the disciplinary boundaries of art history, contemporary art and ecological thought. Maja Fowkes is the author of *The Green Bloc: Neo-avant-garde Art and Ecology under Socialism* (2015) and together they published *River Ecologies: Contemporary Art and Environmental Humanities on the Danube* (2015).

Anselm Franke is a Berlin-based curator and author. He has been the head of the Department of Visual Arts and Film at Haus der Kulturen der Welt since 2013. He was the chief curator of the Taipei Biennial in 2012 and of the Shanghai Biennale in 2014. His exhibition project *Animism* was shown from 2009 until 2014 in collaboration with various partners in Antwerp, Berne, Vienna, Berlin, New York, Shenzhen, Seoul and Beirut. Franke received his doctorate from Goldsmiths College, London.

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Andrew Goffey, of *Evil Media* (MIT), editor of *Software Studies*, a lexicon (MIT) and co-editor of the journal *Computational Culture*. He is involved in a number of projects in art, media and software and is the author of the forthcoming *How to Sleep, in Art, Biology and Culture* (Bloomsbury).

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Ine Gevers is a curator, writer and activist. Among her exhibitions and publications are *Niet Normaal: Difference on Display* (Beurs van Berlage, Amsterdam, 2010; Berlin, 2011; Liverpool, 2012) and *Yes Naturally: How art saves the world* (Gemeentemuseum, The Hague, 2013), proposing a non-anthropocentric world view in order to become ecologically intelligent. Her large-scale international exhibition *Hacking Habitat* was displayed in the former prison of the city of Utrecht in 2016.

Tom Giesbers is a philosopher at Utrecht University who specializes in German post-Kantian philosophy and contemporary French philosophy. His research interests include, but are not limited to, realism,

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Maria Hlavajova is the founder of BAK, basis voor actuele kunst, Utrecht and has been its artistic director since 2000, and is also artistic director of FORMER WEST (2008–16), which she initiated and developed as an international collaborative research, education, publication and exhibition undertaking. Hlavajova has organized numerous projects at BAK and beyond, including, most recently, the series *Future Vocabularies* (2014–16) and *New World Academy* with artist Jonas Staal (2013, ongoing).

Aud Sissel Hoel is Professor of Media Studies and Visual Culture at the Norwegian University of Science and Technology. Her research concerns the role of images and tools in knowledge and thinking, focusing on photography, scientific instruments,

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Ingrid Hoelzl is an image theorist and performance artist, currently Assistant Professor at the School of Creative Media, Hong Kong. She is the author of a monograph on the theory of photographic self-portraiture, *Der Autoporträtistische Pakt* (2008) and (with Rémi Marie) of *Softimage: Towards a New Theory of the Digital Image* (2015) which investigates the algorithmic paradigm of the image leading to the thesis of the image as program. She is currently working on a new book project titled *Postimage: The New Ecology of Vision*, which addresses the dissolution of the image in machine vision and neuroscience from the perspective of posthumanism and ecophenomenology.

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Pierre Huyghe (born 1962 in Paris) lives and works in Paris and New York. He studied at the Ecole Nationale Supérieure des Arts Décoratifs in Paris. He has had numerous international solo exhibitions at such venues as the Metropolitan Museum of Art, New York (2015), Los Angeles County Museum of Art and Museum Ludwig, Cologne (2014) and the Centre Pompidou, Paris (2013–14), among others.

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Tove Kjellmark is an artist living and working in Stockholm, Sweden. She has received numerous grants and has had many solo exhibitions over the years. In her work she searches for Another Nature: a nature that refuses to accept a difference between technological and natural forces, between human life and animal life, between

mechanics and organics. By doing research on precisely these issues, she wants to challenge nature, creating it anew.

Goda Klumbyté is a PhD candidate at the University of Kassel, Germany, within a research group Gender/Diversity in Informatics Systems. Her research engages feminist technoscience, new media studies and posthumanism. Her work has been published in *Everyday Feminist Research Praxis* (eds Leurs and Olivieri, 2015) and *Fat Sex: New Directions in Theory and Activism* (eds Walters and Hester, 2015).

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Karen Kramer graduated with a BFA from Parsons School of Design, New York, in 2003 and concentrated, for a number of years, on a career in graphic design. In 2011 she relocated to the UK to begin an MFA in Fine Art at Goldsmiths, University of London. Since completing her final exhibition in 2013 she has exhibited internationally and taken part in a range of studio residencies. In 2015 she was a co-recipient of the Jerwood/FVU awards, culminating in the exhibition *Borrowed Time* at Jerwood Space, London.

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Koen Leurs is an Assistant Professor in Gender and Postcolonial Studies at Utrecht University. Leurs is critical Internet researcher working on migration, diaspora, gender, race, class, urbanity and youth culture. Recent publications include the co-edited anthology *Everyday Feminist Research Practices* (2014), the monograph *Digital Passages: Migrant Youth 2.0* (2015) and an article on 'Feminist data studies' that appeared in *Feminist Review* (2017). Currently he is co-editing the *SAGE Handbook of Media and Migration*.

Armin Linke was born in 1966 and lives in Milan and Berlin. As a photographer and film-maker he combines a range of contemporary image-processing technologies in order to blur the borders between fiction and reality. His artistic practice is concerned with different possibilities of dealing with photographic archives and their respective manifestations, as well as with the interrelations and transformative powers between urban, architectural or spatial functions and the human beings interacting with these environments.

Kirsty Liddiard is currently a Research Fellow within the Centre for the Study of Childhood and Youth, in the School of Education at the University of Sheffield. Prior to this, she became the inaugural Ethel Louise Armstrong Postdoctoral Fellow at the School of Disability Studies, Ryerson University, Toronto, Canada. Her work centres on disablism and ableism; and gender, sexuality and intimate citizenship.

Geert Lovink is a Dutch media theorist, Internet critic and author of *Uncanny Networks* (2002), *Dark Fiber* (2002), *My First Recession* (2003), *Zero Comments* (2007), *Networks Without a Cause* (2012) and *Social Media Abyss* (2016). In 2004 he founded the Institute of Network Cultures at the Amsterdam University of Applied Sciences. His centre organizes conferences, publications and research networks such as Video Vortex (online video), Unlike Us (alternatives in social media), Critical Point of View (Wikipedia), Society of the Query (the culture of search), MoneyLab (internet-based revenue models in the arts). Recent projects deal with digital publishing and the future of art criticism. He also teaches at the European Graduate School (Saas-Fee/ Malta) where he supervises PhD students.

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Stuart McLean is Professor of Anthropology and Global Studies at the University of Minnesota. He is the author of *The Event and its Terrors: Ireland, Famine, Modernity* (2004) and *Fictionalizing Anthropology: Encounters and Fabulations at the Edges of the Human* (2017) and the editor (with Anand Pandian) of *Crumpled Paper Boat: Experiments in Ethnographic Writing* (2017).

Steve Mentz is Professor of English at St John's University in New York City. His most recent books include *Shipwreck Modernity: Ecologies of Globalization, 1550–1719* (2015) and *Oceanic New York* (2015). His work in the blue humanities also includes *At the Bottom of Shakespeare's Ocean* (2009) and numerous articles and chapters. Works

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Sandro Mezzadra teaches political theory at the University of Bologna and is adjunct fellow at the Institute for Culture and Society, Western Sydney University. With Brett Neilson, he is the author of *Border as Method, or, the Multiplication of Labor* (Duke UP, 2013). He is an active participant in the 'post-workerist' debates and one of the founders of the website Euronomadé.

The MTL Collective, Nitasha Dhillon and Amin Husain, is a collaboration that joins research, aesthetics and action in its practice. Nitasha is a visual artist based in New York and New Delhi, and is currently a PhD candidate at the Department of Media Study, State University of New York at Buffalo. Amin is a Palestinian-American lawyer, artist, and organizer based in New York. He practised law for five years before transitioning to art, studying at the School of the International Center of Photography and Whitney Independent Study Program. Amin currently teaches at the Gallatin and Steinhardt Schools at New York University and Pratt's Graduate Writing Program.

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Serpil Oppermann is a full professor in the Department of English Language and Literature at Hacettepe University, Ankara. Her most recent publications include *International Perspectives in Feminist Ecocriticism* (2013), co-edited with Greta Gaard and Simon Estok, and *Material Ecocriticism* (2014) and *Environmental Humanities: Voices from the Anthropocene* (2017), co-edited with Serenella Iovino. She has also edited *New Voices in International Ecocriticism* (2015).

The Otolith Group is an award-winning artist-led collective and organization founded by Anjalika Sagar and Kodwo Eshun in 2002. It creates films, installations and performances that are driven by extensive research into the histories of science fiction and the legacies of transnationalism. The Otolith Group was shortlisted for the Turner Prize in 2010.

Susanna Paasonen is professor of Media Studies at the University of Turku, Finland. With an interest in studies of popular culture, affect and media theory, she is most recently the author of *Carnal Resonance: Affect and Online Pornography* (2011) as well as co-editor of *Working with Affect in Feminist Readings: Disturbing Differences* (2010) and *Networked Affect* (2015).

Trevor Paglen's work deliberately blurs lines between science, contemporary art, journalism and other disciplines to construct unfamiliar yet meticulously researched ways to see and interpret the world around us. His visual work has been exhibited at the Metropolitan Museum of Art, New York, Tate Modern, London, The Walker Arts Center, Minneapolis and others. His most recent book, *The Last Pictures* (2012) is a meditation on the intersections of deep-time, politics and art.

Neni Panourgía is an anthropologist, Senior Research Fellow at the Institute for Comparative Literature and Society at Columbia University, Director of the Project on Aging, and affiliated faculty at the Psychology Department. Through the Prison Program at Columbia University she teaches at Sing Sing, the maximum-security prison in Upstate New York. Her work engages many registers, lexicons, and disciplines and is concerned with questions of epistemology, critical theory, critical medical studies, humanism and anthropism, social and political exception and excision, sites of dissonance, complete and austere institutions. She has situated her research in

hospitals, prisons, camps, schools. She has published on theory of anthropology, ethnographic methods, art, architecture, political histories, and intimate ethnographies. Her numerous publications have appeared in *American Ethnologist*, *American Anthropologist*, *angelaki*, *Anthropology and Humanism*, *Anthropological Theory*, *Documenta*, *Mousse*, *Naked Punch*. Her award-winning books include *Fragments of Death*, *Fables of Identity*. *An Athenian Anthropography* (1995); *Ethnographica Moralia. Experiments in Interpretive Anthropology* (2008); *Dangerous Citizens. The Greek Left and the Terror of the State* (2009); and a new edition of Paul Radin's *Primitive Man as Philosopher* (2017).

Dimitris Papadopoulos is a Reader in Sociology and Organisation at the School of Management, University of Leicester. His work in science and technology studies, social theory and sociology of social change has been published in numerous journals and several monographs, including the forthcoming *Experimental Politics: Technoscience and More Than Social Movements* (Duke University Press), *Escape Routes: Control and Subversion in the 21st Century* (2008) and *Analysing Everyday Experience: Social Research and Political Change* (2006).

Jussi Parikka is a media theorist, writer and Professor in Technological Culture and Aesthetics at Winchester School of Art, University of Southampton. He has published widely on digital culture, media theory, visual culture and media archaeology. Parikka's books include *Digital Contagions: A Media Archaeology of Computer Viruses* (2007, 2nd ed. 2016), *Insect Media* (2010), *A Geology of Media* (2015) and *The Anthroscene* (2014).

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Matteo Pasquinelli (MA, Bologna; PhD, London) is a philosopher and Professor in Media Theory at the University of Arts and Design, Karlsruhe. Previously he has taught at the Pratt Institute, New York. He wrote *Animal Spirits: A Bestiary of the Commons* (2008) and has edited the anthologies *Gli algoritmi del capitale* (2014) and *Alleys of Your Mind: Augmented Intelligence and its Traumas* (2015) among others.

Patricia Pisters is Professor of Film at the Department of Media Studies of the University of Amsterdam and director of the Amsterdam School of Cultural Analysis (ASCA). She is one of the founding editors of the Open Access journal *Necus: European Journal of Media Studies* and author of *The Neuro-Image: A Film-Philosophy of Digital Screen Culture* (2012).

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Introduction

ROSI BRAIDOTTI AND MARIA HLAVAJOVA

What could terms such as ‘altergorithm’, ‘rewilding’, ‘negentropy’ and ‘technoanimalism’ possibly have in common? The answer lies in the pages of this book: they are all neologisms that attempt to come to terms with the complexities of the posthuman predicament. Every time we refer to some of these neologisms in the introduction, we will insert the inverted commas, as a way of indexing them and alerting the readers to the specific inception of the terms.

This glossary rests on the working definition of the posthuman as a field of enquiry and experimentation that is triggered by the convergence of post-humanism on the one hand and post-anthropocentrism on the other. Posthumanism focuses on the critique of the humanist ideal of ‘Man’ as the universal representative of the human, while post-anthropocentrism criticizes species hierarchy and advances bio-centred egalitarianism. Equally interdisciplinary in character, they refer back to different traditions, cite different authors and tend to take place in-between different disciplinary areas. The convergence of these two strands is producing a dynamic new field of scholarship right now. Accordingly, in this *Posthuman Glossary* we take the term ‘posthuman’ to mark the emergence of a transdisciplinary discourse that is more than the sum of posthumanism and post-anthropocentrism, and points to a qualitative leap in a new – perhaps ‘post-disciplinary’ – critical direction.

This volume consequently is both an attempt to reflect the current state of posthuman scholarship – by providing a

selection of key terms and authors – and a critical intervention in the field. The critical part tends to emphasize two main dimensions: the first is the significance of the neo-materialist approaches and of monistic process ontologies in contemporary critical posthuman theory. The second is an ethical concern for the relationship between new concepts and real-life conditions, with strong emphasis being placed throughout the volume on the need for creative responses to the current challenges. This ethical passion drives the volume and it also helps shape its affective tone, in terms of accountability, the respect for diversity and the conviction that critique and creativity work in tandem. In this respect, the *Posthuman Glossary* may be said to both fulfil and defy the usual expectations and aims of a glossary.

ANTHROPOS REDUX

The starting assumption of this volume is that the historical situation of today – ecologically, economically, socio-politically as well as affectively and psychologically – is unprecedented. We define our era as the Anthropocene,¹ by which we understand the geological time when humans are having a lasting and negative effect upon the planet’s systems. As the ‘Generation Anthropocene’² we believe that new notions and terms are needed to address the constituencies and configurations of the present and to map future directions. There is the pressure of old and new contemporary concerns, such as the

changes induced by advanced technological developments on the one hand and the structural inequalities of the neoliberal economics of global capitalism on the other. Accordingly, the contributors to the *Posthuman Glossary* analyse both material and discursive conditions: sociological reality and the more epistemic dimensions are taken together, as two sides of the same coin. This assumes, as a starting point, a nature–culture continuum that defies binary thinking. In other words, the ‘computational turn’ is very ‘earth-bound’ and the global economy, however ‘planetary’, is also eminently ‘terrestrial’. It is just the case that today, the former ‘four elements’ (earth, air, water and fire) have mutated into ‘geo-hydro-solar-bio-techno-politics’. If this sounds puzzling, it’s because it genuinely is so. We need to take on the task of thinking differently about our current predicament.

As a consequence of these mutations, two notions that pertain to residual humanism – the *non*-human and the *in*human – are very important for the *Posthuman Glossary*, because they single out acute aspects of our social reality. The non-human refers to the status of depreciated naturalized ‘others’ whose existence has been cast outside the realm of anthropocentric thought and confined within non-human life (*zoe*). They are, historically, the members of ethnicities other than the ruling and colonial European powers. But they also refer to vegetable, animal and earth species and, by now, the genes and genomic codes that constitute the basic architecture of Life, or rather its ‘epigenetic landscapes’. The reference to epigenetics (see the entry on Epigenetic Landscape) is important to this glossary, in that it contributes to a critique of anthropocentric genetic determinism by stressing that, even at the level of the gene, the human is already interconnected with

the wider material world, and with its histories and events.³ In a broader sense, this glossary assumes that the human is always partially constituted by the non-human and that their interaction is too complex to be reduced to a mere dialectical opposition. All the more so, as nowadays the non-human also involves technologically manufactured ‘others’ – both modernist appliances and objects and post-industrial ‘smart’ things. The latter play a crucial role in defining the posthuman moment by stressing the primacy of digital mediation and electronic circuits in our self-definitions and interaction. One of the challenges for the *Posthuman Glossary* consequently is to devise adequate theoretical and artistic representations for the new forms of interconnection between humans and non-human factors and agents.

The boundaries between the ‘inhuman’ and the ‘non-human’, however, are porous and dynamic. Many scholars use them interchangeably to refer to other-than-human or less/more-than-human life, enlisting selected aspects of geology, anthropology, theology, zoology and biology to the task of reaching an adequate understanding of these terms. In this glossary, we try to make critical distinctions and by ‘inhuman’ we refer to a double phenomenon, which raises both analytical and normative questions. Analytically, the term refers to the de-humanizing effects of structural injustice and exclusions upon entire sections of the human population who have not enjoyed the privileges of being considered fully human. Gender and sexual difference, race and ethnicity, class and education, health and able-bodiedness are crucial markers and gatekeepers of acceptable ‘humanity’. They are terms that index access to the rights, prerogatives and entitlements of being human. Those who are excluded from a dominant notion of

the human based on masculinist, classist, racist and Eurocentric parameters see their lives downgraded from the human as pertaining to 'bios', to a bestialized existence closer to 'zoe'. This insight about structural exclusions flies in the face of the universalist pretensions of the humanist tradition. This critical position also lies at the core of bio-political analyses of contemporary power relations and feeds into a critique of the limitations of humanist thought and practices.

Normatively, however, the inhuman also denounces the inhumane, unjust practices of our times. More specifically it stresses the violent and even murderous structure of contemporary geo-political and social relations, also known as 'necro-politics'. These include increasing economic polarisation and the 'expulsion' of people from homes and homelands in an upsurge of global 'neo-colonial' power relations. Holding these different dimensions of the 'inhuman' and their social effects in some sort of critical balance is one of the challenges of the *Posthuman Glossary*.

Many of the contributors address the bio- and necro-politics of the day, notably the strident correlation between the redefinition of the humans' interaction with their ecological and technological environments on the one hand and the brutality of the power relations of today, on the other. In this glossary, 'metadata society' thrives alongside heaps of 'digital rubbish' and the phenomenon known as 'neuronal aesthetics' works in tandem with 'exclusion zone', apparently unperturbed by their internal contradictions. In other words, the new conceptual and terminological innovations introduced by the contributors are positive interrogations of ongoing new developments, but they do not recoil from assessing also their negative repercussions. The entries of this glossary cover for instance the coexistence

of a double mediation: ubiquitous digital networks and bio-genetic regeneration processes on the one hand and environmental destruction on a mass scale on the other. The terminological diversity is very creative: some authors emphasize new 'general ecologies' and 'resilience', while others focus on human and non-human species 'extinction'. Global migration flows – also known as the 'Lampedusa' effect – are read in the frame of enduring patterns of economic, sexualized and racialized oppression. Data flows in virtual space coexist with regimes of earth-bound, spatial management based on growing incarceration and 'execution'. The perpetual 'war' on terror occurs alongside the spreading of extensive 'security/surveillance' systems, to name but a few significant markers of our time.

The effect of the internally contradictory developments of the posthuman era is that they contribute to explode the concept of the human. The human is no longer the familiar notion that was previously known and taken for granted, and it is not consensually shared (Braidotti, 2013). The drastic transformations of our bio and necro-political regimes have come to mark a 'posthuman condition' that combines exciting new developments with a troublesome reiteration of old, unresolved problems. The *Posthuman Glossary* assesses this moment as marking the end of the self-referential arrogance of a dominant Eurocentric notion of the human and the opening up of new perspectives.

If art, science, and the academic Humanities have shared one thing, it is their common engagement with constructions and representations of the *human* within their respective realms. Artists and Humanities scholars also mirror each other in their mutual explorations of how people process, document and analyse their human experiences. Reference and

appeals to that particular idea of the human, however, pertain to a block of ‘common sense’ notions that are constantly deployed without ever being seriously defined. Too often still, the term ‘human’ is simply accepted and circulated without critical analyses of its internal fractures and constitutive hierarchies. The ‘human’ as concept attains an implicitly normative status as what humans ought to be, or not, as well as what they may actually happen to be. In academic research in the Humanities, the hegemony of humanist values in defining the human is such that one disputes the notion of the human and the worth of humanism at one’s own risk and peril. As stated earlier, the *Posthuman Glossary* pursues a double aim: it presents a variety of alternative responses to the critique of humanism and anthropocentrism, while also attempting to sketch a theoretically coherent critical position on the posthuman. Both approaches are sustained by the conviction that neither the limitations set by the anthropomorphic nature of humans nor the excesses of their anthropocentric ambitions have been the target of sustained analysis and criticism.

As a result of this range of perspectives, the posthuman – far from having a stable and coherent identity – manifests itself by a vast number of disparate concerns that do not always coalesce into a single thematic field. A major axis of reflection running across the *Posthuman Glossary* therefore consists in a critical overview and assessment of the multiple discourses that are currently circulating about the notion of the Anthropocene itself. How useful is the notion of the Anthropocene? This book raises sustained critical questions as to whether the awareness of a collective sense of ecological, social and affective responsibility necessarily enhances ethical agency and political consciousness. Besides, how inclusive and how representative is the

‘Generation Anthropocene’? The urgency of these questions is equal to the vitality of the field: even as a relative neologism, the Anthropocene has already become another ‘Anthropomeme’ (Macfarlane 2016). It has spawned several alternative terms, such as ‘Capitalocene’ (Haraway 2015a, 2015b), ‘Anthrop-obscene’ (Parikka 2014), but also ‘Plantationocene’ (Tsing 2015), ‘Manthropocene’ and ‘Plasticene’. This proliferation does not contribute to linear stability, but it rather fosters intellectual and artistic creativity.

Taking the cartographic aim of the *Posthuman Glossary* seriously by surveying the current state of the scholarship, we are also committed to pointing out missing links and exclusions. In this spirit, the glossary attempts to challenge the contemporary manifestations of power in ways that privilege Eurocentric traditions of critical thought and do not engage the work of ‘decolonial critique’, ‘neo-colonial’ politics and black studies in a sustained manner. We are strongly opposed to monocultures, also and especially of the posthuman mind (Shiva 1993). Although the glossary offers a few entries in the postcolonial and race fields of posthuman study, we are aware of our critical ellipses and see them as a limitation of this collection – literally, a matter of finitude. Like all cartographies, the *Posthuman Glossary* only offers a partial account and a synoptical view of the field at this point in time.⁴

The *Posthuman Glossary* also attempts to build bridges across a number of other missing links. It aims first of all to connect scholarship and critical thought to the real-life issues and praxes that are of immediate relevance to individuals and society today. Although there is much talk nowadays of the ‘impact’ of academic work upon the real world, the gulf between the two remains large. This volume starts by filling in this gap. Secondly, the glossary

aims at connecting artistic and curatorial practice to scientific research, technological innovations and scholarly work. This implies an open-minded attitude on both sides and the conviction that there is much to be gained through these dialogues. The assumption that we need to experiment with different ways of thinking places the contemporary artists in a crucial position for scholars struggling with the protocols of established academic work and language, and vice versa.

Thirdly, it is the aim of the glossary to connect different generations of thinkers and users of human and non-human technologies. This is especially relevant now that electronic networks enter into their nth operational generation, resulting in new generations of human on-line users being defined as 'digital natives'. It is urgent to study and work across their respective assessments of our present predicament and to explore the implications of the fact that age-indexed differences nowadays are structured by sizeable infrastructural divergences, such as access to bio-medical technologies that extend and segment life on the one hand and the accumulation of debt on the other. Such structural inequalities add additional layers of complexity to the question of intergenerational relations. Here the posthuman approach offers a fresh lens with which to frame intergenerational justice in the Anthropocene and across the great digital divide. The need arises to analyse also the implications of millennial youth culture's high levels of technological literacy for their relationship to the knowledge and experience of older generations of critical thinkers and, for instance, the formulation of 'socially just pedagogies'.

The breadth of terms, scope and purpose of the *Posthuman Glossary* is not only quantitative, but also qualitative: we want to de-segregate the different and

highly specialized spheres of knowledge production, so as to bring together different communities of thinkers and practitioners who may not otherwise come across each other. As we mentioned before, this is especially the case for perspectives developed from decolonial, black and race studies that are often marginalized in both new media and posthuman scholarship. And it is also the case for the artistic and curatorial community, who can often appear to be physically held apart from the academic world, and vice versa. We also hope to trigger some transdisciplinary energy and inspiration from these unexpected encounters, so as to renew the scope of critical inquiry and move towards a more inclusive posthuman critical theory. The pace is so fast that the speed is breathtaking. In response, the *Posthuman Glossary* is a valiant attempt to escape that velocity and to reach out for some temporary 'meta-stability', by combining a cartographic approach with a critical response.

THE INTERDISCIPLINARY HUBS

It follows from the above that the notion of the posthuman is in full expansion, in terms both of the sheer amount of scholarship being produced and the new qualitative perspectives it introduces. The terminological diversity is admirable and it goes hand in hand with a variety of genres and theoretical styles. At this stage it includes, for instance, a posthuman manifesto (Pepperell 2003); a school of inhuman thought (Lyotard 1991; Grimaldi 2011); emphasis on non-human agency (Raffnsøe 2013); on posthuman personhood (Wennemann 2013); on the 'new' human (Rosendahl Thomsen 2013); the 'a-human' (MacCormack 2014); the 'dishuman' (Goodley, Lawthom and Runswick-Cole

2014) and posthuman nomadic subjects (Braidotti 2013). Next to these relatively familiar terms there is a fast-growing world of neologisms and creative interventions.

With 141 contributors and over 160 entries, our volume bears witness to the explosion of this new field of research and proposes its own discursive strategy for dealing with the theoretical and terminological exuberance. As stated from the outset, one of the aims of the *Posthuman Glossary* is to provide an overview of the different critical terms, the many 'turns' and the leading concepts of posthuman critical thought and scholarship in the Humanities today, in dialogue with contemporary artistic and activist practices. The range of theoretical sources the contributors draw from may be limited, but it is not arbitrary. The selection of theoretical references has been left up to each contributor, but the glossary has a strong emphasis on a neo-materialist approach and on process ontologies that function as the point of convergence among many of our authors. The volume was conceived in May and June 2015 as a series of four workshops organized by the Centre for the Humanities at Utrecht University and BAK, the centre for contemporary art (basis voor actuele kunst, Utrecht). Dozens of brilliant papers and art performances took place within the flexible framework of those workshops and the desire to expand and extend the discussions led us to this collective enterprise.⁵

Although we have opted for a presentation based on the alphabetical order of the entries themselves, there are some key operating principles at work in the selection we have made and the structure we have assigned to this glossary. First of all, in order to provide an accurate cartography of the field, we have attempted to reflect the state of existing scholarship and

to discuss the leading scholars writing in the field. In cases where we were not able to secure an original contribution from these scholars themselves, we have drafted specific entries covering their work. Next to this, there are more critical, creative and even experimental entries that aim at devising new schemes of thought to deal with the contemporary challenges. Many of them aim at fulfilling the ethical task of exploring the relationship between new concepts and real-life conditions. The cumulative bibliography included at the end of the volume attempts to reflect as fully as possible both these aspects of the glossary.

As a matter of professional ethics, the glossary is respectful and open to multiple and potentially contradictory interpretations of the posthuman predicament, both on conceptual and on political grounds. This means also that a broad spectrum of academic disciplines is represented in this volume. Multiple new discourses, which call themselves 'studies' (gender studies, postcolonial studies, media studies etc. etc.) however, have grown in-between the disciplines and function as incubators for new ideas, methods, images and representations (Braidotti 2016b). The cross-overs between them are currently producing exciting new perspectives in posthuman scholarship.

Some meta-patterns are emerging across the different entries in this volume. We have detected a number of crucial interdisciplinary hubs that play the role of creative nuclei and we have consequently taken them as points of reference for this glossary. They are not discrete and neatly defined areas, but rather like rhizomic lines that zigzag through many contributions, allowing the authors to belong to several of them at the same time. Examples of these interdisciplinary hubs are, to begin with: comparative literature and cultural

studies, which have played a pioneering role in posthuman scholarship (Wolfe 2003, 2010; Herbrechter 2011; Nayar 2013) and have innovated on methods as well as themes, especially eco-criticism, animal studies and 'ecomaterialism' (Iovino and Opperman 2014a; Alaimo 2010). Another pioneering field is new media studies, which has taken a more material turn in order to account for the political economy of human/non-human interaction and 'networked affect' in our times (Parikka, Paasonen, Fuller, Gabrys, Terranova in this volume). Environmental studies is another crucial innovator in posthuman thinking, both the first Gaia generation (Lovelock 2009) and more recent work on the post-anthropocentric as a metamorphic entity (Clarke 2008); multi-species analysis (van Dooren 2014) and zoontologies (De Fontaney 1998; Gray 2001, Wolfe 2003).

Science and technology studies can be taken as a nursery of posthuman insights, as testified by the seminal work of Donna Haraway (1985, 1989, 1997, 2008), Isabelle Stengers (1987) and feminist cultural studies of science (Franklin, Lury and Stacey 2000). Recent scholarship returns to Darwin (Creed 2009; Midgley 2010; Grosz 2011), an author who had received little critical attention in the Humanities, with the exception of the pioneering efforts of Gillian Beer (1983), Stephen Jay Gould (1997) and Hilary Rose (2000).

Feminist, gender and LGBT+ theory, as well as postcolonial studies, are another intersectional critical hub. Feminists have long been theorizing the non-human and more especially the continuum between the human and the non-human (Balsamo 1996; Braidotti 2002; Grosz 2011; Halberstam and Livingston 1995; Halberstam 2012). That trend is now accelerating in queer posthuman and inhuman theories (Giffney and Hird 2008; Hird and Roberts 2011; Gruen and Weil 2012;

Livingston and Puar 2011; Colebrook 2014) and the emphasis on 'posthuman sexuality' (McCormack 2012). The turn to new materialism (Dolphijn and van der Tuin 2012; Coole and Frost 2010; Neimanis 2014; Laboria Cuboniks 2015) and the affective turn (Clough 2008) are also significant. Emphasis on bodily materialism (Braidotti 1991, 1994) and carnal thought (Sobchack 2004) mutates into 'vibrant matter' (Bennett 2010); and inventive life (Fraser, Kember and Lury 2006); 'transcorporeality' (Alaimo 2010) and 'post-human performativity' (Barad 2007). Of course the list is not exhaustive and it demonstrates the staggering vitality of the new thinkers – such as those who drafted the 'xenofeminism' manifesto – who are inspired as much by 'Lady Gaga' as by the feminist classics.

A brief overview of these interdisciplinary hubs also fulfils another purpose. Our hope is that it may serve as a navigational tool to help non-specialists steer a course from relatively familiar interdisciplinary discourses, into the wilder and more transdisciplinary field of posthuman studies. The bibliographical references to these interdisciplinary hubs, in other words, trace as many road-maps leading outwards, from within the academic disciplines and the critical 'studies' areas.

MULTIPLE AXES

The embarrassment of interdisciplinary riches offered by the fast-growing field of posthuman scholarship is manifold and multi-layered. Therefore the *Posthuman Glossary* strives to strike a balance between providing a survey and defining some meta-patterns, or emerging theoretical lines among the different contributions.

As stated above, the first theoretical orientations we foreground rotate around neo-materialism, 'ecosophy' and monistic vital philosophies, in the wake of Deleuze and Guattari's agenda-setting philosophy. Some contributions argue explicitly that monism is the philosophical grounding for 'posthuman critical theory' (Braidotti, Dolphijn, MacCormack and others), because it allows for rethinking matter as self-organizing process ontology. A monistic ontology, as both material and vital, offers possibilities of grounding the embodied and embedded posthuman subject in process (Braidotti 2006b). Moreover, by focusing on the dynamic interaction of Sameness and Difference, monism moves outside the scheme of dialectical opposition, stressing instead the generative force of living matter itself (Ansell Pearson 1997, 1999). Freed from the distinction between natural and constructed events, a monistic philosophy of intelligent, self-organizing matter produces a materialist political physics and 'political affect' (Bonta and Protevi 2004; Protevi 2001, 2009, 2013).

The influence of Deleuze and Guattari's ideas, which is felt strongly in this volume, is, however, not exclusive. Several contributors follow different ways of 'mattering', that is to say of exploring matter as a dynamic process. Many other process-oriented ontologies are at work, for instance in the references to Derrida, Whitehead, Wittgenstein, Meillassoux, Latour, Haraway and others. A major point of theoretical convergence between them is the need to overcome binaries and to state that matter, the world and humans themselves are not dualistic entities structured according to dialectical principles of internal or external opposition, but rather materially embedded subjects-in-process circulating within webs of relation with forces, entities and encounters.

In the context of the Anthropocene, that is to say amidst increasing global environmental degradation, the century-old divide between nature and culture has to be questioned and displaced. A combination of factors encourages this critical move. Such factors occur in a wide range of fields, like 'artificial intelligence'; advances in the Life sciences, notably bio-genetics; the introduction of large-scale technological mediation through consumer electronics; and the rise of neural sciences and computational cultures. In critical theory as in artistic practice the notion of a nature-culture continuum has become quite accepted, though its implications are seldom borne out. Contemporary posthuman scholarship pushes the nature-cultural continuum further, introducing terms such as 'medi-anatures', 'ecomaterialism' and 'make-human' to replace the old divides.

The methodological challenge for the *Posthuman Glossary* consequently becomes how to represent theoretically and artistically the profound interconnections between humans and non-human factors and agents. And how to fulfil this task, moreover, while keeping in mind the structural inequalities that control access to the dominant category of the 'human' to begin with. In accepting the shift towards monistic, neo-materialist, holistic or 'process ontologies', we also need to redefine the very terms of the nature-culture and human/non-human interrelations. Many authors in this volume address the question of how models of thought and practice in contemporary scholarship and the arts have been redefined by new forms of interconnection and interaction between humans and non-humans. Others wonder to what an extent process-oriented, 'object-oriented', neo-spinozist, vital monistic philosophies can sustain a shift towards

posthuman ethical relations and post-human politics.

The human/non-human; nature-culture; medianatures continuum includes the impact of networked cultures. Digital mediation has introduced a new public sphere, through the specificity of its 'algorithmic studies' and culture. Therefore a new set of questions arises, which again covers both the material and the immaterial aspect of mediation. For instance, many contributors explore the correlation between embedded discourses and practices around 'digital citizenship' and many forms of 'undocumented citizenship'. Digital activism, in groups such as 'Anonymous', stands alongside the 'Occupy' movement, in a public sphere that is thickly material, yet completely mediated.

At the centre of the public debate about the digital public sphere is the question of what may be the social, legal, ethical and political relevance for the 'bodies politic' of the 'hypersocial' subjects in the 'post-internet' era. A key issue, for instance, is how to assess the different digital agendas that are being set up by governments, corporations, the military, the global media and users themselves. The over-emphasis on corporate priorities such as transparency and digital rights in public debates may work to the detriment of more fundamental analyses of how posthuman subjectivity is being re-structured by the current technological mediation. In this regard, the *Posthuman Glossary* takes a critical distance from 'transhumanism' and its human enhancement project, which serves the corporate interests of the robotics sector and of the more deterministic strands of contemporary brain research (see Ferrando in this volume).

Furthermore, as advanced computational networks have come to provide the basic logistical infrastructure for the global economy – as in the stock exchange

networks – and for war weaponry – as in the case of semi-automated drones – the issue of their relative independence of direct human control raises some ethical and political concerns. In this regard, the *Posthuman Glossary* offers a number of models of resistance selected from contemporary critical thought, arts and media activism, such as ideas of 'stateless state' and 'posthuman rights', as well as 'postanimalism' and 'robophilosophy'. The issue of how to bury the digital dead also receives a great deal of attention. It concerns defunct people's email addresses and social network links and pages, but also dead codes, obsolete technologies and programmes and other forms of 'static glow'. Electronic *Pietas* is here to stay.

These questions flow inevitably towards the issue of bio-political management of life – see for instance the growing importance of 'food studies' and 'wearable technologies'. More specifically they explore contemporary necro-political governmentality, that is to say the management of death and dying, which often relies on algorithmic cultures and digital security. Technologies have always been linked to the military and to population control, but such a link has undergone significant mutations today. Many of the entries in this glossary consequently address the impact of contemporary digital technologies upon the mechanisms and the techniques of surveillance and monitoring of the social space, of border areas and war zones. Other authors address questions about the kinds of changes that have come upon visual technologies in the process of being turned into tracking devices. The question of defining the appropriate objects of study in relation to a culture of security, surveillance, counter-terrorism and the militarization of the social space raises the related issue of the responsibility of the critical thinkers who are dealing

with them. How can critical theorists and artistic practitioners address effectively the key terms of reference of the current political economy of visual representation and its impact on posthuman subject-formation?

To answer this burning question, new evaluation criteria are needed to assess the computational turn in media and cultural studies in relation to issues of power and security. The *Posthuman Glossary* offers many resources to come to terms with this challenge: from explorations of ‘biological arts’ to very diverse theoretical constructs, such as ‘rationalist inhumanism’ and ‘immanent humanism’, to name a few.

THE NEED FOR CREATIVITY

Another major operating principle of the *Posthuman Glossary* is the conviction that we cannot solve problems by using the same kind of thinking we used when we created them, as Albert Einstein lucidly put it.⁶ We need new terms. And new terminologies require conceptual creativity, which means to trust in the powers of the imagination, as well as rely on academic credentials and conventions. Such creativity is not an optional extra, but a necessity in both cognitive and ethical terms, in order to keep up with the emerging scholarship. We think that the interdisciplinary hubs we outlined above provide useful connections between critique and creativity, by framing inter- and trans-disciplinary scholarship as a particularly fruitful source of conceptual creativity.

Posthuman scholars are not inventing new words or coining new concepts just for the sake of it, or out of disrespectful impatience with the limitations of past frameworks. The experimental approach is rather an integral part of the effort to

produce adequate representations of our real-life conditions in fast-changing times. We might go so far as to suggest that uncritical reliance on terminological conventions today betrays a form of intellectual laziness that is ethically inconsistent, considering the urgency of some of the issues we are facing. In this glossary, ethical accountability works in tandem with the production of adequate intellectual cartographies. Accordingly we have encouraged the contributors to experiment with what we can only describe as a grounded, pragmatic and accountable approach to theoretical creativity. We want to examine the many ways in which the collective imagination is able to draw terminological inspiration from a variety of theoretical and real-life sources.

The *Posthuman Glossary* pursues this aim by way of a twofold enquiry: on the one hand the volume questions the ability of any one field of contemporary knowledge production in isolation – be it art, science, or the academic Humanities – to provide relevant analyses, let alone adequate solutions. More than ever we need to bring together interdisciplinary scholarship and even aim at a more trans-disciplinary approach in order to embrace the complexity of the issues confronting us. The parallelism of science, philosophy and the arts – so dear to Gilles Deleuze and Felix Guattari – is more relevant than ever in this endeavour.

On the other hand we argue that much more – and different kinds of – effort is needed to achieve new ways of thinking: we may need to draw resources from areas of expertise that do not always meet scientific standards of excellence. One of these fields is the arts: the *Posthuman Glossary* actively pursues the interconnection between academic work and arts theory and practice by exploring what particular kinds of research are developed

by artistic and curatorial practice. Considering the importance of experimenting with new ways of thinking that exceed the determination of existing categories, throughout the glossary the readers will find several visual essays that explore the concepts pertaining to post-human predicament (from 'geomythologies' to 'anthropocene observatory', 'forests as polis and politics' to 'hypersea') through the language of visual arts. Several contributors raise the following questions: which are the assumed subjects and presumed object matters of the arts and how do they intersect – or fail to – with academic scholarship? What can artistic practice and scholarly research do to strengthen and inspire each other on the issue of the in/non/post/-human? What methodological and political alliances do we need to sustain in order to co-create robust conceptual and experimental terminologies that may be adequate to the complexity of our times? This glossary provides a broad spectrum of answers to these crucial questions.

MULTIPLE HUMANITIES

The ambitious goal of filling in missing links and bringing together several communities takes us back to some fundamental self-questioning, namely: who are 'we', exactly? In some ways the continued emphasis on a general idea of the posthuman and the Anthropocene – all variations and puns notwithstanding – becomes yet another way of perpetuating a narcissistic form of anthropocentrism. This generalized notion entails a further risk that, by creating a new sense and image of pan-human interconnection, it may actually erase categorical differences, structural injustices and disparities in access to

natural and constructed resources (Shiva 1997; Chakrabarty 2009; Braidotti 2013, Haraway 1985, 2015a).

Thus, the glossary focuses on how contemporary scholarship and the arts respond to the posthuman predicament – not only in the propositional content of their arguments, but also through the hybrid and complex methods by which they bring these questions to bear. The assumption that the Anthropocene social imaginary is created by images and metaphors, representations and anticipations that emerge from the arts, literature, cinema and new media entails crucial implications in terms of their social responsibility. This book raises serious questions about the ways in which academic scholarship in the Humanities is reacting to this situation and how it assesses the role culture plays in shaping the contemporary social imaginary. Some contributors question which images can be taken as emblematic of the posthuman condition: is the icon the spectacular, shiny body of cybernetic mechanism? Or should we rather value to the more humble icon that is the anti-conception 'Pill'?

Wary of the fact that the 'human' has never been a neutral term, but rather a notion that indexes access to entitlements and power, and ever mindful that 'we' are not human to the same degree, extent and scale, 'we' have a problem of both self-representation and recognition of devalORIZED 'others.' This critical insight is politically significant considering that in the public debate at present there is a great deal of stated cognitive and moral anxiety about the state of the health of the human (Armstrong and Montag 2009); the status of Anthropos today (Rabinow 2003; Rose 2007; Esposito 2008a); the crisis of the humanist vision of the human (Habermas 2003; Sloterdijk 2009a; Pope Francis 2015); fear of the posthuman future (Fukuyama

2002) and of possible extinction (Klein 2014). The effect of these, often reactive, positions is that they result in hasty re-compositions of a new pan-humanity bonded in fear and anxiety about its own survival. Following this position, a new 'humanity' thus arises from the ashes of its Anthropocenic self-destruction. In this glossary, we want to resist such generalizations, while taking our responsibility for the multitude of problems in which we find ourselves – together. While 'we' are not the same, we are in *this* together.

Accordingly, the *Posthuman Glossary* gathers contributors who propose a wide range of alternative visions emerging from the implosion of the category of the 'human' and the explosion of multiple forms of inhuman, non-human and posthuman subject positions. Such diversification is both quantitative and qualitative: it expresses geo-political and socio-economic differences while sustaining common concerns in a post-anthropocentric world order. Analyses of bio- and necro-power run throughout this glossary. They take the form of neo-materialist, grounded or immanent interconnections that are both embedded and embodied, relational and affective cartographies of the new power relations that are emerging. Significant markers of human 'normality' based on traditional views of class, race, gender, age and able-bodiedness continue to be at work as key factors in framing the notion of and policing access to something we may call 'human' or 'humanity'. Thus, although there is no denying the global reach of the problems we are facing today, which indicates that 'we' are in *this* anthropocentric crisis together, it is equally true that such awareness must not be allowed to flatten out the power differentials that sustain the collective subject ('we') and its endeavour ('*this*'). We need sharper

analyses of the politics of our locations and adequate representations of their contradictions.

Crucial to this project is therefore the question: how do power differences based on race, class, gender, sexuality, ethnicity, religion, age and able-bodiedness feature in the posthuman universe? How can we both analyse and resist the violence of the times? Where do art and scholarship sit within this resistance, and what role can they play here? What epistemic and methodological transformations do practices need to undergo in order that they should not reproduce the inhuman structures of our times? The entries in the volume show that we need to acknowledge that there may well be multiple and potentially contradictory projects at stake in the complex re-compositions of the human, inhuman, non-human and posthuman at work right now.

MULTIPLE AFFECTS

The multi-layered and pluri-directional lines of thought pursued by the 'Anthropocene Generation' contribute also to install an intense affective economy, expressed in concepts or images. What is the sensory and perceptive apparatus of posthuman subjects like? A survey of the literature reveals some fundamental alterations of our 'ethereal scent', 'sensing practices' and affective responses. We alternate between euphoria and despair, in a manic-depressive cycle of frenzy and fear, narcissism and paranoia. Schizoid loops and systemic double-binds mark, together with xenophobic paranoia, the political economy of affects in advanced capitalism. They enact the double imperative of global consumerism and the inherent deferral of commodified pleasure,

which induces addictive habits of repetition without difference. Deleuze and Guattari's critique of capitalism as schizophrenia (1980) is a highly relevant analysis of this perverse political economy.

The posthuman is not only a mode of critical thought, but also a mood of affective belonging. It introduces a multi-faceted 'affective turn' that combines emotions usually held as opposites: nostalgia with the passion for utopian vision; the politics of life itself with the spectre of mass extinction; melancholia with anticipation; mourning for the past with a brutalist passion for the not-yet. In this respect, Pathos and Thanatos stare at each other in the eyes while Eros looks away. The *Posthuman Glossary* is as much a rhetorical and aesthetic exploration of the posthuman condition as a literal description of its defining features and analytic conditions of possibility. The eco-elegiac tone of some of our contributors is echoed by the flair for 'eco-horror' expressed by others. New affects require new languages: what do you call that haunting feeling of ecological memories of landscapes transfigured by violent development? Eco-nostalgia? Remembrance of trees past? Geo-physical semiotics? Portrait of a young wasteland? Colonial transfigurations? Scar wars? Terrestrial delirium? And how should we describe that sinking feeling at the thought of the unsustainability of our future? Post-anthropocentric nausea? Extinction-attraction syndrome? Global obscenities overload? No country for any human?

The affective dimension is central to the aims of the *Posthuman Glossary* and cannot be separated from conceptual creativity. In an era that is increasingly defined by the critique of anthropocentric apathy and the recognition of the vitality of matter and of non-human agency, this book wants to explore the new critical

angles and creative insights about affect that are emerging between theory, science and the arts. Our authors argue that these domains combine forces in addressing the challenge of our collective 'ecopathy'. Or, to paraphrase Donna Haraway: why are the machines so lively and the humans so inert?

The *Posthuman Glossary* attempts to strike a balance between these multiple theoretical lines, swinging moods and over-active interdisciplinary hubs. The volume wants to think about and highlight the interconnection between our fascination for novel technological artefacts, environmental degradation, economic disparities, structural injustice and the recrudescence of power differences claimed to have been left behind. In other words, the passion that sustains this volume is essentially ethical: how can we come to terms with the breathtaking transformations of our times while being able to endure and to resist? How to keep in mind issues of social, feminist, queer, trans, decolonial, anti-racist, inter-species, disability and transnational justice while keeping pace with the amazing bio-scientific, media and communication, and the cognitive technological advances of our times?

Faced with such complexity and the wealth of new perspectives emerging from posthuman investigations, another crucial question that emerges from this glossary is whether multiple forms of alternative humanisms – of the non-Western; non-liberal; non-masculinist; non-heterosexist; non-anthropocentric and non-imperial kind – are feasible today. And how would these inspiring but potentially contradictory approaches fare in the conflictual geo-political forum of today's world?

Asking these questions across the multiple axes, the proliferating glossaries

and the theoretical vitality of our 141 contributors express an act of confidence in the capacity of collective and individual critical thought to address head-on the challenges of today. But in order to succeed in this daunting task, the critical thinkers in this volume have taken the institutional and intellectual freedom to roam across a variety of fields of competence and areas of 'studies'. Freedom from need, constraints and censorship, but also the freedom to take risks and to experiment.

In conclusion, the *Posthuman Glossary* hopes that some fundamental gratuity – a principle of non-profit – will be re-stated as the core value of fundamental post-human critical theory in the arts, sciences and the Humanities today. We need to cement the bond between conceptual creativity and intellectual courage, so as to dare to dream up new scenarios in the midst of the roller-coaster of exciting new developments and brutal old injustices which is characteristic of our times. To be worthy of these new contradictions and challenges, we need to break old partitions and vested interests and install dialogues of a qualitative different kind. It is our hope that the *Posthuman Glossary* can

contribute a first set of premises towards that kind of dialogue.

Notes

1. The Nobel Prize-winning chemist Paul Crutzen coined the term 'Anthropocene' in 2002, to describe our current geological era in terms of human impact upon the sustainability of the planet. The term was officially adopted by the International Geological Association in Cape Town in August 2016.
2. See Robert Macfarlane: 'Generation Anthropocene: how humans have altered the planet forever', *The Guardian*, 1 April 2016.
3. With thanks to Stacy Alaimo.
4. With thanks to Shannon Winnubst.
5. The glossary is also produced as an e-book and some items are available on the Bloomsbury Academic website. For more information on the original seminars, consult the websites of the Centre for the Humanities at Utrecht University (<http://cfh-lectures.hum.uu.nl>) or of BAK in Utrecht (<http://www.bakonline.org/nl/Index>).
6. In 'The Real Problem is in the Hearts of Men', *New York Times Magazine*, 23 June 1946.

A

AFFECTIVE TURN

Can there be affect without the human? To address this question in the spirit of a glossary, let's take these two keywords – *affect* and *posthuman* – at face value. A paradox would seem implicit in the pairing. Admittedly, there is no consensus on the meaning of affect, even from within a single disciplinary formation, whether it be philosophy, cultural theory or psychoanalysis. We can, however, distinguish those theorists who make distinctions between this concept and possible cognates – emotions, feelings, moods, sentiments, etc. – from those who do not. Sianne Ngai's *Ugly Feelings*, a study that drew a long arc of the affective turn in the early 2000s, exemplifies the refusal to distinguish. 'Feelings,' 'emotions' and 'affects' flow interchangeably within Ngai's work, a conceptual choice she addresses head-on: 'The difference between affect and emotion is taken as a modal difference of intensity or degree, rather than a formal difference of quality or kind' (2005: 27). Emotions become – or 'denature into' (27) – affects based on the degree to which they are articulable and narratable. The continuity between these terms suggests, at minimum, that affect and emotion both revolve around a human perceiver and feeler. This human orientation is vital to the political force Ngai's theory carries. *Ugly Feelings* rests on a historical argument, that late capitalism has deformed the political such that we must reckon with 'less powerful' – often 'ugly' – affects such as anxiety and irritation because

these are the feelings that are 'perhaps more suited in their ambient, Bartlebyan, but still diagnostic nature, for models of subjectivity, collectivity, and agency not entirely foreseen by past theorists' (5). Ngai's account of affect and those it has inspired does not exfoliate the agential human subject, even if states such as anxiety do, for a time, 'suspend' agency (1).

Perhaps those who more strictly delineate affect from its cognates decouple humanity from affectivity more decisively. Brian Massumi's definitions of affect and emotion have been germinal for affect theory and would seem, *prima facie*, to swerve from humanism into posthumanism. *Parables for the Virtual* and Massumi's writings leading up to it establish 'the autonomy of affect' (2002: 23). 'An emotion is a subjective content,' he proposes, 'the sociolinguistic fixing of the quality of an experience which is from that point onward defined as personal . . . It is intensity owned and recognized' (28). Affect, by contrast, is 'unqualified. As such, it is not ownable or recognizable and is thus resistant to critique' (28). If affect is not 'owned,' perhaps it floats free of a human possessor. But reading on, we learn that, though affects are not recognized cognitively, they are still 'irreducibly bodily and autonomic' (28). The pre- or sub-personal quality of affects does not, for that, make them posthuman.¹

When we consider not only how such germinal studies define affect but also the style of many affect studies, the human intrudes even more forcefully. Thinkers

forming the ‘Public Feelings’ group – notably Lauren Berlant (*Cruel Optimism*), Ann Cvetkovich (*Depression*), José Esteban Muñoz (*Cruising Utopia*) and Kathleen Stewart (*Ordinary Affects*) – write from the embodied ‘I,’ at times in an avowedly memoiristic mode. These and generically similar studies substantiate Eugenie Brinkema’s point that the affective turn has ‘a performative dimension ... that emphasizes the personal experience of the theorist’ and thus ‘preserve[s] a kernel of humanism’ at the core of its endeavour (2014: 31, 32).

The human, then, contaminates affect studies; across the differences between theorists, this attribute makes the enterprise cohere. Looking to environmental cultural studies, affect is the fulcrum for imagining posthumanism as vulnerability rather than as a state of being ‘not,’ ‘beyond’ or ‘after’ humanism. This strain of posthumanist thought posits a prosthetic being defined by ‘constitutive dependency and finitude’ (Wolfe 2010: xxvi) rather than a disembodied entity² or one optimized by biotechnological engineering. A structuring problematic of affect theory – the relays between subject and object – is constitutive for thinking posthumanism from within environmental thought. In this intellectual tradition, the ‘object’ typically belongs to the more-than-human realm of other animal species, plants, elements and forces.³ Stacy Alaimo proposes ‘transcorporeality’ to figure the permeability of the membranes between humans and those others with which it is enmeshed. In her feminist materialist analysis, posthumanism requires ‘accountab[ility] to a material world that is never merely an external place but always the very substance of ourselves and others’ (Alaimo 2010: 158). The human persists, but she is not alone. Her very materiality is made of the stuff of the

world in a sense stronger than what one typically finds in affect theories that treat the stuff of the world – typically art objects and other people – as catalysts for emotion.

How might affect be a litmus test for interspecies – and even inter-matter – animation? In my study of contemporary narratives of environmental and somatic sickness, affects like disgust that might seem infelicitous for feeling transcorporeal connectedness in fact make these flows knowable, if not predictable (Houser 2014). For Matthew Taylor, the ‘ecophobia’ that laces Edgar Allan Poe’s writing nourishes an ‘ecological posthumanism’ rather than human superiority and mastery (2013: 359). Affectivity does not mark human uniqueness. The world does not give us the choice of separation and superiority, ecological posthumanists instruct. Care might not be the stance or ethic that results from the affective messiness through which beings experience ‘the inextricability of dependency, the inescapability of vulnerability, the impossibility of mastery’ (Taylor 2013: 370). Whether through fear, disgust, anxiety or wonder, realizing vulnerability is rarely an easy matter; it is just as prone to set more troubling emotions into motion as it is to create comfortable relations. For the environmental humanities, the affective turn of the 2000s may not have made it any easier to be good toward (I use this phrase with all deliberate naiveté) other ‘vitalities’ (Bennett 2010: xvii). It has, however, offered ways of describing how feelings seemingly contained by the human show the errors in the very idea of containment.

See also Ecohorror; Ecomaterialism; Green/Environmental Humanities; Multispecies; Political Affect; Precognition; Trans-corporeality; Vibrant Matter.

Notes

1. Cultural theorists Ngai and Massumi are undoubtedly only two notes in a complex symphony that has affect as its theme. I use them as exemplars here because of their influence for cultural and social theory and because their definitions diverge.
2. See Hayles (1997, 1999) on how post-humanism lost its body.
3. On plants, see Marder (2013) and Kohn (2013). On elements and forces, see the emerging 'elemental ecocriticism' represented by Cohen (2013a) and Cohen and Duckert (2015a), as well as varieties of materialism formulated by Bennett (2010), Chen (2012), Meillassoux (2008) and others.

Heather Houser

AFROFUTURISM

'The preservation of black life is articulated in and with the violence of innovation.'

**S. Harney and F. Moten (2013),
*The Undercommons: Fugitive
Planning & Black Study***

In his 1994 essay 'Black to the Future: Interviews with Samuel R. Delany, Greg Tate and Tricia Rose', Mark Dery describes the black body as inhabiting a perverse space of cultural intolerance; or in a very real sense, occupying a place in history where the body of the African diaspora is more reminiscent of the strangeness of alien abduction, rather than signification of a self-determinant people.

According to Dery, subjugation of the black body is situated at the techno-scientific, where the subject is articulated as real only inasmuch as it develops in contact with the most (dis)functional modes of technological progress: today in terms of the tip of a police bullet, the

subject of the body cam or racial profiling, the efficiency of redlined pricing and other technologies that disproportionately reduce the manoeuvrability of black people. For technology has been, and remains today, an insufficient means of liberation for the black body.

Yet interestingly, since the projects of the Enlightenment and the technological dystopia called modernity, the technical has also functioned as the black body's precise mode of collective departure. Technological speculation, as a *techniques of relation* borrowing from Massumi (Massumi and McKim 2009), offers the black body a method by which the alienness of terrestrial belonging is re-scripted, re-coded and re-organized into alternative narratives of being and becoming (see Akomfrah 1996). Dery calls this convergence *Afrofuturism*, which makes use of the sublegitimacy of science fiction to form new entry points into self-representation within black Diasporic experience (Nelson 2000; Eshun 1999).

Although generally positioned within African-American literary, sonic and film culture, Afrofuturism, like science fiction, extends to global social platforms, video, gaming, cosplay, graphic arts and other digital and geek ecologies. Afrofuturism can also be said to extend into the levels of sensation. According to cultural critic Greg Tate, 'science fiction eschews the psychological dimension in terms of character portrayal for an all-encompassing look at the impact of the various institutions that govern behavior and the transmission of knowledge' (as quoted in Dery 1994: 211).

Dery is considered the first to use the term *Afrofuturism*. It is not, however, a new concept, but rather a generative and heuristic movement of black speculative performance that solicits a do-it-yourself perspective to subjective experience (see

Eshun 1999). This is seen most readily in the black fiction works of Mark Sinkler, Richard Wright, Amiri Baraka and earlier contributions by Octavia Butler and Samuel R. Delany, not to mention Sun Ra's *Space Is The Place*, George Clinton and his bands Parliament and Funkadelic, Afrika Bambaataa and all of the margins of black performance in between.

These cultural endowments are not to overshadow the current technocultural experiments in art, and in sonic and literary culture by author Ingrid Lafleur and singer Janelle Monáe, online Afrofuturist communities founded by Alondra Nelson and Art McGee, artists Juliana Huxtable, Rasheedah Phillips, Eddy Kamuanga Ilunga, performer M. Lamar, or the late dubstep artist The Spaceape.

Afrofuturism operates at the intersections of history, speculation and performance – within modes of potential – to develop a methodological immediacy that combines the speculative sufficiency of fantasy, fiction, performance and other technocultural reflections with historical modes of sufferings and displacements. The purpose is to imagine new relational frameworks. In a way, Afrofuturists seek to understand where the black body ends and representation begins; and how the imposition of historical circumstance emerges as a politics of present and future collective belonging.

Afrofuturism, however, is foremost a humanist agenda. What is of particular interest in Afrofuturism is its draw upon futurity's Zionist promise – in convergence with Pan-Africanism and Afrocentrism – to reconceptualize alternative self-representations. Central here is a symbiotic cohesion between the self-directed transformation of the individual and the connective properties of black consciousness. Greg Tate reminds us that knowing yourself as a black person in the complex-

ities of historical, spiritual and cultural situatedness 'is not something that's given to you institutionally; it's an arduous journey that must be undertaken by the individual' (Dery 1994: 210); even as the black body calls upon a collective cultural memory to capture new beginnings (Walker 2015).

This calls into question how the black body is conceptualized in relation to ecologies of culture, and how the body gains a connection to self-determining outcomes. Afrofuturism thus draws upon this tension in extending Afrocentrism towards a simulated new beginning based on a mythical past of greatness. Technology then emerges at multiple sides of the obelisk – one in a historical relationship with the subjection of a peoples and another in concert with their deliverance through self-discovery.

The aesthetic, however, does not seek to change history per se, but to establish a future where people of African descent are central to their own stories. Black identity, as such, is an abstraction, a language that has neither corporeal form nor transcendental grounding. Blackness is conceptualized and continually reconstructed in the process of doing, being black, always in relation to but not dependent on the fictions of race or racism. Even so, black identity is often represented as existing within two states: (1) a historical enunciation represented by spatio-temporal positioning among other racialized assemblages; and (2) aesthetic markers, like Afrofuturism that serve as new potentialities of subjective understanding.

It is here, at the junction of encounter and context, that Félix Guattari views the racialized group as assigning meaning. This meaning is a force that 'constitutes the seeds of the production of subjectivity', as 'we are not in the presence of a passively representative image, but a vector of subjectivation'

(Guattari 1995: 29–30). It is through the meaning of blackness that the black, brown and other subjected individual creates a cohesion of (mis)representation, expounded by aesthetic markers, dynamic vibrations and a cultural kineticism often expressed as a sense of belonging.

Nonetheless, Afrofuturism's fragility comes from liberation-based ideologies found in black identity politics. Here, a commitment to the idea of race and ethnic-based centrality is thought essential to techniques of survival (see Bogues 2003; Morrison 1992; West 1989). Racial identity then becomes a source of security, as a body politics nonetheless, that implies the stability of black identity in denial of race as an ever-shifting technological articulation of wider ecological relations. Critics also argue that Afrocentric logics are vulnerable to cultural normativities that extend beyond the representational and symbolic. Marlon Riggs, Michelle Wallace, Angela Davis and bell hooks have already illustrated the dangers of composing a blackness in which queerness, gender openness, trans lives and other non-linear alignments are foreclosed in efforts to maintain the rigidities of self-referentiality (Riggs 1994). This, then, raises the following question: if Sun Ra had succeeded in taking us to Jupiter or his self-proclaimed home planet of Saturn or if George Clinton and Parliament had been taken up on their invitation to ride the mother ship, which of us would be left behind?

Central to this question are reflections on the role of history in pre-empting the future, and the lens through which potential futures are performed and assessed. Afrofuturism offers a breach in the technique of relation to celebrate the awkwardness and disjointedness of culture, or, as Esedebé (1994) argues, of black centralities. The mythical narrative is enough to

place a peoples' history into celebrations of future possibilities. Esedebé has validity despite relying on what Gilroy (1987) calls an 'ethnic absolutism' to reimagine black identity. Just as Afrofuturism risks being reduced to a reflection of the existing world, reflection is precisely what moves Afrofuturism into the contingencies of other-worldness that allow for the ethereal to articulate itself both in seas of darkness and in the brightness of the sun. Still, perhaps neither dichotomy is adequate, as the nuances that comprise collective belonging are captured no more neatly into ideas of blackness than they are sufficient descriptions of Afrofuturism – even if the resilience of black culture and black life is about 'imagining the impossible, imagining a better place, a different world'.¹ After all, each Afrofuturist expression is collective only in as much as it can't be represented.

Science fiction writer Samuel R. Delany reminds us that

one of the most forceful and distinguishing aspects of science fiction is that it's marginal. It's always at its most honest and most effective when it operates – and claims to be operating – from the margins ... I don't want to see it operate from anyone's center: black nationalism's, feminism's, gay rights', pro-technology movements', ecology movements', or any other center

Dery 1994: 189

According to Ytasha Womack (2013), Afrofuturism is an apparatus by which a non-linear and fluid imaginary emerges. But how does one remain at the margins without recapturing new, equally volatile forms of representation? All this considered, Afrofuturism might be best illustrated by the impossibility of blackness, the impossibility of being black, an impossible engagement with

the self and other, or as Sun Ra explains: ‘something that’s so impossible . . . it can’t possibly be true’ (as quoted in Corbett 1994: 311) – a heterotopia in the Foucauldian sense, or a black resistance as a way of living already present and still yet to exist.

See also Alienation; Necropolitics; Posthumanist Performativity; Decolonial Critique; Real Cool Ethics.

Note

1. Interview with Alondra Nelson, *Afrofuturism*, Soho Repertory Theater, 30 November 2010, <https://youtu.be/IFhEjaal5js> [accessed 13 February 2017].

Ramon Amaro

AHUMAN, THE

The ahuman is a concept coined in the 2014 collected anthology *The Animal Catalyst: Toward Ahuman Theory*. It sees posthumanism in a parabolic configuration to challenge both the evolutionary mono-directional linearity of cyber biotechnic-based posthumanism and the increasing use of nonhuman animals in posthumanism as a devolutionary metaphor. The ahuman’s parabola has in one direction nonhuman animals and in the other something which refuses the privilege and signifying systems of the human but does not institute a new version of posthumanism which would continue those tendencies albeit in a mutated form. The apex of the parabola is the (now defunct myth of the) human. The nonhuman animal and the ahuman are thus close in proximity but absolutely extricated from each other simultaneously.

Ahuman theory comes from two motives. The first is the increasing movement from animal rights to absolute abolition. Animal rights traditionally serves the interests of nonhumans based on equivalences with humans and is a flawed politics of equality (equal to the human) rather than difference. Abolition sees the rights of any entity based on not what it is but that it is. Human compulsions to define animal rights define the animal, and the discourse is ultimately one between humans and their dominant perceptions of nonhuman entities in order to vindicate their exploitation of those entities. So all animal studies is inherently human studies between humans of the other and has no nonhuman benefit except in its capacity to catalyse humans to stop being human. In animal rights and animal studies the nonhuman is imposed within a structure for which it has neither given consent nor has the power of address and for this reason becomes the *differend* after Lyotard’s (1988) description of the victim who cannot be plaintiff because it cannot manipulate the master’s discourse.

Abolitionists are activists against all use of animals, acknowledging communication is fatally human, so we can never know modes of nonhuman communication and to do so is both hubris and materially detrimental to nonhumans. Abolitionists advocate the end of all use of all animals for all purposes and select words to exchange for those in circulation in describing the oppression of nonhumans – ‘food’ (cannibalism for meat, rape and theft and murder of young for dairy and chicken use, murder), ‘entertainment’ (enslavement), ‘research’ (torture) and so forth. Abolitionist philosophers are also against the fetishisation of nonhumans in posthuman becoming and refuse the use of human perceptions of nonhuman

systems and entities as assimilative and co-optive. In both incarnations, abolitionism remains antagonistic to and is considered radical by animal rights, animal studies and ethology in its refusal to utilize animals. Abolition, after Serres, follows the tenets of symbiosis which is a form of necessary care and grace which is a leaving (to) be in reference to human–nonhuman inevitable interaction – a natural contract (see also becoming-world) which overthrows the entirely social contract within which most current debates around nonhuman entities occurs and which thus will always exclude them.

The second motive for ahuman theory negotiates the question of what becomes of the human when it is neither posthuman cyborg nor animal fetishist. We remain non-nonhuman animals yet we must still acknowledge our biological organism's place within the ecosophical series of relations (see cosmology). Ahuman theory promotes catalysing becoming-other from the majoritarian or all human privilege and renouncing the benefits of the Anthropocene. This can occur in infinite ways. Some of the suggestions offered include the use of all manifestations of art to form new terrains of apprehension of the world and encourage new ethical relations between entities, the cessation of reproduction toward an end of the human as a parasitic detrimental species (see extinction), and thinking differently about death by advocating for suicide, euthanasia¹ and a good life over biotechnologies' drive for immortality. However, these are few of any variety of tactics which could shift human signifying systems toward ahuman asemiotic reterritorializations of connectivity and novel participations.

See also Animal; Animism; Ecohorror; Cosmopolitics; In/Human; In-Human; Extinction.

Note

1. See Church of Euthanasia, <http://churchofeuthanasia.org>.

Patricia MacCormack

AI (ARTIFICIAL INTELLIGENCE)

In 1955, American computer scientist and cognitivist scientist John McCarthy invented the term Artificial Intelligence to describe machines designed to be intelligent agents equipped with beliefs systems. With the proliferation of automated machines programmed to accomplish tasks and carry out functions without supervision, from the thermostat to software updating on your computer, this rich field of research has manifested the cultural imaginary of a techno-social intelligence emerging from the human investment in instrumental thinking. With the algorithmically driven processing of knowledge and communication, this imaginary has undergone a profound change and become an epitome of a primary ontological question: what is the being of thought?

In the last thirty years, automation has achieved an irreversible re-modelling and acquired a dynamic quality whereby its mechanical repetitious tasks no longer define its function. These new logical possibilities available to a machine today could be grasped from within the cultural imaginary, for instance if one simply juxtaposes the cinematically refined articulations of artificial intelligence in Kubrick's *2001: A Space Odyssey* (1968) and in Garland's *Ex Machina* (2015). In particular, one cannot overlook the striking contrast between Hal, the sentient intelligence of the spaceship based on logical rules that exclude its fallibility, and Ava, the artificial intelligent android programmed to break

the Turing Test (i.e. to pass as a sapient agent able to reason beyond any reliable responsive disposition). The AI Hal here impersonates the logical model of so-called 'high church computationalism' and also a strong AI thesis (i.e. the idea that machines can overcome human intelligence), sustained by a representational model of thinking, which was based on the analogical association between symbolic structures and neurobiologically encoded and thus computable concepts (i.e. calculable because derivable from given premises). Algorithms were here programmed on the model of deductive or monotonic logic, characterised by a step-by-step procedure and consequential reasoning aiming to solve problems that could be justified within the framework of pre-established axioms or truths.

In the instance of *2001: A Space Odyssey*, the AI Hal insists that its logical procedures could not fail and that that the central system HAL 9000 backups had failed because of the error-prone activities of human behaviour. Unable to understand that the machine deductive reasoning was limited and could fail, Hal decides to eliminate human errors by plotting to kill the spaceship's astronauts. Famously inspired by American cognitivist scientist Marvin Lee Minsky, the failure of the AI Hal was rather supported by the then scientific belief that AI's logical model of intelligence was unable to deal with contingencies and with thinking beyond rule-obeying conduct. Hal was supposed to behave like a neural network that could grow artificial intelligence by exactly mirroring the growth of human brains. In the book *Perceptrons*, Minsky claimed that a single neuron could only compute a small number of logical predicates in any given case, and casted a long shadow on neural network research in the 1970s.

In the late 1980s and 1990s, after the so-called 'AI winter', new models of AI research addressed sub-symbolic manifestations of intelligence and adopted non-deductive and heuristic methods to be able to deal with uncertain or incomplete information. Boxing away symbolic logic, AI systems emerged that were able to learn directly by trial and error by interacting with the environment. These embedded agents are learning machines retrieving information through sensory-motor responses that enable agents to map and navigate space by constructing neural connections amongst interactive nodes. Central to these models is the idea that intelligence is not a top-down program to execute, but that automated systems need to develop intelligent skills characterized by speedy, non-conscious, non-hierarchical orders of decision based on an interactive retrieval of information sorted out by means of trial-and-error attempts at determining functions. Statistical approaches were particularly central to this shift towards non-deductive logic and the expansion of an ampliative or non-monotonic processing of information.

General methods for including the computation of uncertainty eventually became dominant in models of probabilistic reasoning. The error, uncertainty or fallibility of computation no longer demarcated the limit of AI, but the limit of the mechanization of deductive logic in AI. As opposed to deductive logic, non-monotonic thinking (induction and abduction) is the process by which inferences or the process of explaining how one truth is contained into another starts with a hypothetical statement or an elaboration of the uncertainties embedded into the material world. Conjecturing hypotheses to explain unknown phenomena is the process by which what is known of existing conditions is overlapped by a speculative tendency towards another statement

that adds on, enters into dialogue with and exposes a forward-order of explanation. Here what is given is not known unless it becomes abstracted from its particular loci so that it is possible to return to it from another standpoint, a meta-relational view. With non-monotonic logic, the ingression of uncertainties into what is given is not geared to prove an existing truth, but to expand its methods of explanation so as to achieve the determination of new truths. Such logic is evolutionary.

In AI research the development of probabilistic thinking has similarly seen a crucial overlapping between statistical methods based on given probabilities and strategies of searching the most probable outcomes through the abstraction of infinite varieties from a given set of data. This process of abstraction is computational (see computational turn) and is defined by the logical procedures of its functions carried out by algorithms. The latter are iterative patterns emerging from the inductive and heuristic methods of sub-symbolic intelligence, informed, as it were, by the data environment through which they operate. Algorithmic logic, however, is also determined by the statistical computations of indeterminate outcomes, where what is probable is better understood in terms of predictive thinking. Prediction indeed is central to the temporal activities of thinking insofar as it demarcates the synthetic processing of infinite quantities of information through which thinking leads to acting. Prediction and not probability is central to the dynamic automation of the new generations of AI.

Inductive and heuristic methods of logic in automated systems together with predictive control mechanisms have been adopted in automated planning, natural language processing, machine perception, speech recognition, robotics, machine learning, social intelligence or affective

computing, and general artificial intelligence. Differently from Hal, these contemporary forms of collective thinking machines are not stopped by paradoxes and neutralized by fallibility. Instead, indeterminacy and uncertainty are incentives for the development of their task of synthesizing randomness through prediction as they grow their learning possibilities and become able to include error within their operative functions. This is where Ava in *Ex Machina* shows us how to break the Turing Test and casts her spell on the truth of thinking as being not bounded to human sapience by necessity. Instead, with Ava, the existential condition of machines seems to parallel in another dimension the condition of a primordial existence of human knowledge that the scenes about the monolith found on the moon in *2001* instantiate. The computational age of AI demarcates the raise of an informational stratum whose logical operations are not simply symbolic or static modes of understanding. Instead, Ava's mission of persuading a human to set her free shows us how the task of processing uncertainty is central to a general form of artificial thinking. The realization of thinking in machines shows us that intelligence is primarily an alien affair, an engine of abstraction forcing a constant de-naturalization from what is given.

See also Computational Turn; Non-Human Agency; Extended Cognition; Neocybernetics; Networked Affect; Robophilosophy.

Luciana Parisi

ALGORITHM

Perhaps the most present forms of algorithms, present in the conscious

awareness of most computational and internet users, occur in corporate app and interface relationships: the Google search algorithm providing ranked (ordered) results; recommendations for future purchases from Amazon, eBay or Alibaba based on indices of implication of purchasing habits; Facebook status update streams, queued and delivered as cues for reciprocation and circulation; ad placement in the sidebar of Gmail and many 'free' communications apps, returning bits (and bytes) of your messages as potential opportunities to push communications into financial exchange. The functionalities of these algorithms, by design, appear and engage at friendly levels of human perception. The levels of abstraction, the functionalities of code, the relations of code and hardware and human somatics, and the temporalities of computation and internet transmission do not appear, do not engage nor operate at friendly or at any conscious level of human perception. In this human imperceptibility in service to circulation and value extraction, the computational algorithm offers itself as an artefact of the posthuman and the Capitalocene.

For many users, critical knowledge of this artefactuality is conscious, if not consensual, but the materiality, functionalities and modalities of algorithms remain, in the most classic sense of the term, black-boxed, a knowing by demonstrated effects without comprehension of process. And demonstrated effects constitute only a small intersection of designed (including non-conscious) affects: desiring, somatic and rhythmic. But in order to arrive at this entanglement of effects and affects, the box must be opened and a simple turn to basic questions must be made: 'What is an algorithm? What can they do? What do they make?'

An algorithm, in itself, is not computational. It is a set of modular or autonomous

instructions – in execution – for the doing or making of something, which includes necessary elements, constraints and procedure, taken together dynamically. Often when definitions of algorithms are offered to a non-technical audience, the algorithm cooks up through the metaphor of the recipe and its relation to baking. The list of ingredients corresponds to input, a data set and/or variables, and the step-by-step instructions for mixing, blending, sifting, blanching and heating food ingredients corresponds to the procedural, embedded, nested, iterative and return commands composed through code. And just as the recipe for pumpkin bread is not the baked pumpkin bread, the code itself is not algorithmic until it is run. The materialization of pumpkin bread, or a Google search, is in its execution, an intra-action instantiated through particular materialities, at once discrete and modular. The previous sentence suggests that for our metaphoric equivalence to remain true, pumpkin bread might easily, but with a difference of an ingredient, become banana bread. But it doesn't. The materiality of banana does not *equate* to pumpkin. The spices complementing pumpkin and banana, while shared in part, differ. The chemistry of baking bananas is closer to that of baking eggs than pumpkins. The point here is belaboured precisely to point to the material differences and affordances of analogue algorithms and computational algorithms.

The chemistry of baking pumpkin bread, including heat and temporality, operates through a tracing of the combinatorial rhythms of the matters of flour, baking powder and soda, sugars, spices, oils and/or butter, eggs and/or bananas and sugar pumpkin. Even in this list, ingredients and process differ if the pumpkin bread comes into being as the tracing of vegan and purely vegetative

material rhythms, oil not butter, bananas not eggs, or as the tracing of a concatenation of animal and vegetative material rhythms. These material rhythmic differences might be thought of, with *substantial* abstraction, as differences between composing functionality through the material rhythms for an Android device versus an Apple OS device. And the metaphor might extend even further to capture unconscious effects and affects: the baked sugar-carbohydrate compounds of pumpkin bread digestively entering a human body increases rates and volumes of blood sugar, speeding metabolism followed by a triggered insulin response, which slows and dulls the body and brain function (and much much more ...). Relations of speed and slowness, rhythms of complex intra-active matters, constitutive of *a body*. This rhythmic material process, perceptible in part, known by its effects and affects, quite literally operates at the temporalities of the human, the body, not just and not wholly consciousness.

But what of the material rhythms of computational algorithms? What digestive correlate that doesn't suggest eating a computational device? To be explicit, computational algorithms run, and only run, on computational devices. A pseudo-code example (a partial code/natural language articulation of an algorithm/function):

```
a = 0;
for (a <= 100; a = a + 1) {
  print (a, ", ");
}
```

Machines read one line at a time, top to bottom, unless redirected. The first line, $a = 0$, is an ingredient, or the declaration of a variable. The first part of the second line tells the machine *how long* to cook for, $a \leq 100$, or as long as a is less than or equal to 100. It *counts*. The second part

of the second line specifies the process that the ingredient or variable will undergo, $a = a + 1$, which on the first iteration (and all subsequent ones) means that every time the 'a' is thrown in the mix, it will be increased by one, $a = 0 + 1$ [therefore after the first run, $a = 1$]. The curly brackets work like a bowl, containing the results of our loop. So the machine 'prints' '1,' but most importantly, this 'for' demands we stay in its loop until 'a' exceeds 100. So the bowl, the print function, will be filled until $a = 100$, and the machine will print '1, 2, 3, [...], 100' and then stop. This result will happen in less than a second after hitting the 'run' or 'go' feature without any necessary understanding of the counting and temporality, condition and constraint, or design of the output. This result is *not* the process. Neither is the explanation of the syntax of the algorithm.

Each character, moment of syntax and system function ('for') in this very simple bit of pseudo-code – in execution – is something quite different *for the machine*. The 'a', the '=', and the '0' of the first line are bundled bytes, code within code, corresponding to an electrified arrangement of circuits, a temporary and stilled burn in memory. The 'for', the ' $a \leq 100$ ', etc., are nested functions, bundles of code within bundles of nested code, that make 'a' circuits dance, move, change, charging and discharging, a rhythmic burn, unburn, burn inherent in the very materiality of the circuits. As the 'a' counts, iterates to 100, the machine resonates, vibrates, heats, charges, discharges. An algorithm is more accurately understood as an algoRhythm, material charges, resonances, temporalities in the guts of the machine, and also directed and designed charges, resonances and temporalities distributed across and through its rhythmically energized and promiscuous interfaces, deeply compatible across and

through human somatic charge, bio-rhythms, affective–aesthetic attendancies. Under a second. Black-boxed, in conscious effects, exceeded in non-conscious affects. Bodies, in motion and rest, constraint and design, energetics and discrete materialities, intra-actions, modular, autonomous functions and somatic affections.

Swipe. Click. Hold. Check. Checksum. Check. Like. Buy now.

Posthuman algoRhythms.

Google's invasion of our data privacy doesn't even begin to scratch the skin.

See also Computational Turn; Altergorithm; Algorithmic Studies; AI (Artificial Intelligence), Informatic Opacity, Metadata Society, Networked Affect, Non-human Agency, Posthuman Ethics.

Jamie 'Skye' Bianco

ALGORITHMIC STUDIES

Algorithmic studies rest on the epistemological assertion that digital technologies remodel the conditions of possibility for a number of crucial discursive and material practices. These practices and their modes of production, representation, distribution and circulation include the definition of Being, the structuring of the Social, the instrumentalization of the Political and the animation of the Cultural. Through intense interventions into the very structure of these key conceptual practices, they re-tool – and in many ways manufacture anew – the very nature of what we understand as life itself.

Bruno Latour and Eduardo Viveiros de Castro, among others, have commented on the significant shifts undergone by categorical distinctions that had been upheld with relative stability within the western project of modernity. Consider the growing indis-

tinguishability between humanity and animality, the human and the non-human – classical binary oppositions unhinged by the ubiquitous intervention of technological mediation. By developing sensorial capacities and evolutionary 'smartness', digital technologies make possible and materialize another condition of Being between (or beyond?) the human and the animal, coinciding with neither but affecting both. These technologies pervade our flesh and fuse with our skin and blood; they re-wire our neural networks and alter our thought patterns, even as objects acquire ever-increasing capabilities for intelligent learning, reaction, judgement and response. These changes profoundly affect the consciousness, the sensorium, the evolution and the cognition of both human and non-human agents. Even that binary may no longer hold: might we start to think about the digital in an *ahuman* form – a digital agent in its own right, with its own intelligibility, whose sense of the world is genuinely beyond the anthropocentric?

A key element of this shift of perspective and possibility towards this other definition of Being is the computational algorithm, briefly defined as the instructions or rules written in an appropriate language for a computer to process a task and, subsequently, to perform or execute it. As digital technology takes its place in the new ternary (with humanity and animality) it accomplishes a double feat. The algorithm takes on a life of its own, but it also takes on our lives, to the extent that we can begin to speak of algorithmic life itself and its conditions across its many instantiations in the world. As computational culture shifts and evolves, we can begin to clarify not only the state of the algorithmic conditions in twenty-first-century living, but also to identify the mishaps and the ways in

which computational culture fails to deliver what it promised. The analysis of rules, glitches and errors alike is of great relevance to the assessment of how algorithms rise and fall. In short, this kind of analysis frames a new discursive field, where algorithms become the object of socio-critical study.

The Codex we have developed¹ sets out the parameters for studying the algorithmic determinations (Peters 2012) of economic, social, political and cultural life, alongside their emerging modes of being and doing. It outlines a non-exhaustive list of propositions for the study of algorithmic states, for attending analytically to the life forms produced by algorithms, for thinking critically about the extent of the entanglements of life with algorithms and algorithmic operation. The Codex expresses our call for Algorithmic Studies (AS), and opens up explorations of algorithmically defined, refined and produced horizons of being.

Codex

Data are the currency of our time.

The use and exchange value of data are algorithmically driven.

Data production, collection, distribution, circulation, and ownership operate only as effectively as the algorithms enabling them.

AS is the critical study of the social, political and cultural life of the algorithm and its conditions of change, evolution and possibility. It critically assesses the social order(ing) of life effected by algorithms.

AS is the study of the digitization of data, the data-ification of life, the application of being, bio-instrumentation and the instrumentalizing and calculability of the everyday.

AS is the study of algorithmic knowledge, its epistemic formations and formulations.

AS is the study of algorithmically produced networks, the machinic production and inter-communication of networked machines. AS is, thus, the study of algorithmically enabled machine life.

AS is the study of the algorithmic subject: the social and political subject produced by and reproducing algorithmic practice, and its modes of being, doing, and becoming.

AS is the study of the algorithmically compelled (pre-)dictable futures, the consuming subjectivities it structures.

AS accordingly is the critical study of the algorithmically modelled restructuring of agency and its loss, autonomy and its strictures and restrictions.

AS, in short, is the critique of algorithmic capitalism, its mode of production, being and subjectivities; of transitory life; of consuming life; of political culture and cultural politics.

AS is the study of the increasing transitivity of data-fied social life, its coding, its codes, and its applications: the algorithmic.

See also Algorithm; Altergorithm; Computational Turn; Feminist Posthumanities; Postdisciplinarity; Tolerances and Duration.

Notes

1. Jenna Ng and David Theo Goldberg, 'Codex for Algorithmic Studies,' <http://algorithmicstudies.uchri.org/codex/> [accessed 5 May 2016].

David Theo Goldberg and Jenna Ng

ALIENATION

Alienation is to be rendered alien, or to be estranged from something. We can be alienated from home (exile), from a fictitious world (in the theatre, in the arts), from ourselves (according to Marx, as alienation from our productive force, creations and work). Alienation can imply dependence on a power other than ourselves; when we become a marketable commodity, or when we are manipulated by others through our feelings and affections.

Alienation is therefore usually a negative term, implying forced loss of proper possession and estrangement from who we really are, or who we should be. It would seem, therefore, that the posthuman is open to a negative judgement, for the alienation it implies in moves away from the human. To become posthuman, in alliances with plants, animals, societies, materials and machines, would also be to become alienated. The posthuman might then be a place of exploitation, exile and loss.

Two senses of alienation begin to point to an answer to this criticism. For Brecht, the 'alienation effect' in theatre is a way to divest the audience of an implicit acceptance of the illusions of classical theatre. In this alienation, distance is created between the audience and the action on stage by unfamiliarity and discomfort. This has a positive goal: the audience has to be estranged from the stage in order to then return to it afresh and more critically alert to its implications. Alienation is a way to a greater truth.

For Marx, alienation is not estrangement from property but from powers, from our communal powers to transform our social worlds through joint work. We are alienated when we are enclosed and separated by modes of production;

for example, when we only have access to, and a say in, a small part of a productive process, or when the product of our work becomes a mere commodity, rather than something of shared social use. We are alienated from ourselves, when we are either forced into, or acquiesce to, becoming a thing rather than a communal actor; for example, when we think of ourselves as our price, or as our marketability.

According to these points of view, alienation depends on what we really are and on how we are kept from that – by capitalism and by tradition, for instance. This more subtle understanding of alienation reverses the criticism that can be made against the posthuman as alienating idea and process. It is the idea of the human that is alienating, because it imposes a false representation on existence. We are not individual and self-contained beings, defined by a core essence, ideal, consciousness or body. We are multiple processes connected across different forms and places. When those processes are denied, when an alliance with animals, or a dependence on technology, or a multi-agent coalition, is defined as a distortion of a properly human core, then there is alienation.

True alienation happens when we cling to the human, against assemblages and forces that constitute us as posthuman processes of transformation. When alienation is defined in terms of being and property, we are led to think of the human as static, in the sense of having a particular fixed state or fixed belongings and characteristics. This thought is itself alienating, because in truth we are always going beyond states, properties and predicates. To be posthuman is to become alien in many different ways at the same time. Thus, against the accusation that the posthuman is unethical because it fosters alienation, posthuman theorists have

insisted on the possibility of posthuman ethics based on ideas of collective ecologies (MacCormack 2012: 139).

Alienation is hence a useful critical concept for posthuman thought in three ways. First, it allows for a critique of the alienation forced upon us as multiple processes by false ideas of human essences and properties. Second, it allows us to track the positive kinds of alienation effect involved in becoming posthuman, where new assemblages and alliances increase our powers. Third, it allows us to pay attention to the ways we can still fall into the negative sense of alienation as destructive, when a process of becoming is taken too far or too fast and a line of transformation disappears or loses power, thereby leading us to be alienated from collective creative powers.

See also Rationalist Inhumanism; Posthuman Ethics; Bodies Politic.

James Williams

ALTERGORITHM

The 'altergorithm' takes its name from the words 'alternative', signifying the possibility of a state of affairs that is different from the one at hand, and 'algorithm', a set of autonomous rules informing a computation, often used in mathematics, coding, risk assessment and above all speculation.¹ Indeed, I use the term to refer to those practices that envisage alternative, often impossible scenarios through algorithmic modelling, or, rather still perhaps, algorithms that challenge natural laws of probability.

The trope of the altergorithm as I see it is a reaction to two overlapping processes. The first of these processes is an environment that spins, ecologically, economically

and politically, beyond our control. Many, including myself, have described this reality as the return of History with a capital H, but the increasingly popular Anthropocene (Steffen et al. 2007) or indeed Capitolocene, Jason W. Moore's (2014) term for the correlation between our ecological state and the capitalist condition, may be just as appropriate a label, perhaps even more fitting. The second process the altergorithm is a response to is what Ulrich Beck (1992; see also Giddens 1998) has referred to as the 'risk society' and what more recently has simply been called 'algorithmic culture' (Striphas 2015): modern culture's tendency to use algorithms, codes and simulations to predict and pre-empt the possible outcomes of existing processes. A pilot in training, for instance, might use a flight simulator to test his abilities to respond to all possible scenarios; an investment banker might develop an algorithm to speculate on the price of a stock; an insurance company calculates the chance of accidents, illnesses and deaths; and during the first Gulf War, as Jean Baudrillard (1995) argued, the US army premeditated all of the above, playing out a play scripted to the comma without the consent, and at the cost, of its enemy. What the altergorithm responds to, in other words, is the extent to which the first process is the antithesis or, perhaps rather, indicates the failure, of the latter. The Return of History is that scenario that either wasn't predicted by algorithms, or, more likely, wasn't what the decoders wanted to read.

What I mean by altergorithm is a *map of an actual future emerging from a virtual present*, as opposed to the algorithm, which is used for the mapping of virtual futures within the parameters of an actual present. The altergorithm is the name for the practice, in the arts or elsewhere, that uses the algorithm, code or simulation to develop scenarios that will more likely than not, or

simply cannot, happen; or that question what may and may not happen. It pertains to artworks that plot unlikely trajectories from uncertain and unstable points of departure. To put it in other words: the contemporary altergorithm posits an 'as-if' statement; the risk society's algorithm poses a 'what-if' question.

As the early twentieth-century renegade philosopher German Hans Vaihinger (2009) has argued, the conjunction 'as-if' is an analogy – 'as' – with a conditional – 'if' – a comparison with an unstable other; it is an equation in which not only the variables change, but also the constants. If you treat one scenario *as if* it were another, regardless of the relation one has to the other, you open up the terms of the debate. The Dutch artist Jonas Staal, for instance, by discussing politics as if it were art raises entirely new questions and alternate answers. Many of these Q's and A's will, when translated back to politics, make no sense, but some might just help rethink what politics is and can be.²

The risk society's 'what-if' questions, in contrast, close down. As Shell's scenario planning division explains on their website:

Shell Scenarios ask 'what if?' questions to explore alternative views of the future and create plausible stories around them. They consider long-term trends in economics, energy supply and demand, geopolitical shifts and social change, as well as the motivating factors that drive change. In doing so, they help build visions of the future.

Shell, 2015

What-if questions, in other words, calculate all possible routes one might take from one's present position. 'What happens,' they ask, 'when you go left here, and right there, and left, another left, and then right?' Or: 'Where does this road lead?' The trope of

the altergorithm acts *as if* a scenario could take place even, or especially if it could not; the algorithm asks which scenarios will take place, is interested exclusively in those that can take place. The point of the altergorithm, indeed, seems less to predict the future, than to think, to extend the possibilities of the present. As you might expect from a digital code, the altergorithm's as-if statement often spells out an alter or non-human present (see Rosi Braidotti's excellent recent study on Posthumanism, published with Polity in 2013, for an incisive consideration of the nature of this present).

Unsurprisingly, the trope of the altergorithm is particularly pervasive in the genre, or sensibility, in art relating in one way or another – logic, aesthetic, mode of production, distribution or consumption – to the internet and its effects on contemporary culture. Indeed, in thinking about the altergorithm, I guess I am thinking above all of the projects by artists like, amongst many others, Ed Atkins, Katja Novitskova, Ian Cheng, Timur Si-Qin, Wu Tsang, Mark Leckey, Aleksandra Domanovic, Lawrence Abu-Hamdan and Oliver Laric.³

In Ed Atkins' video performances a digital avatar modelled after the artist holds forth monologues – Atkins' recorded voice – about the meaning of life. In stark contrast to the avatars of role-playing games, however, the avatar here is not the double enacting his organic counterpart's intended narrative, as much as an inadequate placeholder for his incoherent subconscious, lost from its proper locus: the human body. Now hybrids, bodies without genitals, then disembodied, a head isolated in the dark, a head shrinking, a head deflating like a hot-air balloon, talking from a digital realm with an analogue voice, to everyone and to no one in particular, Atkins' avatars intersperse incomprehensible ramblings with grand

theories, casual smoking with heartfelt declarations of love and even, in his latest installation in the *Serpentine Ribbons* (2014), intensely performed love songs of Randy Newman and Bach. The simulation here does not present a scenario of a possible future, but a posthuman stream of consciousness of the present that raises questions about both the sustainability of that present and the possibility of any one future story at all.

Ian Cheng's video loop *Entropy Wrangler* from 2013 also envisages a post-human digital stream of consciousness. Yet where for Atkins posthuman means a situation that is alter-human, Cheng literally imagines a *past*-human plot, one where no humans interfere with the action. Cheng has developed an algorithm that replicates unpredictably: one time one thing happens, the other time another. The point of departure – a given – is a virtual display of an undefined space filled with a chair, a ball, a stick figure and some other objects. At a press, the objects begin to evolve, each time differently, sometimes moving into each other, sometimes away, then cracking the chair, now breaking the figure, and so on. The algorithm takes into account some laws of nature, but not all, causing scenarios which are decidedly improbable, as well as being irrational, in that there is no logical – that is to say, humanly conceivable – reason for their coming into being. What Cheng's algorithm achieves is an imagination that supersedes the human mind, in that it is conceived independent from human interference, in that it doesn't follow the human rationale, yet that in turn will obviously inform the human's creative capabilities.

What these, admittedly isolated examples of Atkins and Cheng show – for there are many other case studies possible that extend, nuance or problematize these two – is a desire, in the arts, to produce

models that, first, relate to the possibility of a world that develops differently with, or even independently from human interaction; and second, utilize technocratic models of prediction to envisage these alternative scenarios that defy all prediction. The point here seems less a plea for a world without humans, than a world where humans are able to consider options other than the ones stemming from their own localized, embodied brains, options that may well support those humans' opportunities for survival. In this sense, I guess, the altergorithm in the arts does not have to look long for its philosophical counterparts: new materialism, speculative realism, object-oriented ontology (OOO).

See also Algorithm; Algorithmic Studies; Informatic Opacity; Makehuman; Post Internet; Tolerances and Duration.

Notes

1. I first theorized the altergorithm in the essay 'Thoughts on the Space of Contemporary Sculpture, or: Stringing Along', published in Jörg Heiser and Eva Grubinger's edited volume *Sculpture Unlimited II* (Berlin: Sternberg, 2015).
2. See also Vermeulen, 2014.
3. I would be interested to see how the practices of these artists relate to those of the so-called 'algorists', the new media art network founded in the mid-nineties by Roman Verostko and Jean-Pierre Hébert. An overview of their work titled *All.go.rhythm* was recently shown at the Ukrainian Institute of Modern Art in Chicago (October to November 2015).

Timotheus Vermeulen

ANIMACIES

Animacies raise a twofold issue. On the one hand, there are obligatory, cross-linguistic *grammatical* and arguably also *hegemonically encoded* obligations to register degrees of animacy, that is, levels of sentience, mobility, personhood or liveness. On the other hand, they suggest consequences for cultural politics and theory, particularly along the lines of race, coloniality, gender and dis/ability.

Animacy's history as a linguistic concept is traced to cross-linguistic studies of grammar, first noted by the linguistic anthropologist Michael Silverstein in 1976. He suggested that 'animacy hierarchies' were an important area of intersection between meaning and grammar. Even within linguistics today, animacy most generally refers to the grammatical effects of the sentience or liveness of noun phrases, but this ostensibly simple meaning opens into much wider conversations.

In my book on this topic, *Animacies* (2012), the plurality of the title acknowledges that I have built on and expanded beyond the original conceptual apparatus of animacy as defined in linguistics. There are specific approaches one can take while exploring animacies' cultural politics, drawing upon a number of often segregated discourses. Each has its set of sensibilities – for instance, queer theory gives a feeling for the regulation of intimacy, and critical race provides a sense of the subtle ways that racialization can happen. A transdisciplinary approach to animacy means that for every point of inquiry there are many structural understandings, which might be brought to bear, together, upon it.

Pluralizing the term is also to recognize that even *within* linguistics scholarship, animacy remains a mysterious, mobile thing, just beyond one's reach, and yet having a powerful hold on language. It

works unlike other facets of language that are similarly deeply grammaticalized, and that makes it particularly fascinating. This combination of para- or extra-linguistic richness alongside a deeply grammaticalized presence suggests there is much to explore here, challenging the idea of any simple border between the linguistic and the non-linguistic.

First, the linguistics. consider the phrases: the food that we eat. The mice that cats catch. The hikers that rocks crush. In this last example, the difficulty frequently experienced by English speakers in processing this phrase has much to do with the inanimacy of the rock (which plays an agent role in relation to the verb crush) as compared to the animacy of the hikers, who in this scenario play an object role. 'The hikers that rocks crush' thus violates a cross-linguistic animacy preference among speakers. They tend to prefer animate head nouns to go with subject-extracted relative clauses (the hikers who __ crushed the rock) or inanimate head nouns to go with object-extracted relative clauses (the rock that the hiker crushed __). Add to this that there is a smaller plausibility that rocks will agentively crush hikers than that hikers will agentively crush rocks: a conceptual order of things, an animate hierarchy of possible acts, begins to take shape.

Even within the case of 'the hikers that rocks crush', however, it is only within a specific cosmology that stones so obviously lack agency or could be the source of causality; in numerous indigenous cultures, including the native Hawaiian people, Kanaka Maoli, stones can be taken as living beings. But these are devalued accounts within geopolitical spaces dominated by settler colonialism and supported by the hegemony of languages such as English. Paralleling this, we also find patterns of *dehumanization* within which those in specific circumstances of

structural poverty, disability, racism, gender, are considered less fully human than others who are in positions of hierarchal privilege. This interpretation is accurate insofar as the embellishment of humanness is only afforded to some, whereas others become, for certain circumstances, biopolitically 'no better than' those in positions lower in the animate hierarchy. How else can we explain the utility and potency of figurative resources that, for instance, animalize the human targets of racism? This leads to situations within dominant languages such as English in which non-human animals *and* humans stereotyped as passive, such as people with cognitive or physical disabilities, inevitably are subjected to the calculus of animacy: what happens when they are intuitively judged as less animate? What are the full consequences of this position?

Hence while I consider the animacy hierarchy as a prevalent conceptual structure that might come out of understandings of lifeliness, sentience, agency, ability and mobility in a richly textured world, I actively contextualize this hierarchy as a politically dominant one, potentially affected and shaped by the spread of Christian cosmologies, capitalism and the colonial orders of things. Animacy's 'grammar' thus extends beyond linguistic coercion to broader strokes of biopolitical governance. I read this animacy hierarchy, treated by linguists as an avowedly conceptual organization of worldly and abstract things with grammatical consequence, as a story of *relative* agency. Animacy hierarchies are precisely about which things can or cannot affect – or be affected by – which other things within a specific scheme of possible action. Moreover, I study not only this dominant animacy hierarchy's norms, but also its leakages, its 'ambivalent grammaticalities', to map the ways in which such a conceptual

hierarchy is doomed to fail, to have gaps. Above all, animacy is political, shaped by what or who counts as human, and what or who does not.

The hierarchical scale positions humanity in one place and animals in another place, despite humans' resolutely animal being, and leaves inanimate objects in several significant ways out of the equation. We could say that governments in the perpetual race of capitalism disregard environmental concerns to pursue the commodity, but there is something else going on in the priorities of matter itself that makes environmentalism seem unimportant. Ultimately I am arguing that these inanimate objects in the world, despite their marginalization, are exceedingly important. They are the doubled matter of biopolitics: the idea of political power or government, not necessarily through governmental bodies, which takes biological life as its point of management and control. They furthermore participate in complex ways in race, gender and sexuality discourses. The business of animacy theory is about how the respective positions and interrelations between humans, inanimate objects and non-human animals are ostensibly explained in relation to one another, when they are in fact intertwined in further, surprising ways. These include the surprising racializations and sexualizations and abilities/disabilities that under-run the hierarchy of animacy.

In this analysis words, and genres of language, become akin to a first level of animation, a primary site in which the matter of the world takes shape and is affectively informed, in this case for humans. Non-human animals take critical places in both theory and in cultural production. And in this analysis we also become exposed to the affectivities of lead and mercury as industrial pollutants that simultaneously *affect*, in the popular sense

of toxins, as well as *effect*, living bodies. Animacy theory allows one to question the self-evident relevance of a word like ‘toxicity’.

In the original study of animacy by linguistic anthropologist Michael Silverstein that I mentioned above, selected indigenous American and Australian languages, including indigenous North American Chinookan, Australian Dyrbal and other indigenous Australian languages, were all identified as sharing such hierarchies with Indo-European languages. That indigenous languages have been at the foundation of linguistic animacy theory, and yet that in terms of governance indigenous groups have been targets of cosmological violence under settler colonialism, appears paradoxical. But it is worth noting that the fact of hierarchical categorization can mean a variety of different things. It can mean either supremacy or simply difference, which may mean that one can't equate the animacy hierarchies of some indigenous languages and cosmologies with some colonial languages. Furthermore, as my book *Animacies* details, there are some troubling patterns in the linguistic research that default to a kind of dehistoricized account of animacy, which neutralizes the politics of the patterns we observe. Indeed colonial practices often use indigenous forms of trans-animate co-identification against themselves (as in, their primitivisms have not advanced to a proper understanding of justified human – that is to say, white – supremacy). Within scholarship there are tensions worth sitting with and exploring, not only to take in the radical violence of the ongoing occupation of indigenous and other spaces in ways that do and do not mimic the more limited set of relations under European colonization, but also to ask in what ways scholarship habitually ignores or consumes indigenous knowledges and what are the ethical ramifications.

There is therefore a coercive underpinning to the primacy of English transnationally (with clear doubling consequences for scholarship) that reaches beyond the fact that it must be spoken for economic advantage, and that underpinning involves a mandate to treat certain affects, certain agencies and certain relational configurations as plausible, and others as implausible. Ultimately, animacies are meant to explore the kind of possibility for justice within conceptions of matter in which humans play only a part.

See also Animal; Animism; In-Human; In/Human; Posthuman Ethics; Postanimalism.

Mel Y. Chen

ANIMAL

Animals are living beings of various kinds. According to the famous Chinese encyclopaedia, quoted by J. L. Borges, quoted by Foucault,

animals are divided into: (a) belonging to the emperor, (b) embalmed, (c) tame, (d) sucking pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) *et cetera*, (m) having just broken the water pitcher, (n) that from a long way off look like flies.

Foucault 1973: xv

This is only one of many possible ways to classify animals with which we share the planet. Thus, Aristotle divides living beings into animals that have blood and animals that do not. All the animals with blood, according to Aristotle, have a spine. In Lamarck, animals are divided into vertebrates and invertebrates. George Cuvier combined the principles of both Lamarck

and Aristotle: in his theory, vertebrates have red blood, and invertebrates have white. Generally speaking, Lamarck thinks the same way, but he defines blood through the intensity of its red colour. Therefore, according to him, invertebrates do not have true blood, which is red, and so on. Hegel, in his turn, bases further classification of vertebrates on the elements to which animal bodies are adapted – that is, earth, air or water – and thus we have land animals, birds and fish (Hegel 2007: 425). One could also divide animals into human, non-human, pre-human and posthuman.

An almost infinite variety of today's animals emerged as a result of the so-called Cambrian explosion and the Skeleton revolution, which happened around 500 million years ago. This revolution gave to animals not only exoskeletons, but complex organs, eyes and even brains. Before that, animals existed, too, but they were absolutely different. Some of them resembled inflatable mattresses; others were rather like discs, tubes or mud-filled bags. These organisms, called Ediacaran biota, which are now completely extinct, were mostly sessile, permanently attached to their places. In contrast to them, perhaps the main thing which all contemporary animals have in common is their motility, although there are animals that still prefer to rest.

Traditionally animals are differentiated from plants, mushrooms, bacteria and stuff like this, on the one hand, and human beings, angels, machines and gods, on the other. These divisions, made by science, are, of course, very conventional. In a way, every living thing has something animal in it, at least if we pay closer attention to the etymology, which shows that the word 'animal' derives from *anima*, a Latin term for the soul and the animating principle of life. Human beings often exclude them-

selves from the rest of the animal kingdom and think that they fall under a separate category. This is called human exception. However, in fact humans are, of course, animals, too, as they are born, breathe, move, eat other living things, reproduce and eventually die. Angels, even though they do not die, can also be regarded as animals, since they possess wings, claws, talons and tails; everything which has a tail must be qualified as animal, aeroplanes, comets and rockets included, in spite of the fact that human beings usually separate celestial bodies and machines with tails from other beasts. Finally, gods are animals. At least, they were. At the cradle of humanity, our first gods were animals.

Prehistoric people believed in the divine nature of animals they saw around, and used to draw them on the walls and ceilings of their caves. These paintings were icons of prehistoric men. Lizards, snakes, elephants, lions, eagles, giraffes and other great things that they met did not work and did not speak languages, therefore they were considered higher than men. They were, and they still are, as Georges Bataille puts it, sovereign, or 'essentially free beings' (Bataille 1986). However, the attitude towards animals in ancient totemism was extremely ambiguous. Animals were forefathers and gods, but at the same time provided people with everything they needed for life – food, habitation, clothes, tools and arms. Their flesh, their skins, bones, horns – everything was of use. For this, people were killing animals, but if these animals were their gods, great ancestors or other divine entities, such killings were called sacrifices. Sometimes sacrificed animals were invited to the feast where their own flesh was served and where all members of a given community – say tribe – were praising them while eating them.

Human attitude with regard to animals remained paradoxical throughout the whole of history. With the rise of other, more recent forms of religion, especially Christianity, animals lost their divine status, but animal sacrifices remained. Of monotheisms, for instance, Islam still keeps the tradition of a massive animal sacrifice, with lambs offered to God, whereas Christianity tends to be a kind of post-sacrificial religion: the death of Christ on the Cross symbolizes the last sacrifice from which Christian history starts. Animals nevertheless keep providing men with all the stuff needed for human life – flesh, skins, bones, etc. As Michel Serres notes in his theory of the parasite:

We adore eating veal, lamb, beef, antelope, pheasant, or grouse, but we don't throw away their 'leftover's. We dress in leather and adorn ourselves with feathers. Like the Chinese, we devour duck without wasting a bit; we eat the whole pig, from head to tail; but we get under these animals' skins as well, in their plumage or in their hide. Men in clothes live within the animals they devoured. And the same thing for plants.

Serres 2007: 10

In Serres, it is not use or exchange value, but abuse value which drives human economy based on the constriction of parasitic chains. To this, we can add that the most perfect of such chains is called capitalism: it is a religion in which animal sacrifice is mostly replaced with a massive industrial slaughter.

It is no surprise that the epoch of the human activities on Earth, recently known as the Anthropocene, is characterized by a gradual extinction of other living entities. Capitalist modernity is especially emblematic in this regard. The disappearance of animals in the last two centuries was

emphasized by John Berger, who, in his essay *Why Look at Animals?* claims that this process is simultaneous with the appearance of zoos: 'Public zoos came into existence at the beginning of the period which was to see the disappearance of animals from daily life' (Berger 2009: 30). According to Berger, 'The historic loss, to which zoos are the monument, is now irredeemable for the culture of capitalism' (ibid. 37). More and more animals depart, one by one, leaving humanity with pets and toys. To these striking observations, Akira Mizuta Lippit adds that in fact they 'never *entirely* vanish, but rather continue to exist in a state of *perpetual vanishing*'. Their existence become *spectral*, or, 'In supernatural terms, modernity finds animals lingering in the world *undead*' (Lippit 2000: 1).

When the last animal disappears, the sun will die out and never rise again.

See also Ahuman; Animacies; Animism; Animism (Limulus); Bios; Postanimalism; Urbanibalism.

Oxana Timofeeva

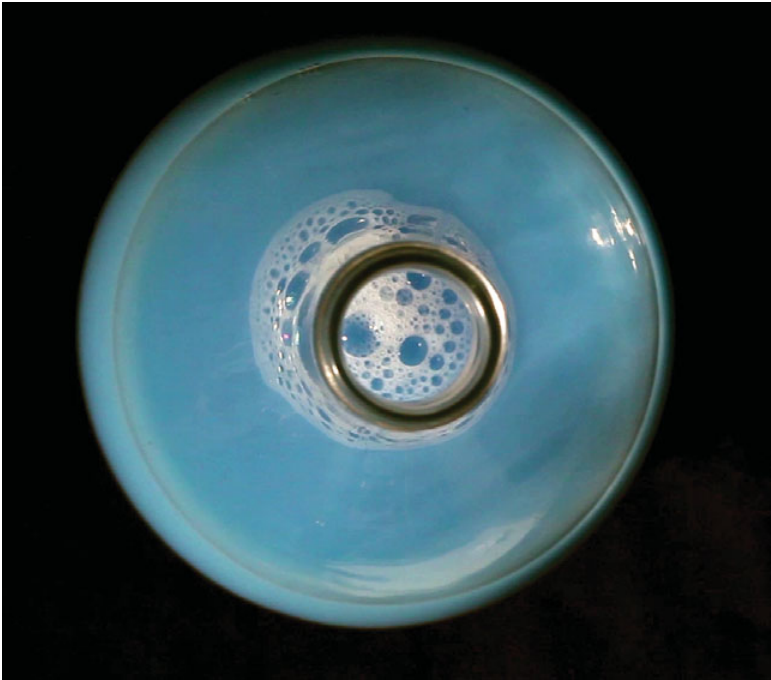
ANIMISM (LIMULUS)

Limulus is a film. The narrator is a supernatural piece of marine debris.

See also Animism; Non-Human Agency; Biological Arts/Living Arts; Hypersea; Multispecies.

Karen Kramer





Stills from Karen Kramer, *Limulus*, 2013, film.

ANIMISM

'Animism' designates a cosmos in which theoretically everything is alive and communicating, and potentially possesses the qualities of being 'a person' or, at the very least, an agent of some kind. It describes a world in which all social and ontological boundaries are porous and can be crossed under specific circumstances, a world of becoming and metamorphoses, in which no entity precedes the sets of relations that bring it into being.

From the perspective of state order, insofar as the latter relies on stable identities, all kinds of animisms pose a potential threat. The discourse about 'savage' animism is hence above all a question of what is permitted into the social collective, with full status and rights, and what gains only minor or subjugated status or is completely excluded. The border of separation between the fully 'human' and its others – the primitive, the savage, the animal, the insane – is not simply a given, but a cultural construction *and* evolutionary product at the same time, with some distinctions arguably less mutable than others – for the border between a plant and a human to be crossed, an entire cosmology and its order of the elements would need to be upset.

Colonial Implications

Animism, derived from the Latin *anima*, inextricably links questions of communicability and media with long-embattled questions over the soul and its relation to materiality. Is the soul an enclosed property of human beings alone or a realm of mediality, the condition of possibility to be-in-a-medium-of-communication? Inheriting earlier theological discourses transposed into secular and novel scientific vocabularies, the concept came to be a

crucial node in the discursive formation of colonial modernity in the nineteenth century, with its concerns over media, materiality and the validity of non-European knowledge.

Drawing on classical philosophy and a then-virulent debate on vitalism and spiritism, it was Edward B. Tylor (who held the first university chair in anthropology) who gave the term its colloquial meaning in his major work *Primitive Culture* (1871), signifying a 'belief in spirits' that for Tylor was the universal origin of religion. The term carried the allegation that so-called primitive cultures were incapable of assessing the material world.

Tylor claimed that every religion stemmed from the attribution of life, soul or spirit to inanimate objects. According to this theory, Europeans have advanced from animism, via polytheism, to monotheism, and from there to the highest stage of science, rising from a state of nature to one of civilization. In contrast, indigenous peoples of North and South America, Africa, Asia and Polynesia were left behind during this evolutionary process and remain as the savage survivals of a natural state. But while Tylor legitimized the colonial agenda both explicitly and implicitly, he also was among those European writers who insisted early on about the mental unity of all mankind – a fact that was of great significance in a climate of scientific racism that often explicitly denied non-Europeans rationality or even humanity. Despite its enormous influence in cultural theory from psychology to art, Tylor's animism was long shunned throughout the twentieth century due to its all too explicit evolutionism and its investment in what Claude Lévi-Strauss termed the 'archaic illusion' – the fallacy characteristic of modern primitivism that blended children, savages and the insane and declared them to be survivals of an archaic past. In the late

nineteenth and early twentieth centuries 'animism' was frequently invoked in the European struggle to account for the ontological enigma of the mode of communication in so-called primitive societies, as well as mediumistic phenomena inside Western societies and the rise of technological media. The discourse of animism hence constituted a 'media-technological phantasm' (see Hörl 2015) situated ontologically in the abyss between the dichotomies opened up by (Cartesian) poles of matter and mind, subject and object, humans and nature. It is equally invoked with great frequency whenever the conceptual certainties related to these poles and their mode of representation are fractured, designating a liminal zone in the encounter with alterity and ontological difference. Throughout its history, the term stands for the attempt to fixate contradictory moments of conceptual bewilderment, from the promise of transformability and unbounded intelligibility across ontological divides, to the experience of these divides as unbridgeable and untranslatable.

Contemporary Uses

In recent years, the concept has been revived in debates that critically mirror and question the ontological partitions and assumptions of modernity and its standard metaphysics. The new understandings of animism are not based on the fundament of identity and being, but rather on becomings, echoing an alternative strand of Western philosophy.¹ This resurgence of animism as 'relational ontology' is perhaps symptomatic of a wider crisis of Western objectivism under a new information paradigm (see Hörl 2015).

The continued challenge of the concept of animism lies in the imperative to rethink the border between humans and

their others, as the minimum demand put forth by the concept is that at least these borders and their underlying categories can potentially be re-thought. The character of the concept as a real conceptual and imaginary limit is underlined by the fact that for the majority of European authors writing on animism, just like Tylor, the 'spirits' of others actually remain enigmatic and inaccessible. 'Spirits' appear to categorically escape the objectification methods of Western epistemology. Within their respective systems of knowledge and disciplines, most authors are incapable of acknowledging their ontological status as 'real', and hence transpose them into other ontological designations – as phenomena of psychology or even art.

To talk of animism today still means to approach the limits of the matrix of Western thought. With this concept, modernity sought to differentiate itself from its other with a gesture of inclusive exclusion, assigning such otherness a place within its own matrix. The otherness of animism is simultaneously a horizon that circumscribes and encircles modernity and its civilizational discourse, from both the past and the future. From the past, because the animism described by the ethnologists and psychologists of the late nineteenth century as the primordial ground of 'religion' (cf. Hörl 2005; Schüttpelz 1872; Schott 2015) is that modern civilization must suppress and leave behind in order to become civilized and modern. But animism also appears at the other end of the vector of time – as a future condition in which alienation and the great divides of modernity are imagined as overcome. A politicized discourse on animism hence may ask not about the subjectivity of perception, but about the subjectivity of the so-called object. It is not only the historiography of slavery and colonialism that demands that the question of animism be approached inside out, as it were.

Animism and Capitalism

During the further course of the twentieth century animism ceased to function as modernity's excluded counter-image. In the middle of the twentieth century Claude Lévi-Strauss declared the 'archaic illusion' to be over (Lévi-Strauss 1949), and this end was associated with the dissolution of substance-based thinking and its dualistic oppositions of man and nature, body and soul, even life and non-life. On the basis of information technologies, cybernetics and system theories, the former oppositions became increasingly obsolete. The entire second half of the twentieth century bears witness to an ontological transformation, in which the categories, the representational, substantial and transcendental thought of Western modernity are gradually replaced by the paradigm of communication, culminating in a relational reformulation of reality.

To this day we still occupy the framework of this new discourse: the previously excluded (banished to the abyss of the 'archaic') middle now shifts to the centre: 'Everything takes place in the centre', through 'mediation, translation and networks' (Latour 1993: 76). In the world of distributed consciousness, with the power of agency allotted to human and non-human protagonists, it is no longer the shaping of the world of objects through human labour that constitutes the core of production, but the modulation of milieus, and within them, the 'transindividual' dimension of the production of subjectivity (cf. Aspe 2013). The 'return' of animism to the centre of modernity essentially proves to be a result of computerization and the experience of medial environments and their feedback loops.

The horizon of neoliberal ideological mobilisation is, as Achille Mbembe recently proposed, an identity of capital and animism (Mbembe 2015: 17). It delineates

the horizon of de-objectification, the horizon of a relational subject within the field of an expanded mediativity. The animism of capital is a resource which grants the neoliberal subject access to (self)transformability and perhaps even more importantly, following the imperative of flexibility and ecological behaviour, with the means to adapt. In a certain sense, the mechanisms described by Freud, according to which the animist projects his consciousness into the world, are becoming increasingly realized in the algorithmicized world of digital *tracing* and *tracking*, at least to the extent that the difference between consciousness and world is annulled when we inhabit the feedback loops, continually encountering the preferences and projections of our own digital profiles.

See also Animism (Limulus); Anthrôpos; Non-human Agency; Anthropism/Immanent Humanism.

Note

1. See, for example, Viveiros de Castro (2004), Bird-David (1999), Descola (1992) and Holbraad and Willerslev (2007).

Anselm Franke

ANONYMITY

'I mourn the loss of my anonymity every day.'

Writing from prison to supporters, an anarchist activist who is inside for placing a home-made 'stinger', a plank with an array of upturned nails, outside the car exit of a police station in Bristol one night, grieves for her change in status from an unnameable force to that of a known quantity (Shepherd 2015). This loss of anonymity, of turning a pluripotent person

into something with a record, a name, address and date of birth, with biometric measurements, known associates and affiliations is a point of anguish. Anonymity for her is a space of freedom, a chance to move in the city without being logged, without being anticipated, without bringing the plague to others who might lose their anonymity by becoming persons of interest to the police by observable contact with her. The loss of anonymity in this case is tragedy, losing itself to identifiability as a force that negates anonymity, shapes and disembowels its constituent capacities and its spaces of feeling and action.

Anonymity has its structural conditions and its histories, its contours changing over time in relation to the techniques of the state, of science and of media. Anonymity, more broadly, is not only the welcome dark cloak of the revolutionary, but also the space in which much of life takes place and which, historically speaking, it has unfolded. Anonymity is the space of evolution and the coming into being of life amidst the interactions of millions of unnamed entities. The way in which different historical moments articulate the tension between processes of naming, describing and knowing, and anonymity as a primal condition constitutes a submerged strata of the condition of knowledge.

The literature of the nineteenth century made a virtue and a problem of the city as the engine and the theatre of anonymity. The night and the proximity of thousands of unknown persons became the space in which figures such as the 'masses' could be conceived. The enormity of human force driving industry, filling slums, devouring resources, reproducing and doing unnameable things in anonymous rooms is a staple, and imagined as a space of freedom, of fascination and of disgust. Here history becomes an immense black chamber at the back of a pub, a space in which bodies

writhe together without name or obligation, though variably riddled with the systems of nomenclature given in the anthropic toolkit. Becoming the agent of history, rather than of the mere passage of time, in such a context meant moving backwards and forwards across the boundary of namelessness at different times and in different ways, giving words to a process, uttering new words, sometimes attaching them to something that became a subject.

The question of alienation, in which the human became strange to itself, through work, obligation, custom, and indeed experiment, sometimes as a release, sometimes as anguish is core to this era, but it was also the era in which anonymity to oneself, as Eduard Glissant writes in terms of opacity, becomes paradigmatic of the question of being a self (Glissant 1997). Knowledge and anonymity are not mutually exclusive, but intertwined. For Foucault, these two tendencies were negotiated by the 'anonymous murmur' (Foucault [1973] 1994) of discourse in which the ideas of the time were developed not in the decidedly named operations of the world of philosophy, but in the complexes of ideas and operations that formed ways of knowing and doing in medicine, and the human and natural sciences more broadly. Probing the unspoken and explicit terms of this process, from the formulations of disciplines to the circulation of techniques provides in turn an initial means of recognizing the way in which technologies take part in the shaping and induction of knowledge. In such a condition for Foucault, a problem was to find a means of erasing one's name, of gaining the succour of disappearance behind the cloak of anonymity (Foucault 1996).

Such a position, within this tension between anonymity and the mechanisms of knowledge, forms the grounds for much of the way in which modes of anonymity are formed in contemporary politics, with

the specific condition also that such politics is also partially prepared and embedded in technological forms. One can say that there are broadly two tendencies here, neither of which is immune from the other: the discourse of human rights and the related though partially contradictory one of the tension between anonymity and privacy in computational and networked digital media.

In the contemporary era, human rights has been formulated as against the anonymizing functions of cells, torture, mass graves and labour camps, which themselves used mechanisms of identification and enumeration aimed at erasing the singularity of a person (Wachsmann 2015). Human rights discourse consists of identifying and raising to a level of attention those who are effaced and dismembered. It extols and defends people without the papers that name, those without access to anything but anonymity. It makes public the means of erasure and provides a means of reverse-engineering such processes to name their mechanisms and their operators (Forensic Architecture 2014). In doing so it must negotiate the difficulty of proposing a universalized version of humanity that acts not as a condition of solidarity but as an agent of differentiation of what falls above and below such a standard and that can thus, once codified and turned into a legal operator in itself, be manipulated in turn against the conditions that it aimed at defending. Such, for instance, is the condition in Gaza where, as Eyal Weizman describes it, the legal defences of human rights are used by Israeli military lawyers as a means to describe, and thus tighten, the inside of a tourniquet (Weizman 2012). Human rights thus becomes a paradoxical yet universal foundation that is at once both a Möbius strip, turning itself inside out in grotesque convolutions, but also essential, a barrier and a barricade, that

may also invert and become a defining contour of a literal concrete border wall.

Alongside this condition is that of the relation between privacy and anonymity in digital media. Whereas anonymity is to not yet become named or to exist outside of the condition of the registration of names, privacy is to maintain identity as a resource; to parcel it out, to operate with it as it has already entered the economy of identification but held in reserve as an asset within possessive individualism. The large-scale platforms that aim at producing and enforcing global monopolies in particular varieties of digital information services have the erasure of anonymity as a core business aim. Subsequently, what passes for privacy is also eroded by them. Part of this condition is what makes for new political movements: those that embrace privacy as a form of human right; and those that engender anonymity as a form of conflict and refusal. Anonymity as a condition, in the figure of the multiple-name 'Anonymous' used by hackers, is also a declaration of solidarity in this condition, a figure of the unknown as one of generosity (Coleman 2014). Here, those identified and isolated from this current have often shown themselves to have an astute political analysis of the present day.

One particular episode is perhaps symptomatic of the interconnected fault lines of this condition. In 2012, people using the Anonymous name leaked the email log of the consultancy group Stratfor via WikiLeaks. Stratfor's work involves trading in political and economic information, often against political activists and human rights movements, especially those that may have some consequence for the continued profitability of resource-extraction based industries. The information that led to the public release of this data came from a hacker called Sabu, an FBI-supported agent provocateur. The

data released revealed the list of Stratfor's subscribers and the hysterically sober tone and content of their advice on acting against emerging threats to the status quo. Here, identity (of the informant), anonymity (of information sources and hackers) and privacy (of the companies and others subscribing, including of the judge who decided the result of the consequential trial) are tangled in a knot that reveals their crucial role as parameters of contemporary forms of life. Crucially, all three are involved with different modalities of power that effect their capacities and their unfolding in time. The rights to property and privacy set protective boundaries around the capacity to circulate anonymous murmurs that in turn propitiate the easy facility of transgressing what might be established as the human rights of workers and those living in parts of the world targeted for resource-depletion. The simple facts of who goes to prison and who does not, what information flows and what must be leaked, who remains anonymous and who does not in such a case, make things remarkably easy to name.

See also Algorithm; Leaks and Stings; Metadata Society.

Matthew Fuller

ANTHROPISM/IMMANENT HUMANISM

I propose that we retool and repurpose humanism to an *anthropism*, an immanent humanism (in a Spinozian, Deleuzian, Balibarian immanence). But first let us think if there is anything to be salvaged from the original concept of humanism that would be useful not only in thinking about, but also in acting as humans. Are

there any premises that can be retained from a concept that seems to have been evacuated of all its promises, having traversed the space from project to an ideology that has supported both the most horrific and the most sublime acts by human beings? Humanism is a notoriously slippery concept that, as Vito Giustiniani (1985) points out, shifts meanings from language to language even within the same linguistic family (from German to French), linguistic traditions (from continental Europe to Britain) and political genealogies (from Greek to Latin). Humanism writ large is of course, an anthropocentric praxis, a praxis that centres the world on the human being as the human in its Renaissance iteration, sourced from *humanus*, who is always already a being predicated upon that which it excludes, be that woman, Black, First Nation, dark-and-darker, African, indigenous, resting on the transcendence of its own meaning. It is a concept and a praxis that was vacated in the Querelle des Anciens et des Modernes, where the classical content of humanism was replaced by the turn to science and technology. As Giustiniani notes, in Classical Latin *humanus* carried with it, in addition to various determinants of the human (speech being one of them) two other attributions of the human, one being 'benevolent', the other being 'learned'. Giustiniani shows that while 'learned' was the dominant determinant in classical times it was lost during Middle Latin while 'benevolent' was retained. From there Giustiniani argues that 'in antiquity *humanus* defined human nature downwards, towards the animal, while in the Middle Ages it rather mattered to define human nature upwards, towards God' (1985: 169). It is this humanism that seems to have produced what is known as 'colonial humanism', a humanism that rested and depended upon the benevolence and humanitarianism of the

colonialists and their local proxies (Césaire 1972; de Gennaro 2003; Wilder 2005; Cooper 2006).

The German neoclassical movement in architecture of the late eighteenth and early nineteenth centuries (itself the result of the hellenomania of the Germans for Ancient Greece) that looked at ancient Greek rather than Roman art challenged the Latin-based humanism of the time and introduced German *neuhumanismus* that privileged Greek thought (and democracy) over Latin thought (and *res publica*). Until Hitler showed up.

In the space between the humanitarian benevolence of *humanismus* (what Césaire called in his *Notebook 53* ‘benefactors of humanity’) and the rationality and sublimity of *neuhumanismus* stepped Edward Said (2004) to draw a distinction between Heidegger’s humanism as the logos of the metaphysical relationship of humanism to a prior Being, and what Said meant by humanism, a term that he imbued with the experience of exile, extraterritoriality and homelessness. Keeping in mind the abuses that humanism suffered in its iterations as Eurocentrism, Said called for a different kind of humanism, ‘humanism as a usable praxis of intellectuals and academics who want to know what they are doing, what they are committed to as scholars, and who want also to connect these principles to the world in which they live as citizens’ (2004: 6). Said saw humanism as the ‘process of unending disclosure ... self-criticism, and liberation ... as critique that is democratic, secular and open ... and that its purpose is to make things available to critical scrutiny as the product of human labor’ (21–2), a humanism that, with a nod to Isaac Deutscher’s ‘non-Jewish Jew’ would engage the ‘non-humanist humanist’ (77). This is a humanism that rests on the understanding – no, demands the recognition – of a shared humanity, now in Franz Fanon,

now in Aimeé Césaire, now in the utterances of Malcolm X, of the inmates at Attica, of the Palestinians in Gaza, on signs held by the refugees and immigrants on the Greek border with Macedonia pleading for safe passage to a safe place.

I train my gaze, then, to a new iteration of humanism, an immanent, secular, democratic and anthropological humanism that will further trouble and upset the field, that will unsettle the archive, a humanism centred on humanity, one that neither falls back to the anthropocentrism of the Enlightenment nor reimagines the human as the aleatory experience of itself, a human that places the *méconnaissance* of itself, the mis-recognition of the subject by the subject at the centre of a new political project of a promised autonomy. An immanent humanism that listens to how humans define themselves, a humanism that is an *anthropism*, so that it skirts the exclusionary mechanisms of the past and re-proposes the *ánthropos* of the now, outside of any transcendence, engaging with no metaphysics.

See also Anthrōpos; Anthropocene; Critical Posthumanism; Posthumanism; Posthuman Critical Theory.

Neni Panourgía

ANTHROPOCENE OBSERVATORY

A new intensification is reshaping the surface of the planet: human changes to the Earth’s climate, land, oceans and biosphere are now so great and so rapid that the thesis of a new geological epoch defined by the actions of humans – the Anthropocene – is now being widely debated and articulated. This thesis is developing across a number of circuits, institutions, organizations, scientific and intellectual fields, all of which

are equally affected by this unfolding discourse, as much as the environments in which they act.

Operating as an observatory, a composition of documentary practices and discourses, this project traces the formation of the Anthropocene thesis. The project combines film, photography, documentation, interviews, spatial analysis and fieldwork to form an archive and a series of installations, seminars, debates and cultural interventions.

Across a number of specific international agencies and organizations, information about scientific research is acquired, registered, evaluated, processed, stored, archived, organized and re-distributed. These behind-the-scenes processes and practices, that lead to the equally complex decision-making procedures, form new discourses and figures of shift. The Anthropocene Observatory documents

these practices in a series of short films, interviews and documentary materials: the aim of the project is to illustrate in detail the unfolding of the thesis of the Anthropocene in its many streams of influence.

Territories

The Anthropocene is the new geological epoch where the world-system dominates and impacts the earth system at new and unprecedented scales and intensities. It sets in motion a series of reverberations and oscillations that scatter long-established boundaries and it opens up a new set of divisions of time and space. Territories are the specific forms of the links between the earth and humans, between the earth system and the many world-systems that humans shape.

Territories are the sustained form of the relationship between human cohabitation



United Nations COP19 Climate Change Conference. Warsaw, Poland, 2013.

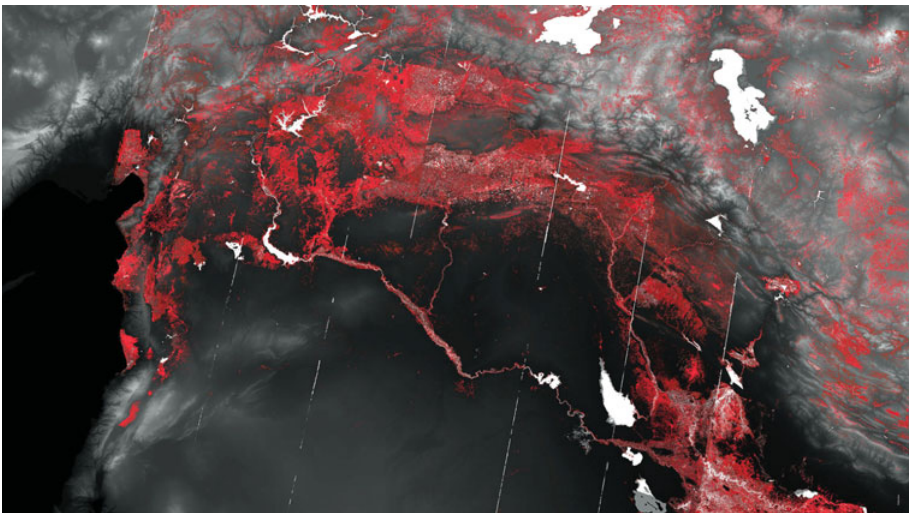
GIULIA BRUNO AND ARMIN LINKE

and material processes, unfolding in time and across space. They are a construction developing over time, and they mould the structures of both environmental processes and the specific forms of human polities. The boundaries of the social, economic, legal, political and cultural spaces that territories shape, their rules of legitimation, inclusion and exclusion, their members, their hierarchies, their cohesion over time and space, are reflected and marked into the forms of terrains, river basins, shorelines, fields, the modes of organization of work on the land, the shape of settlements and the framing of circulations.

Territories evolve in time and in space, they are a dynamic system, shaped by a vast array of individual interactions, local contingencies and specific sets of agents. The particular forms of those interactions, and their relative stability over time, shape vast systems of coherence and power; they establish the forms of the relation between

humans, and between us and natural resources, processes and forms.

The rise, development, articulation and organization of territories divide time and establish boundaries and borders in space. These divisions are as dynamic as their counterparts. The rise of new territories cuts across established relations; in their wake new articulations are formed, and previous ones disrupted and severed. The conceptualization of these moments of transition, the relations to the material traces and the human histories of these transformations, is what guides and forms aspirations of knowledge, governance and influence over human spaces and earth processes. The Anthropocene is reshaping these aspirations, reallocating and redistributing agencies, establishing new power relations and new links between atmospheric chemistry and human political action, between ocean circulations and infrastructures, between sedimentation processes and engineering, between energy



Mesopotamia: territorial transformations at the age of global war. Multiyear satellite multispectral analysis, normalized difference vegetation index. © TERRITORIAL AGENCY

and natural resources extraction and the forms of globalized economy and war.

A series of Anthropocene tipping points, of rapid transitions away from the long-established forms of modern world-systems and from the territories of the Holocene, are depicted here. They characterize how the concept of the Anthropocene is resonating across human spaces, cutting through notions of government and planning, survey and management of resources, modifying scientific practices and their relation to humanities, setting in spin forms of cohabitation. A dark, new space is opening up, where only small glimpses of new territorial structures taking form are visible.

Earth System

In a system, different elements or components interact and are interdependent,

forming a coherent whole sustained in space and over time, with clear boundaries and durations of its internal and external relations. Earth System sciences set out to understand the complex interrelations that characterize the Earth as a whole. They integrate a variety of disciplines and fields of knowledge production.

The development of Earth System sciences has shown that the Earth operates as a complex single system, with physical, chemical, biological and human components, each one interacting with all the others. They contribute to shape a system that is self-regulating and presents multi-scale temporal and spatial coherences. The dynamics of the relations that characterize the Earth System are unique and they are dominated by life. The conditions to maintain life are the result of complex self-organizing relations between the components of the Earth System. The interaction



NASA Jet Propulsion Laboratory, 99.9 per cent air-based substance. Pasadena, USA 1999. ARMIN LINKE



Copper mine. Chuquicamata, Chile 1999. ARMIN LINKE

between living forms and their inorganic environments affects the atmosphere, global temperature, ocean salinity, oxygen in the air, the water cycles and the carbon and nitrogen cycles that guarantee that life is sustained on our planet.

The development of Earth System sciences over the last decades has indicated that human activity is deeply affecting the entire system. The atmosphere, the geosphere, the cryosphere, the biosphere and the hydrosphere are faced with new forces, mobilizing the Earth towards instability and possible great fluctuations in its interdependent dynamics.

World-systems

Human systems and societies have forms that develop over history. The specific human relations are shaped, structured and hardened by these historical processes. Individuals, groups and societies are shaped in their interactions by these processes as much as they contribute to their dynamics. Long-term inhabitation of cities, lands and territories, intricate networks of communication, long-term development of everyday life-forms and

rituals have a major role in human history as much as local contingencies and immediate actions have.

The intertwined relation between the history of nations and the history of the Earth has been at the centre of many different conceptualizations and civilizations over time. The development of these concepts, their specific history, their formalization, structuring and diffusion are equally a key element in the formation of world-systems.

World-systems are a coherent, sweeping force, unfolding across large areas and through economic, social, political and cultural structures and interactions. They operate at very high levels of coherence and unfold at scales well beyond the individual elements that shape them. They are whole: the boundaries they structure and the flows of energy, money, ideas, language, social class and rank, law, population and power that characterize each world-system in its particular development shape complete systems which operate as a complex entities.

The social construction of time and space evolves through rapid transformations, a succession of different dynamics,



Bloemenveiling Aalsmeer, flower auction, test room. Amsterdam, Netherlands 1998. ARMIN LINKE



Greenhouse. El Ejido, Spain 2013. ARMIN LINKE

where different forms of documentation and different practices of power affect the overall system. World-systems develop through tipping points, through transitions that bring the systems from one level of complexity and coherence to another. This is a complex process which leaves stratifications in language, social relations, ideas and rituals. It also leaves material forms in its wake: the intricate geometries of cities, monuments, fields and infrastructures that sustain a specific form of a world-system are carried over from one world-system to a new one. Monuments, documents and technologies are the material inscriptions of world-systems. To decipher them, humans need to conceptualize their own history in relation to the history of the planet.

Anthropocene Observatory is a project by Territorial Agency (John Palmesino and Ann-Sofi Rönnskog), Armin Linke and Anselm Franke.

See also Anthropocene, Capitalocene and Chthulucene; Resilience; Expulsions; Extinction; Hacking Habitat.

John Palmesino and Ann-Sofi Rönnskog – Territorial Agency and Armin Linke

ANTHROPOCENE

Much of the debate about the global climate change is often discussed through the amount of CO₂ concentration in the atmosphere. But besides the atmosphere and questions about fresh water and ocean ecosystems, the geological has also become one central perspective for understanding the fundamental change concerning the planet. It relates to a recognition of the Earth as a whole, interlocked feedback system with various nonlinear speeds and rates of change that can however trigger

massive level changes (Steffen, Crutzen and McNeill 2007: 615). Hence, discussions of the air are about the Earth too while the future of the geologic era might be something determined by the oceans and especially the melting ice (Wolff 2014).

The concept of the Anthropocene marks an intertwining of geological Earth time and human history; it triggers massive amounts of paperwork, data, discussions, conferences, art works and philosophical ideas as well of course as misrepresentations in its wake. Suggested by chemist Paul Crutzen in 2000 it has launched a wide debate in both geology and the wider academic and art communities. The term suggests that the ten to twelve millennia of the Holocene is followed up by the accelerated version of human impact on the planet (Crutzen 2002). One of the periodizations for the start of the Anthropocene marks it as starting in the eighteenth century ‘when analyses of air trapped in polar ice showed the beginning of growing global concentrations of carbon dioxide and methane’ (ibid.). In any case, the analyses usually converge around the period as one of new imbalance in ‘the stocks and flows of major elements in the planetary machinery such as nitrogen, carbon, phosphorus, and silicon’ (Steffen et al. 2007: 614) as well as energy consumption. Similar concepts have emerged since the nineteenth century, including Antonio Stoppani’s ‘Anthropozoic era’, but only in the 2000s has the impact of the concept itself consolidated around issues with political and scientific efficacy. Already the earlier ideas marked the specific difference of human impact from natural variation that has then become an object of analysis with specific scientific tools that discuss the historical aspects – what is a suitable start date for this period – as well as its future implications: what is the tipping point of no return in the process of acceleration? Hence we are not dealing

with a naive assumption of ‘balance’ of the planet but a historicization of the chemical doses and elements, of reactions and processes as one significant context where the politics of existence of life unfolds.

In many ways, a lot of the accounts including the more popular texts about the Anthropocene resonate with histories of technology: the emergence of agriculture is one crucial threshold that has changed the chemical relations of the Earth. The invention of fire is another. The steam engine gets a frequent mention in narratives of the Anthropocene, as well as modern synthetic chemistry. One of the key issues is of course the radical change in the energy economy: from the use of wind and water to the excavation of fossil fuels such as coal and oil. The accounts of the Great Acceleration focus on the energy and war economies after 1945 with an intensification since the 1950s because of the increase in nuclear bomb testing; the global processes of urbanization; increase in fertilizer use and various other types of processes of technological society (Zalasiewicz et al. 2014).

Humanities and social sciences have anyway in the past often relied on generalizing periodizations. Human history has been divided into epochs of capitalism, imperialism and colonialism, as well as other earlier periods that offer heuristic support to understand historical time. Some of the archaeological periods place special emphasis on the main materials around which culture is organized: the Stone Age, Bronze Age and Iron Age. Some of the later concepts have also understood that the relation to natural resources is significant in order to understand that period. For example, Karl Marx’s analyses are obviously very aware of the changing industrial basis of production, from agricultural relations to the new metabolism produced by capitalism’s focus on natural

resources. Indeed, metabolism was a term used by Marx to ‘define the labor process as “a process between man and nature, a process by which man, through his own actions, mediates, regulates and controls the metabolism between himself and nature”’ (Foster 2000: 141). Interestingly, the Modern era – so crucial as a reference point for the social sciences especially – was itself as a concept an attempt to purify Nature out of human activities, which, however, itself hides the multiple attachments across any artificial Nature–Nurture divide and the difficulty of detaching politics from science and nature (Latour 2014a: 21). More specifically, and with a more acute awareness of the political economy of the Anthropocene, McKenzie Wark (2015a) continues Marx’s theoretization by pointing out that one can actually understand the Anthropocene as metabolic rifts, movement of materials and the labour that mobilizes these elements.

With the Anthropocene, any earlier periodization is even more directly driven by a scientific understanding of the Earth. It involves an analysis of human impact but also the other way round: to read human history through chemistry, the atmosphere, the geological and more. There is an implicit challenge here to the Humanities. It is hence no wonder that it becomes itself a useful trigger for a variety of approaches that are interested in the non-human and posthuman. These are important ways to steer clear of the anthropocentric fallacy and towards, for example, a more geocentric understanding of the planetary life (see e.g. Braidotti 2012, Bennett 2010). Furthermore, it introduces new ways to think about time not merely in terms of human history but as time marked by chronostratigraphy that uses rock strata as the main focus for understanding evolution and change. As such, it resonates with various ideas in the past

years of humanities theory and philosophy that open up new avenues towards temporality (see for example Grosz 2004). Time becomes detached from the specific anthropocentric onto-epistemologies to take into account the multiplicity of temporalities and alternative metaphysics. The Anthropocene arrives in contemporary discussions not merely as geology but as a politics of visual culture (Mirzoeff 2014) and as a demand to rewrite the genealogies of cultural theory (Wark 2015a). Furthermore, as a concept that refers to the scientific era, it raises the question relevant to technology scholars, and to students of media and humanities writ large: not what it does to humans only, but how nature is being framed, rearranged and targeted (cf. Peters 2015).

While becoming an important platform to discuss climate change, offering impetus to both humanities and art practices, the Anthropocene has its limitations. How far is it really possible to discuss the Age of Humans as really homogeneously about the human impact when it actually should register the specific economic and political actions, often specific to capitalism, that have effects very unevenly across the global south–north divide (see Chakrabarty 2009)? Hence to speak of the Capitalocene (Moore 2014, Haraway 2015a, 2015b) has also been suggested, as well as other related terms such as the Anthroscene (Parikka 2014) and the Chthulucene (Haraway 2015a, 2015b). The Anthropocene is not saying that the human being really has agency but something more like culpability (Chun 2015). But how that culpability is being distributed is itself a rather burning political question. We need to be able to investigate how the environmental debates and scientific analyses respond as well as are also held back by the strongly anti-democratic forces of the neoliberal era (Brown 2014). Any sort of effective polit-

ical and policy relating to the Anthropocene has anyway to face up to the massive political mobilization of the neoliberal agenda that is also global, unevenly distributed and extremely harmful across the continuum of matter-affect that defines the current ecology. In other words, even if the Anthropocene sets the important question it might not be the best conceptual solution out there to solve the complex interlinks between scientific analysis of natural processes, political agendas, economic drives and the affective desire that still governs the very tightly fossil-fuelled state of the contemporary era. Since the inception of the concept, the debate about massive-level geoengineering has also been flagged up as one option (Crutzen 2002) although, to be sure, any such planetary-level design should be contextualized in a wider realization about the political economic stakes of the environmental disaster and its possible solutions that involve an entanglement of politics, nature and design.

See also Capitalocene and Chthulucene; General Ecology; Earth; Four Elements; Posthuman Critical Theory; Ecohorror; Extinction.

Jussi Parikka

ANTHRŌPOS

Anthrōpos has content and properties, both of which produce obligations. *Logos* (as language, speech and logic) attributed exclusively to *ánthropos*, creates the obligation for inductive thought that sets it apart from animal language; *hexis* (as agential habit, engagement with acts that are recognized and shared by the social environment) creates ethics; *to koinōnikon* (the social) creates and demands politics.

Anthrōpos – a conceptual circularity of meaning, from ἀνήρ/άνδρός (*anēr* in the nominative/*andros* in the genitive), human being, and ὄψ (*ōps*), face, appearance, look, the one who looks like oneself, the being that looks like itself, human being writ large, sexless and genderless. We know this, that it is genderless and sexless, because Homer tells us that Zeus was the father of all humans and gods (Ζεὺς πατὴρ ἀνδρῶν τε θεῶν τε), and Oedipus drives the Sphinx to her death by uttering the genderless response *ánthropos* (and I am reading it with a nod to Muriel Rukeyser)¹ to the riddle ‘what is that which having one voice becomes a quadrupedal and a bipedal and a tripedal and it is at its strongest when it has the fewest?’ that she had been taught by the Muses and she deployed to drive men to their deaths.

Only the Spartans among the Greeks had a gendered type of the term – *he anthrōpós*, doubly marked with the feminine article and the stress accent on the last syllable, the Spartans who knew the value they placed on the male and the radical alterity of the female. Or, maybe, they marked it for precisely the opposite reasons, considering that it was the female of the species, the mother, who, when her son came of age, thought him better dead than a coward as she handed him his shield and ordered him not to drop it on the battlefield, but either to bring it back or to be brought back stretched out on it (ἢ τάν, ἢ ἐπὶ τάς).

There is one occasion where *ánthropos* appears in the feminine. Plutarch uses *tēn ánthrōpon* in order to denote a specific woman, Timaia, wife of King Agis of Sparta, who fell so desperately in love with Alcibiades that she bore his child in secret when he was a guest at the royal palace, while her husband was away at war – ‘such *eros* had possessed the she-human,’ says Plutarch (τοσοῦτος ἔρωσ κατέιχε τῆν

ἄνθρωπο) (Plutarch, *Bioi*, ‘Alcibiades’ 23.7). Even though the meaning of *anēr* towards the end of the Classical era is fixed to mean an adult male, *ánthropos* never lost its non-gendered force and remains, to this day, the all-inclusive, unmarked signifier of the human being.

Plato, in *Cratylus* 399, has Socrates explain to Hermogenes that the meaning of *ánthropos* (ἄνθρωπος) is that it is the only animal that examines (ἀναθρεῖ) what it sees (ὄπωπε), therefore only this examining animal is correct to be called *ánthropos*, the one who is looking up at what it sees and considers it, examines it, is an animal that is *anathrōn ha orōpen* (ἀναθρῶν ἄ ὄπωπεν), as it engages simultaneously in an act of avowal and disavowal, as it avows the examined life and disavows the impossibility of such an examining, it bespeaks the *krisis*, the critical thoughts of the human as it belies its animality.

Etymologicum Magnum (the Byzantine lexicon originally compiled in the middle of the eleventh century CE and printed in Venice in 1499 at the Greek printing press of Zacharias Kalliergi) gives as a possible etymology for *ánthrōpos* *para to anō threin*, ‘the being that looks upwards’ (παρὰ τὸ ἀνω θρεῖν), continuing that it is the only being that looks upwards, the only one that considers itself as a self, an etymology that has been proven to be erroneous since by other, more systematic etymologists. But *si non è vero è ben trovato*, since it actually creates an interesting tension with the etymology of *human* from the Latin *Homo* (earthling) through the Greek *hamai* (χαμαί) that means ‘ground’ or ‘soil’ (and should not be confused with the other term that comes from Greek, *homo-* that means ‘the same’ from which Havelock Ellis has been erroneously debited as having coined the term ‘homosexual’). The spillage from *ánthrōpos* to *human* becomes important insofar as it permits a proleptic conceptual

motion that brings the term human out of antiquity and provides a linguistic bridge with the post-antiquity scriptural landscape. If *ánthrōpos* means the being that looks upwards, and *homo* means the earthling who comes from the soil, then the gradual privileging of *homo* seems to be pregnant with The Fall, seems to be anticipating Christianity's 'dust to dust'. James Boon notes that despite the many qualifiers (taxonomic tools, not much more than rhetorical exaggerations) attached to *Homo* – *rationalis, ridens, ludens, thanatos, absurdus, oeconomicus, hierarchicus, aequalis, religiosus, magicus, saecularis, Homo* – whoever – and contrary to them, 'abstract *Homo* is more of a humanist *anthropos*: intrinsically both comic and tragic, selfish and philanthropic, capable of asceticism and hedonism . . .' (1982: 22–3).

These seemingly innocuous categorical classifications, engaging in an affirmative declaration of the identity of the human (*Homo* who laughs, thinks logically, makes symbols, creates hierarchies, religions, magic, understands death, navigates the seas, engages with economy) are pregnant with a negative such declaration (not simply the human who does not laugh, labour, make symbols, or think logically) but its radical alterity – the non-human. Such have been the negative declarations about the indigenous peoples of the Americas from north to south and the Caribbean (as in Juan Ginés de Sepulveda; cf. *Sublimis Deus* of 1537: Taussig 1986); all of sub-Saharan Africa and the African slaves in the Americas (as in the 1857 Supreme Court decision in *Dred Scott vs Sanford*); African Americans even currently (as in the acronym NHI (Non-Humans Involved) used by the police throughout the United States in cases involving only African Americans: Wynter 1994; Panourgíá 2017); leftist and communist exiles during the Greek Civil War of 1946–

49 (Panourgíá 2009); the Tutsis by the Hutus in Rwanda (Hilsun 1994; Moshman 2011; Baisley 2014); the Andaman Islanders at the end of the nineteenth century; the Jews by the Nazis; the Puerto Ricans by mainland US (Herrera 2008).

There is, then, a human being that transcends the transcendental, moral or even ethical categories, in claiming its origin as a human in its immanence when faced with a technology that is imbued with agency, the beating club, the chemical weapon, the naked and raw power that seeks to obliterate it, or, even worse perhaps, to engineer it differently but also with that which is invisible: the economy, the markets, that seek to create a human being that will be compliant differently, willingly, submissively, that will be thinking of itself as a free agent when, in actuality, as we have seen repeatedly, it will be always already an indebted being. A human being, then, that is an *ánthrōpos*.

See also Exclusion Zone; In/human; Lampedusa.

Note

1. Athena Athanasiou (2008: 96) brought to my attention the poem 'Myth' by Muriel Rukeyser.

Neni Panourgíá

ARCHITECTONIC DISPOSITION

Ichnography, Scaenography, Orthography

The notion of 'architectonic disposition' is relevant to a posthuman glossary in that it contributes critical methods to the new materialist interest in 'agential matter'. In the legacy of architectural treaties, this

notion is part of the Roman invention of a set of categories for addressing, as I want to argue, something very similar to the ‘material-discursive set-ups’ that increasingly come into focus today. Karen Barad rightly foregrounds that these set-ups have a systemic kind of agency (her ‘apparatus’ notion) that is at work, so to speak, behind the back of any critical consciousness that might attempt to focus on it: either such a consciousness focuses on the material aspects, and remains blind to the discursive dispositive from within which it does so; or it focuses on the discursive aspects and thereby deprives an a-personal objectivity of this set-up’s autonomy and power of resisting. Like the particle/wave set-up in quantum physics, both aspects are equally real and valid, but phenomena in such set-ups cannot be traced in this double makeup at one and the same time.

Additionally, it is also impossible to bypass the decision by proceeding in an iterative way, by stacking discrete observations such as to eventually compare them, and decide, in well-informed manner, in the end. For there is an irreversibility to such tracing itself that cannot be undone retrospectively (see *Negentropy*, *Maxwell’s Demon*). This is precisely the similarity this article points out between the ‘material-discursive set-ups’ that have been at stake in the treaties of architecture since Vitruvius, and those now at stake in new materialist politics, ethics and science: A built structure acts situatively, and asymmetrically, with regard to whatever the intentions of the architect might have been (what kind of beauty, truth, order or simply pragmatics her building is to manifest), as well as to how such intentions are projected to the work by a public, in discourse. If agency is a lived relation rather than something one does or does not have, then architectonic disposition, and the conceptual triad that constitutes it (ichnography, scenography, orthography), might

help to develop methods of quantum-reading and quantum-writing information, that expresses itself in mathematical models (Michel Serres) – a literacy that can do without any idealized notion of symmetry, one for which ‘reading’ and ‘writing’ comprehends mathematical thinking and the constitutive asymmetry that propels its very inventiveness (see *Equation*).

In his *Ten Books on Architecture*, the Roman architect Vitruvius gathered all the existent knowledge on architecture in one comprehensive treaty including the building of temples, of course, but also the construction of clocks (gnomon, sundials) and the fabrication of machinery. The dedicated aim of gathering all the distributed knowledge in architecture has been to generalize from local customs and the ethical/religious meanings attributed to the built works, and to propose rules and conceptual distinctions for addressing and critically evaluating ‘the establishment of public order’ in a manner that can preserve the built environment’s ‘worth’ without deciding upon an ultimate reference for this ‘worth.’¹ Vitruvius proposed three categories – *utilitas*, *firmitas*, and *venustas* – and introduced six elementary concepts by which an architectural object can be qualified according to these categories.² None of these concepts is self-standing, like a separate metrics, but rather must be brought to work together by the architect in singular manners; the planning of this interplay – this is the work in which an architect can be more or less professed.

Vitruvius’ conceptual apparatus is to provide critical assessment of such professionalism, such that the ‘worth’ of architecture can be preserved over generations and regions without determining it positively. It includes practical aspects as well as theoretical ones, which he distinguished as *fabrica* and *ratiocination*. The six elementary concepts are: (1) *ordinatio*: centring in

selecting one module from which the metrical unit for the overall taxation is to be derived in order to establish a singular work's 'ordination' by articulating and proportioning the members of the work; this idea of ordination is analogous to Vitruvius' suggestion that rather than ideas of the magnitudes and scales impersonated by a particular God, the human body can be referent to proportionate metrics in architecture; (2) *dispositio*: regarding the conception and disposition of all the work's elements in a generalized form in plans; (3) *eurythmia*: the well-proportioned overall appearance of the particular work; (4) *symmetria*: for the harmony of the order with regard to the module from which its metrics is derived; (5) *decor* or *propriety*: for customization of the work according to established customs; and (6) *distributio* (in Greek *oikonomia*): for a distribution of building materials and expenses adequate to the wealth and status of the customer.

The generalization from local customs and the ethical/religious meanings attempted by Vitruvius is so interesting because it proceeds in a manner of which I claim here that it *parallels* rather than imitates or reproduces philosophical methods of generalization and classification. Against this postulate there is a long tradition of Vitruvius' reception; according to this reception, architecture, especially the public order it articulates in cities, was thought of as realizing an ideal of a cosmic order in the here and now of the world. The predominant critique on Vitruvius since the Renaissance is that his proposed methods operate with proportion, without ever specifying the attributes of the proportions with precise ratios (Fischer 2009). If, however, we return to his interest in the preservation of architecture's worth not through the discourse of aesthetics, but through an approach informed by a climatic kind of energetics

(thermodynamic conservation), Vitruvius' apparent failure reveals itself as its very mark of distinction and excellence: whatever the value this worth preserves may be – beauty, harmony, the good, etc. – such an approach at systematization in order to conserve, without fighting the impurity of the system introduced through transformations (its historicity), lives from *not* specifying the nature of this value in any determinate manner (see *Negentropy, Invariance*).

The preservation of this value would be achievable only as a state of entropy, in which all of its articulations would be equally 'likely' – meaning in the architectonic context, which is concerned with criteria of adequacy rather than of happening, equally 'adequatable'. Such an architectonic state of entropy provides an atomism of value like the thermodynamic state of entropy (of the universe) provides an axiomatism of forces. We can think of the disposition of a work, its plan-ability, as such an entropic state, and we can call this 'architectonic disposition', picking up on Alberti and Serlio, an 'architectonic model'. According to Vitruvius, the elements of this disposition – quasi its vertices – must comprehend the full combinatorial space of the totality of possibilities the six elementary concepts are capable of determining. 'Planning' or 'design' – to use today's concepts – can be read as a reduction of the combinatorial potentiabilities, by configuring the potential elements in an objective way.³ Vitruvius foresees three dimensions of conception which we know today as ground plan, elevation and perspective. He calls these three dimensions of conception *orthographia* (the natural, potential elements, in renaissance: elevation), *ichnographia* (the contraction of the potentiabilities of these elements, in renaissance: floorplan) and *scenographia* (the operation of contracting, in renaissance: perspective or three-dimensional plan).

If Vitruvius' triad of architectonic disposition could be demonstrated in a generalized form, then his architectural theory might lend itself for developing an information architectonics. It might provide orientation in how to generalize again from the numerous spreading out of disciplines that fall victim to increasing local seclusion, hermeticism and what could be called a certain banality of highly technical specialization without systemic overview. Might the architectonic categories that constitute architecture as a *profession* (rather than as an art or as a science) provide a model of how to preserve the 'worth' of the public order that is embodied in knowledge? This, of course, is but a biased and speculative outlook. But here are some indexes of how such a re-interpretation of architectonic disposition could be started.

The notion of architectonic disposition has recently been picked up by Michel Serres, who argues exactly along these lines. Ichnography, scenography and orthography are terms that allow him to theorize a notion of system which contracts the first and the second laws of thermodynamics: its invariant conservation (first law) and its drift towards dissolution (second law). 'Physics describes a system,' he argues, 'but not one that is hierarchic, deductive, or tightly ordered, as in the series of the Stoics: it is a set, a general equilibrium, a balance sheet that takes account of the stochastic' (Serres 2000: 128), as he puts it in *The Birth of Physics* (1977), where he develops his notion of the *foedera naturae*, the natural contract, in distinction to what he calls the *foedera fati*, the contract of destiny. Serres' interest in the contract, here and in other texts, can best be understood as translating the dimension of architectonic 'orthography'. Like this, one can decipher the same notion of system, always contracted to mathematical models

and never self-evident, which he explored perhaps most prominently in his book *Le Système de Leibniz et ses Modèles Mathématiques* (1968). The introduction here is entitled 'Ensembles théorique' and Serres begins with the subchapter 'Scénographie, Ichnographie'. Scholars interested in Leibniz share a kind of embarrassment, he begins. It concerns the irreconcilability of Leibniz's rigorously systematic thought, while this very systematicity doesn't cease to refuse itself to rigorous understanding. Leibniz presents his reader, as Serres puts it,

a potential ordonnance which lets itself be divined and which refuses itself ceaselessly, a vague idea of a perceived coherence seen a thousand times in the mode of cavalier, and which hides its géométral, the sense of progressing in a labyrinth of which one holds the thread but has no map. Offered perspectives, multiplied points of view, infinitely iterated possibilities: it never seems that one could actually arrive at the exhaustive limits of a synoptic, spread out, complete and actual plan.

Serres 1968: 162⁴

Serres here argues for a notion of the system which comprehends and organizes all that obeys the principle of identity, yet as an invariant of which he assumes nothing else except that it be capable of absorbing and integrating all the variations that can actually be attributed to it; one can refer to such a notion of system only via mathematical models, he maintains. Such models are not addressed as representing a reality (or ideality); they must be fashioned in profile to each other rather than to a frame of reference. Their profiles are to be worked out under the criteria of isomorphism (equality with regard to their formality) between all of them, rather than correlation (linear hierarchies of consequentiality) or

representation between model and modelled reality. In Serres' notion of a mathematical system 'there is a plurality of possible paths of deduction' (1968: 190); it is thus a notion of system which is 'an irreversible order' which 'like a ladder' is made up of a plurality of 'orders, derived from an infinitely replicated infinity of infinities' [par infinité d'infinités infiniment répliquée] (1968: 487). Within such a sheaf of orders, 'my enunciations are universal and they conserve the analogy' [analogy here is a 'discrete multiplicity' which Serres contrasts with a function as 'a continued variation'] (492). This is why mathematical modelling of the system, conceived as a ladder where different orders, each infinite, are leading from one to the other, progresses indefinitely. Its steps are governed by 'laws of binding one – multiple, finite – infinite, which are of value in multivalent manner for perception, liberty, knowing, creativity, remembering etc., which all are at work also in the mathematical model' (493). Hence, to Serres it is not mathematics that govern all these aspects of reality (perception, liberty, consciousness, creation, remembering, etc.); rather, he assumes, 'there is no relation of cause and effect here, there is a parallelism of structure' (580). Serres' notion of a system which contracts the invariant conservation (first law, orthographia) and its drift towards dissolution (second law, ichnographia) is always integrated, bound together (scenographia) mathematically, in models. The system, thereby, is never represented by its models. The relation between them is a contract that formulates their mutually implicative cordiality, the orthographic politeness that makes up the *foedera naturae*, the Natural Contract: 'the model of the system, this is the system of the model' (481).

See also Equation; Negentropy; Invariance.

Notes

1. Cf. the preface by Vitruvius, dedicated to his Ceasar.
2. I understand these concepts as elementary in a quasi-material, quasi-presocratic sense: all of them factor in all of the architectonic work, like the material elements in the Timeaus factor in all of the sensible bodies (all things are made up of fire, water, earth and air, and between them we can assume the lawfulness of a proportionality: fire is to earth as air is to water).
3. One can say that Vitruvius introduced models in 'space', and that the Renaissance, with Alberti, introduced the models we are used to today (lineamenta), as models of motion in 'time', and that in today's discrete (digital) geometric paradigm we are discovering models in 'life' (see *Invariance*).
4. Here and in the following I use my own translation of Serres.

Vera Bühlmann

ART

Somewhat paradoxically, or almost too logically, the impossibility of art, painfully obvious in any moment we attempt to speak of it, has proven immensely productive. Ever since Theodor W. Adorno opened his *Aesthetic Theory* with the notorious disclaimer, 'that nothing concerning art is self-evident anymore, not its inner life, not its relation to the world, not even its right to exist' (Adorno 1997: 1) reflections on art, on its concept, its ontology, its relations (to society, to politics, to technology) have thrived on the apparent absence of its legitimacy or necessity. The desolation expressed by Adorno, however, is the very ground from which the late modernist critic's subjectivity arises. The pressure this

subjectivity exerts on the object of its reflection has proved constitutive. The crisis of art invoked in *Aesthetic Theory* may correspond to a self, fashioned as fragile and vulnerable. But rather than turning to art for consolation, it looks for an elusive sense of 'the possibility of the possible' (ibid.: 132). The question to be asked today may be whether art is still capable of providing such a futurist sense of the not-yet.

At the time of writing this article, the concept of art finds itself once again put under increased strain, particularly where it is being identified as 'contemporary art', a term that has become the subject of some debate. For regardless of the language deployed,¹ speaking of art in the networked, globalized now, it is 'contemporary art' that is being addressed. This penchant of narrowing down (or, some would claim, expanding) the discourse on art as universal category to one of 'contemporary art' immediately concerns the very boundaries (or the proclaimed inexistence of any boundaries) of art.² The aforementioned strain is composed of dissatisfaction, disillusionment, resentment even. Arguably, contemporary art is all about losing contact with the traditions of practising and theorizing art as a historically informed critique of the present condition, providing an idea of freedom and autonomy that enables a dialectical, counter-imaginative relation to reality. The loss of self-evidence, noticed by Adorno, has since become the utter denial of art's legitimacy in the face of its apparent failure to respond adequately to the extreme and interlinked disruptions caused by climate change, neoliberal restructuring, invasive digitalization, rampant racism, militarization of the everyday or the new fundamentalisms. Happily indulging in its own glamour, presentism and criticality, contemporary art for many has mutated into an obscene

spectacle of knowledge about how to get in and how to grow beyond expectation. Today's unprecedented expansion of art may have originated in Enlightenment thinking and Romantic philosophy that supported a notion of art as 'beaux arts', 'schöne Künste' or 'fine arts', encompassing all genres and media from literature to sculpture. The subsequently established custom of singling out the 'plastic' or 'visual' arts to embody 'art' proper remained transitory in historical terms, as the 1960s marked the advent of an ever-increasing expansion of the concept of 'contemporary art', leading to art's 'radical openness' (Osborne 2013: 57).³

As a direct consequence of such expansion any reference to 'contemporary art' is alarmingly in need of qualification and concretization: where is it that I am speaking from? Who is it that I am speaking to (and for)? What are my stakes in the matter? Where do I place myself in the discourse? In 1972, critic Rosalind Krauss (who explicitly stated her age of 31 in the article) wrote a kind of open letter to the readership of the New York-based art magazine *Artforum*, re-positioning herself in the (already fading) debates around modernism and 'modernist criticism' (Krauss 1972: 48–51). Having discovered that the 'historical necessity' of 'modernist painting' no longer disclosed itself to her instantly ('at the moment of perception of the work itself') but increasingly relied on 'narrative' and 'temporality', Krauss considered herself now ready for a 'larger modernist sensibility and not the narrower kind' (ibid.: 51). She concluded her intervention on a rather peculiar note, insisting on the personal and autobiographic whenever it comes to say anything critically valid on art, since 'it matters who one sounds like when what one is writing about is art. One's own perspective, like one's own age, is the only orientation one will ever have' (ibid.).

The crisis of modernism embodied in the expanding universe(s) of contemporary art that took root in the 'larger modernist sensibility' necessitated the fashioning of a subjectivity as specific as possible: age, perspective, voice had to be forged into a critical identity prerequisite of walking the expanded fields of post-modernist art. But what happens to this ethico-political ideal of the critic's self once the situation gets completely out of control? The often lamented absence of the brand of strong criticism cultivated by Krauss and her fellows in the 1970s and 1980s may be ultimately ill-conceived; however, it points to a widespread assumption of powerlessness with regard to today's art. In fact, the entire edifice of art's conceptualizations seems on the verge of collapse and in dire need of an ethics that may be convertible into an aesthetics. Fantasies of escape and exodus, of reaching contemporary art's 'beyond', of toppling individual authorship in the name of participation, of merging in activist politics, of investing in a 'usological turn' (in order to revitalize art as a mode of operation with effects on the real; see Wright 2013) abound.

Such visions resemble the well-known, albeit long-discarded (neo-)avant-gardist and productivist notions of the fusion of art and life, but their present urgency seems to stem from a somewhat different analysis and experience of crisis and despair. Among the possible inferences to be made under the current predicament is the critical longing for an art that explicitly fails to be subsumed through the disarticulation of any call to conform to the powers that be. Rendering the progressive opportunism of the majority of contemporary art, artist Paul Chan projects a perfect negative picture of any future that art might have: 'Art, by allying itself with contemporary life, has found its purpose as a cunning system of mediation, capable of

pulling into its comportment anything that exists in our social and material reality' (Chan 2014 [2009]: 76). Chan's critique of art that is bereft of any autonomy which would enable it to reflect on (and resist) 'the global arrangement to which life is increasingly beholden for sustenance' (ibid.) is heavily reminiscent of Adorno's equally sombre (and problematic) pursuit of the non-identical as a residue of aesthetic truth. Moreover, like Adorno, he refuses to bargain in the illusion of a utopian reinvention of art's situation through its expansion. For even though art may not only be found in the places and institutions proper to it ('galleries, nonprofit spaces, museums, corporate lobbies, and such'), but everywhere else ('on the sides of buildings, on abandoned grounds, in the sky, in makeshift kitchens, on river barges, at demonstrations, in magazines, on human skin, as souvenirs, and through speakers and screens of every imaginable shape and size' (ibid.: 82)), it merely expands and disseminates, Chan argues, as to stay functional and operative while affirming the very totality that grants it entitlement. Rather than multiplying, rather than feeling everywhere at home, he concludes, art should become an agent of un-belonging.

The tenet of art's very homelessness and untenability, the demand of art's refusal to signify is one of the most powerful (and certainly most difficult) axioms in aesthetic theory. Where it is not exclusively bound to an imperative to dissent, obliging it to be 'a form of expanded ideological (and institutional) critique' (O'Sullivan 2010: 197) or else 'some kind of production of signification' (Nancy 2010: 96), art may partake in an actualization of other worlds, temporalities and lives that do not necessarily correspond to textual understanding and the routines of critical reading. Escaping representation and its critique, however, usually comes with a price tag –

the abandonment of an essentially historical and genealogical approach to art making, criticism and aesthetic experience that analyses and engages with the material and mental work of constructing an image, an event, an experience.

Therefore, in order to avoid de-historicization and de-politicization, while acknowledging the necessity of breaking the spell of critical routines of Marxist social history and post-structuralist modes of critique, the reflection on art should be shifted and opened to allow for considerations of lives, human and non-human, and the matters and materialities that constitute art despite certain anthropocentric notions of it. The real challenge here would be to imagine and theorize an art (theoretical) practice that is critically aware of its own humanist bias and deconstructive with regard to any notion of a culture/nature divide. For historically, the semantics of 'art' have been gradually changing from referring to various kinds of 'ars', that is human activity based on knowledges and skills often in close vicinity to (if not identical with) 'science', to a concept that is linked to operations which are to be distinguished from those of nature, thus establishing the problematic dualism that has since kept 'art' firmly on the side of 'humanism' rather than of nature or matter. According to the anthropocentric terms of Karl Marx's 1844 *Economic and Philosophical Manuscripts*, '[A]n animal forms only in accordance with the standard and the need of the species to which it belongs, whilst man knows how to produce in accordance with the standard of every species, and knows how to apply everywhere the inherent standard to the object. Man therefore also forms objects in accordance with the laws of beauty' (Marx 2007). Put in original Hegelian terminology, art has to be linked to 'the deepest interests of mankind' (Hegel 1975: 7),

which are universal by default. In this philosophical context, aesthetic autonomy and art itself were largely to be understood as attributes of human agency. However, the critique of aesthetic autonomy, the attack on the category of the artwork, the re-evaluation of experience and affect, post-war art's institutional, geographical, technological and epistemological expansions, the discovery of non-human actors and activities in the making of art all amount to a situation in which the subjectivities produced by and for art have changed for good.

See also Art in the Anthropocene; Contemporary, The; Gulf Labor; Metamodernism; Postimage; Posthuman Museum Practices.

Notes

1. Including the one in which this article happens to be written, as if there would exist a reliable linguistic entity called English, particularly where it comes to speaking of and about 'art' and to using the *lingua specifica* that has been developing around objects and events associated with this very term, for that matter (see e.g. Rule and Levine 2012 and the subsequent debate it entailed, including Steyerl 2013 and Rosler 2013).
2. Since the early 2000s, the negotiation of the notion of 'contemporary art' has developed into a sort of sub-discipline of art history that by now appears solidly canonized or even gridlocked as a proper discourse (see e.g. the numerous publications of art historian Terry Smith (2009, 2010), the 'Questionnaire on the Contemporary' (Krauss et al. 2009) or the two-part special issue on 'What Is Contemporary Art?' of *e-flux journal* (2009, 2010)). Aside from strident dismissals of contemporary art's role in neoliberal economy and finance (see e.g.

Fraser 2011), much of what has been said and written in this respect amounts to sociological musings on how contemporary art constitutes a newly distributed world system replacing the modern center/periphery model by a network of ‘hubs’ (see e.g. Stichweh 2014) and philosophical classifications aiming at contemporary art’s alleged post-media and transdisciplinary character, its determinate disintegration and expansion and specific aesthetic and temporal politics (most interestingly perhaps articulated in Osborne 2013 and Rebentisch 2013).

3. This boundary-defying concept of art that superseded the various attempts by twentieth-century modernists to impose medium-specificity as a norm is characterized by Osborne as ‘generic artistic modernism’, a nominalist tendency ‘equivalent to the crisis of modernism itself’ (p. 51).

Tom Holert

ART IN THE ANTHROPOCENE

The Anthropocene is a disturbing concept. Imported from Geology to signify a proposed new epoch when humanity is the primary geologic agent, its life within the humanities, arts and social sciences has been a troubling one. This is primarily because of the figure of the *Anthropos* and the problematic designation of a universal species being that accompanies this figure, as Andrew Malm, Jason Moore and Donna Haraway have all pointed out. Further the periodization of the Anthropocene fails to do the critical analytical work of properly attributing the necessary precedents that give rise to this condition, namely, the asymmetrical power relations entwined within a destructive economic system –

petroculturalism and its links to extractive colonialism – that have resulted in the massive transformation of the Earth through industrialized agriculture, resource extraction, energy production and the widespread use of petrochemicals.

However, the Anthropocene, as a charismatic mega-concept, does important work by grouping together the environmental crises of the sixth mass extinction, climate change and the ongoing processes of terraforming and increasing toxification of our world, as these are all written into the body of the Earth. Further, despite its troubling re-assertion of the *Anthropos* coupled with the elision of the ideological, political and economic factors that have resulted in this situation (and the disturbing way in which ‘Man’ has again come to stand in for humanity) the Anthropocene asks us to re-think the trajectory of humans on this planet in both biological and geological terms. In other words, it is a concept that has the power to remind us of our limited and contingent time on this earth, and that our being itself is tied to the rocks and other-than-humans that compose us.

So what does art have to do with all this? As I argue, with Etienne Turpin, in *Art in the Anthropocene* (2015), the Anthropocene, in so far as we are to accept this term and its mobilizing potential, is an aesthetic event. I mean this in three ways. First, aesthetics can be understood from its etymological source in *aesthesis*, that is, the perception of the external world by the senses, from the ancient Greek *αἴσθησις* meaning sense perception. Taken in this light, the Anthropocene marks a period of defamiliarization and derangement of sense perception. This is primarily what is unfolding around us: the complete transformation of the sensations and qualities of the world. In other words, the world that we are born into is receding in front of

our eyes, causing a re-arrangement of the sensory apparatus of our organism. Additionally, many of the threats to our health are not immediately sensible: chemicals that infiltrate and proliferate in the environment or the gradual warming of the planet are hard to feel or see or touch. The rapid transformations that we are exposed to, as organisms, are also changing just as fast for the other-than-human creatures that also inhabit the earth. This sense of rapid reorientation to the world is one of the reasons why creatures are going extinct at such extreme rates, as the worlds they inhabited disappear and as chemicals are introduced into the environment so quickly and ubiquitously that there is little time to adapt. Climate change, under these terms, can be understood as a complete re-arrangement of our sensory and perceptive experience of being in the world, where the threat itself becomes hard to identify based on the sensory limitations of our bodies. As Nicholas Mirzoeff (2014) argues, the problem with these changes is that they are often written into the canon in a way that signifies beauty. He uses the example of Claude Monet's *Impression: Sun Rising* (1873). This painting, one of the most circulated images in art history, marks not just a particular aesthetic shift associated with Impressionism, but portrays the intense smog produced by early industrialization. The fact that air pollution has been anaesthetized into a kind of beauty marks one of the central problems of the Anthropocene era. This fetishizing of environmental destruction which troublingly straddles the realms of beauty and awe can also be seen in the work of photographers such as Edward Burtynsky and Andreas Gursky.

Second, the Anthropocene has been framed through modes of the visual: data visualization, satellite imagery, climate modelling and other legacies of the 'whole

earth'. As T. J. Demos has argued, 'Such imagery speaks to a problem articulated by recent theorists of ecology – that the expanded spatial and temporal scales of geology pressure, if not altogether exceed, human comprehension, and thereby present major challenges to representational systems' (2015: n.p.). The seemingly endless flow of numbers within the hyper-mediated spectacle of terminal capitalism – 400 PPM of atmospheric CO₂; seven billion people; one in eight birds, one in four mammals, one in five invertebrates, one in three amphibians, and half of all turtles facing extinction; consuming 400+ years of planetary biomass per day as fossil fuel – all articulate the vast scales at which anthropogenic conditions play out. To attempt to comprehend the vastness of these global problems, the use of modelling is necessary to begin to make sense of the data. But this logic of calculation is not without its drawbacks, as the Invisible Committee write, 'what's remarkable is that he continues relating in the same disastrous manner to the disaster produced by his own disastrous relationship with the world. He *calculates* the rate at which the ice pack is disappearing. He *measures* the extermination of the non-human forms of life' (2015: 32, emphasis in original). At the same time, these questions of numeracy, of being literate in the graphs and charts and data produced through various scientific discourses, are essential to a critical apparatus and are increasingly an index of power within the technoscientific bureaucratic management of ecological crisis.

Third, art is a polyarchic site of experimentation for living in a damaged world, offering a range of discursive, visual and sensual strategies that are not confined by the regimes of scientific objectivity, political moralism or psychological depression. Art can provide a space for dealing with the

affective and emotional trauma of climate change, dams and environmental pollution as it can hold together contradictions. We need modes of expression for the collective loss we are suffering through and venues to express the emotional toll of living in a diminished world. This sense of multiplicity that is contained within art provides a way to sift through the numerous contradictions of our everyday lives, to deal with divergent and discontinuous scales of time, place and action. Art practice can also provide a space of propositions and future imaginaries, exemplified by projects such as *Swale* (2016) by Mary Mattingly, a floating edible tree forest and self-contained ecosystem on the Hudson River that residents and tourists can visit and which provides a site for workshops and other forms of community engagement. As David

Garneau says, ‘What art does do – and what is difficult to measure – is that it changes our individual and collective imaginaries by particles, and these new pictures of the world can influence our behavior’ (quoted in Hill and McCall 2015: ix). The arts are part of the emergence of narratives about the ways in which we live in the world, narratives that can be damaging or visionary, which can connect or dislocate us from the earth. The fact that so much of Anthropocene discourse has been taken up in the arts merits more attention.

See also Art; Anthropocene; Anthropocene Observatory; Ethereal Scent; Biological Arts/Living Arts; Ecohorror; Neuronal Aesthetics.

Heather Davis

B

BIOLOGICAL ARTS/LIVING ARTS

An artistic practice that involves the use of living biological systems; in most cases the biological systems are manipulated and/or modified by the artist using technological/engineering biology as opposed to traditional modes of biological intervention. It is linked to the notion of emerging knowledge and emerging technologies. Biological Arts seems to work on the spectrum from the speculative to the actual, from the hyperbole to the disappointing, from the techno-utopian to the contestable, while using living biological systems as part of the process of art making.¹

Humans' relationship with (the idea of) life is going through some radical shifts; from the sub-molecular to the planetary, the cultural understandings of what life is and what we are doing to it are lagging behind the actualities of scientific and engineering processes. From Synthetic Biology and Regenerative Medicine, through Neuroengineering and Soft Robotics to Geoengineering – life is becoming a technology, a raw material waiting to be engineered; thus providing a new palette of artistic expression in which life is both the subject and object. Within the realms of science and engineering, radical approaches to life, driven by mindsets of control, seem to be taken haphazardly; exposing unintentional ontological breaches, and calling for the urgent need for cultural and artistic scrutiny of the concept of life. This scrutiny goes beyond

the Human to involve non-human agents, through direct and experiential engagement (Catts and Zurr 2014).

Biological Arts deals with the theory, practice, application and implications of the life sciences; creating a platform that actively engages in raising awareness, by proposing different directions in which knowledge can be applied, and technology can be employed. This can be seen as cultural scrutiny in action, articulating and subverting the ever-changing relations with life. Much of the work of biological artists seems to be transgressive, trespassing into areas where 'art should not go'. Yet it often does little more than culturally frame and articulate meanings to the manipulations of life that have become commonplace in the scientific laboratory.

This aesthetically driven and confronting treatment of life by artists can create an uneasy feeling about the levels of manipulation offered to living systems. This uneasiness seems to stem from the fact that current cultural values and belief systems seem to be ill-prepared to deal with the consequences of applied knowledge in the life sciences. Life is going through some major transformation, even if that might be more perceptual than actual. Through rigorous, critical and indeed wondrous explorations in the life science laboratory, Biological Arts begins a dialogue that engages with the extraordinary potentials and pitfalls of our new approaches to life itself.

However, Biological Arts is not a movement with a coherent manifesto; it is

merely an umbrella term to describe art that uses life and living systems as both its subject and object (Yetisen et al. 2015).

Biological Arts has been seen as:

- Critical/tactical media arts in which the artists actively critique, question and problematize these developments as well as the socio-economic contexts in which they operate (da Costa and Philip 2008).
- Promoting transhumanism; differently to the posthuman approach, the transhumanist agenda serves the interest of the human (or some humans) in the quest to become a 'better' human and transcend, through advancement in science and technology, into a seamless amalgamation of a technological human.
- Following a more traditional approach, some Biological artists follow the Formalist approach in which life becomes a raw material for aesthetic expressions concerns with form, perspective, colour composition etc. that is supposedly devoid of socio-political context.
- Public engagement with life science/engineering in which the artists are seen as either raising awareness of techno-scientific developments, or as promoting technological developments and suggesting current and future scenarios. Some initiatives have been actively trying to recruit artists to create public acceptance for technologies not yet realized.

Biological arts has links to other forms of art which touch upon life – for example live art or performance art, where the human is the organism on display and serves as a subject and object; eco or environmental arts in which landscapes are being manipulated and explored. All these

forms of art, like Biological Arts, are ephemeral, transient, in which by the end of the performative duration they leave relics of remembrance.

Some may trace Biological Arts to Media Arts, where the artist's engagement with new technologies and their effect on bodies and societies are the point of interest. In the case of Biological Arts, these technologies are of the life sciences and therefore raise some unique considerations, sensitivities, ethics and applications. Biological Arts is different from Speculative Biology in that it works directly with living biological systems. Avoiding the notion of the 'speculative' (with its capitalist associations), it tends to align more with the notion of materiality. Therefore Biological Arts will be positioned in the spectrum of the actual, authentic and contestable expressions and further away from a fictionalized and speculative approach.

Biological Arts is sometimes referred to as *bioart*; however, the term *bioart* seem to encompass more than Biological Arts, in that *bioart* also includes, among other things, traditional art expressions that are loosely dealing with the future of life, speculative Photoshopped images, and in some cases other branches of science not directly linked to biology.

See also Art; Art in the Anthropocene; Transhumanism/Posthumanism; Hacking Habitat; Non-Human Agency; Technoanimalism; Speculative Posthumanism; Vibrant Matter

Note

1. 'It's now a reality [that] artists are in the labs. They are intentionally transgressing procedures of representation and metaphor, going beyond them to manipulate life itself. Biotechnology is no longer just a topic, but a tool, generating green fluorescent animals, wings for pigs, and

sculptures moulded in bioreactors or under the microscope, and using DNA itself as an artistic medium' (Hauser 2003: 3).

Oron Catts

BIOS

Bios/ zoē [*vios/zōē*] is the foundational property of *ánthrōpos*, the site that both binds and delimits *ánthrōpos* to and from the rest of the other animals. The two forms of the term are far more similar in content and context, whether in Aristotle or anywhere else in Greek language, ancient or modern, than what has recently been made to be. Although not entirely conjoined, they are far from being distinct. The intricacies and intertwining of the two words are attested from the crudely grammatical *langue*, i.e. the structure of the verb *zēō* (ζῆω-ῶ), to the most intricate *parole* that includes locutions such as *vios zoēs* (the life of life) in Plato's *Epinomis* (982a), or the Homeric complex *zōēs d' agathon vion* (hence the fine *vios* of *zoē*, *Odyssey* O: 491). In general terms, it appears that *zōē* references the biological aspect of life, the state of living, while *bios* can be thought of as referring more specifically to the length of the experience of living. A look at Homer though (*Odyssey* E 96), where we find that *to zēn* includes not only one's biological life but also one's property in its entirety, practically one's *bios*, one's means of life, would challenge such a definition. In Pindar, the distinction between the animal and the human dimensions of the two words become even more occluded, since Pindar uses the verb *vioteuō* (βιοτεύω) to mean *zō* (to live), whereas Herodotus (*Histories* 8.105) speaks of the making of life (τὴν ζῶην ποιεῖσθαι). Euripides (*Heracles* F664) uses

viotá ("βιοτά") instead of *zōē* to the same effect.

The tenses of the verb *zēō* (ζῆω-ῶ) are divided almost equally between *zoē/zōē* and *bios/vios*: from *zōē* come the Present *zō*, Simple Past *ezōn*, and the rare Future *zēsō*; while from *vios* come the common Future *viōsomai*, Aorist B *eviōn*, Present Perfect *veviōka*, Past Perfect *eveviōkein*.

Zōthalmios and *viotalmios* in Pindar's 7th Olympian Ode (0.7.10) both mean the preservation of life, and the *Sōsivios* (life-saving) incantation to Asklēpios is asking obviously for the saving of *zoē* (life itself) not of the accumulation of knowledge and experiences that the rigid distinction between *zoē/bios* that Giorgio Agamben reads in *bios*; see, for instance, the inscription *Sōsivios Asklēpiō kai Hhygeian euhēn*, that appears on a votive offering plaque exhibited in the New Acropolis Museum. Graffiti that appears scrawled on walls in Greece since the beginning of the financial crisis in 2010 demand "zōē, óhi epiviōsē" (life, not simple survival); modern and ancient Greek share the locution, descriptive of unspeakable suffering, such as when Sophocles has Ismene respond to Antigone's question "how we are going to use up our life (*alōmenai viou*) trying to procure our hard-to-find food?" (ἀλώμεναι βίου δύσσοιστον ἔξομεν τροφάν;) by conceding that their life (*βίος*) will be unlivable (οὐ βιωτός) after the death of their father (ὁ μέλλον βίος οὐ βιωτός). Sophocles here is certainly conflating the meaning of *zōē* as a biological process, with the meaning of *bios* as the cumulative quality of texture of that life. The binary negation of the form *bios* is found in other instances in Greek grammatology, such as in the *atimōn tēn gynaiķan kai ton vion aviōton paraskeuazōn* (he humiliated the woman and created an unlivable life) in Aishinēs Against Timarchos (par 176); or *ton dhe mohthēron kai aviōton autois*

kathistōnta ton vion (while the wicked one who had made their life unlivable) in John Chrysostom (:465), an expression perfectly legible in Modern Greek (*mou' kanes ton vio aviōto*). Of course, all this becomes further complicated by the locution *zō vion* (ζῶ βίον), as it appears in Demosthenes Against Aeschines (18, 263) where Demosthenes accuses Aeschines of having lived his life under democracy as a hare lives his life—in constant trembling and fear: *lagō vion ezēs* (λαγῶ βίον ἔζης). In Attican Greek the common usage to denote “to live” is *zō* or *vioteuō* (ζῶ, βιοτεύω, Present tense), *ezōn* (ἔζων, Simple Past). As Vernardakis points out, the Atticans used the form *eviōn* (ἐβίων) and *veviōka* (βεβίωκα) instead of *ezēsa*, *ezēka* (ἔζησα, ἔζηκα) to mean “I have lived”.

In other words, and with every respect due to Giorgio Agamben, his theory regarding *zōē* and *vios* appears to be based on a presumed rigid distinction between the two, when he writes “the Greeks had no single term to express what we mean by the word ‘life.’ They used two terms that, although traceable to a common etymological root, are semantically and morphologically distinct: *zōē*, which expressed the simple fact of living common to all living being (animals, men, or gods) and *bios*, which indicated the form or way of living proper to an individual or a group” (1995: 1). There is no question that the two forms of the word are not tautological, but there is also no question about the fact that when Aristotle talks about the act of living well he uses the form *zēn* (as in *eu zēn*) rather than *eu viōnai*, which would be equally available to him, if the distinction that he was making needed to be disinfected from the polluting (or simplistic) implications of animality. On this precise point (and thinking on the antinomies present in the conceptualization of Biopolitics) Roberto Esposito has

inserted a “line of conjugation along which *bíos* is exposed to *zōē*, naturalizing *bíos* as well”, problematizing thusly the presumed disjunction of the two aspects of life (2008: 14).

Rosi Braidotti complicates the gesture of distinction even further when she argues that it was Christianity that left its indelible mark upon the relationship (and the distinction) between *zōē* and *bios*, still retaining the semantic rigidity proposed by Agamben, even though I suspect that this rigid distinction that Braidotti traces through Christianity might be more pronounced in Western than in Eastern Christianity (where *zōē aiōnios*—eternal *zōē*, eternal life—is found only in Christ). But Braidotti sees correctly that the examined life of Plato and Aristotle, *bios theoretikos*, the “self-reflexive control over life”, in Christianity has come to be colonized by the “male, white, heterosexual, Christian, property-owning, standard-language-speaking citizens” (2008: 177–178).

See also Anthrōpos; Animacies; Kin; Vibrant Matter; Zoe; Posthuman Critical Theory.

Neni Panourgía

BLUE HUMANITIES

Blue Humanities names an off-shore trajectory that places cultural history in an oceanic rather than terrestrial context. Recognizing, in the words of science fiction writer Arthur C. Clarke and numerous marine biologists, that ‘the name of this planet should be Ocean, not Earth’, blue humanities scholarship uses the alienating pressure of the deep ocean to estrange familiar stories and rewrite familiar narratives. Against discourses that situate

human cultures in pastoral fields, enclosed gardens or teeming cities, the blue humanities pose the sailor and the swimmer as representative figures, each differently threatened by and attuned to an inhospitable fluid environment. Sailors float with technology, hoping that their vessels stay off the rocks. More vulnerable swimmers use practised motions to keep their bodies afloat. The inhuman ocean, on which humans depend for food and transport but in which we cannot long survive, pushes humanities scholarship into alien environments. The blue humanities find posthuman alienation in a history of human–ocean contacts that stretch from prehistory to last weekend’s trip to the beach.

The turn toward blue humanities reveals maritime history, with its passion for technical exactitude and, particularly in a western European context, conservative historiographical methods, uneasily making space for a posthuman turn. Literary critics, environmental scholars, sea-level activists, poets and artists are turning to the sea to place human histories in more-than-human contexts. Oceanic perspectives replace stories of national expansion or decline with multiple vectors of movement, so that human history becomes a story of multiple estrangements rather than progressive settlements. With particular attention to the constantly reconstituted locations where sea meets land, blue humanities scholarship removes human actors from controlling heights and plunges them into uncertainty, movement and dissolution.

Perhaps the richest historical paradox of the oceanic turn in theoretical scholarship is the rich and often familiar archive of cultural history that this method enables us to rediscover. Unlike some futurist or technologically framed versions of the posthuman project, which imagine twenty-first-century humans on the bleeding edge

of new configurations of bodies, selves and subjectivity, oceanic scholarship finds disorienting posthuman turns in ancient as well as ongoing discourses of fear and fascination in relation to the great waters. The ocean haunts Western culture as boundary and chaos, from tearful Odysseus’s first appearance in Homer’s epic, lamenting his saltwater exile, to the georgic vision of Hesiod that asserts the only happy men are those with no need to go to sea (*Works and Days*), to the Biblical vision of the New Jerusalem in which ‘there was no more sea’ (Rev. 21.1). We fear and love the sea, a salty posthuman body alongside which we place our own salty and watery bodies. The prehistory of the posthuman, the blue humanities suggests, lies underwater.

Beneath the surface of the ocean lies a vastness we comprehend as poorly as the surface of Mars. In the roughly 90 per cent of our planet’s biosphere that lives underwater promises of biotic opulence float, along with carbon-eating phytoplankton, glossy-picture-ready cartoonish life forms and an invisible depth that gnaws at the ocean swimmer’s imagination. Melville’s cabin-boy, having fallen overboard from his chasing whaleboat, finds mad visions of totality beneath his feet: ‘Pip saw the multitudinous, God-omnipresent coral insects, that out of the firmament of waters heaved the colossal orbs. He saw God’s foot on the treadle of the loom’ (Melville 1999: 319). According to literary scholar Josiah Blackmore, the oceanic turn of early modern culture provides poets and writers with a potent metaphor for endlessly receding depth that would profoundly shape modern ideas of selfhood (Blackmore 2012). As sea levels rise and storms ravage coastal settlements in the Anthropocene, uncomfortable and disorienting entanglements of sea and self become increasingly relevant to twenty-first-century writers, artists and activists.

The long literary and cultural history of human entanglements with ocean butt up against what literary scholar Robert Foulke (1997) has called the twentieth century's turn away from maritime culture. While global capitalism's goods still float on the broad oceans, which Hegel called the native element of exchange and economic expansion, the shift from schooners to vast container ships has dehumanized modern humanity's relationship with the ocean (Hegel 1967 [1821]: 151). In much of the twenty-first-century world, we have become communities of swimmers, not sailors. As the artist and film-maker Allan Sekula has powerfully shown, the human-ocean interface has become increasingly mechanized and dehumanized, even though robot-piloted vessels still transport our economy's life-blood across physical oceans (Sekula 1996; Sekula and Burch film 2010). As the size of container ships grows along with their automation, fewer and fewer merchant marine sailors ply the oceans – though it seems noteworthy that the emblematic figure of the pirate has not entirely disappeared.

My own work in the blue humanities explores the posthuman environment of the sea as a space especially valuable in our era of Anthropogenic climate change. The unstable and destructive environment in which we live now increasingly resembles dynamic sea rather than stable land. Agricultural and pastoral visions of sustainability and predictability are giving way to narratives of threatening and unreliable environments. These posthuman and post-sustainable narratives can be terrifying – but I suggest that oceanic literature and culture can provide us with a rich cultural archive for raising new kinds of environmental questions.

No trope in the oceanic archive seems more resonant than shipwreck, an ancient story of disorientation and disruption that

punctuates Western literary culture from Odysseus, Aeneas and Jonah to Ishmael, Robinson Crusoe and the story of the *Titanic*. Especially during periods of maritime expansion, from the Roman empire to the settlement of the New World to Pacific island-hopping in the nineteenth century, shipwreck narratives provide stark visions of humanity caught between divine fiat and the insufficient promise of human agency. The chastened but necessary technical labours of sailors in crisis represent valuable stories of humans surviving (sometimes) in the face of non-human powers.

Researching representations of shipwreck in and beyond the early modern period has led me to deploy four subcategories or interpretive clusters for human-ocean encounters: wet globalization, blue ecocriticism, salt aesthetics and shipwreck modernity. Each of these double-barrelled phrases identifies a trajectory for the blue humanities in the future. New work in feminist and ecomaterialist models also provides rich seas to cross, as do the continuing resonance of such metaphors as the 'ship of state' and such geographic constructs as the World Ocean. In elaborating these four categories, I hope to identify currents for the blue humanities rather than setting boundaries on the element that always overflows all boundaries.

Wet Globalization: Twenty-first century responses to globalization sometimes fly above the earth with passenger planes. Blue humanities scholarship recalls that historically and still today, the global economy floats on the ocean.

Blue Ecocriticism: The sea's overwhelming presence in the natural environment reminds us that this element, long marginalized by green thinking, has the potential to revolutionize ecological thought in a post-sustainability context.

Salt Aesthetics: The disorienting pressure of the inhuman environment of the sea has influenced artists and poets from Homer to J. M. W. Turner and beyond. Salt water carries aesthetic force.

Shipwreck Modernity: From an oceanic perspective, the story of emerging modernity resembles a catastrophe-ridden epic of ocean-fuelled expansion and its attendant disasters.¹

Responding to the alienating pressure of the ocean on human bodies and institutions makes the blue humanities a form of posthuman investigation. With cognates from cyborg studies, post-sustainability ecocriticism, catastrophe studies and other discourses that separate humans from the spaces that comfort them, the oceanic turn in humanities scholarship combines an ancient discourse that still thrives in contemporary culture with a modern understanding of dynamism and change in the relationship between humans and their environments.

See also Earth; Green/Environmental Humanities; Monster/Unhuman; Post-disciplinarity.

Note

1. These points are adapted from Steve Mentz, *Shipwreck Modernity: Ecologies of Globalization, 1550–1719* (Minneapolis: Minnesota University Press, 2015), xxix–xxx.

Steve Mentz

BODIES POLITIC

‘Bodies politic’ (Protevi 2009) imbricate the social and the somatic: the reproduction of

social systems requires producing certain types of ‘somatic bodies politic’ (those whose affective-cognitive patterns and triggers fit the functional needs of the system) while those social systems or ‘civic bodies politic’ are themselves bodily in the sense of directing material flows.

The term was developed in dialogue with and can be seen as resonant with numerous scientific and philosophical projects that can be associated with the ‘posthuman’. Among them would be the historical-libidinal materialism of Deleuze and Guattari (1984, 1987), the enactive biology and cognitive science of Evan Thompson (2007), the cultural neuroplasticity of Bruce Wexler (2006), the evolutionary technicity of Andy Clark (2003), the developmental systems theory of Susan Oyama (2000) and, after the fact, the radical black feminism of Sylvia Wynter (Weheliye 2014).

Bodies politic are embodied, with individuated physiological and psychological somatic dimensions, and they are embedded in multiple and overlapping socio-political relations with other bodies politic, relations which are themselves as well physiological and psychological. We can thus distinguish compositional and temporal scales for bodies politic. Compositionally, we can distinguish first- and second-order bodies politic. First-order bodies politic are at the ‘personal’ scale, whereas second-order bodies politic can be at either the ‘group’ or ‘civic’ scale. Temporally, we can distinguish the short-term or ‘punctual event’ scale, the mid-term or habit/training/developmental scale, and the long-term historical scale. It must be remembered, however, that these scales are analytical rather than concrete; all concrete bodies politic are imbrications of all compositional and temporal scales.

An individual, then, is a first-order body politic, at once social and somatic, embedded and embodied, connected and

individuated, in both physiological and psychological dimensions. This is the micro-level of compositional analysis, the personal. When viewed synchronically (that is, on a relatively short time scale), a first-order body politic is a dynamic physiological system that regulates its material and energetic flows as they enter, circulate within and leave the socially embedded yet individuated body to take part in the economy of higher-order bodies politic at the group and civic scales. These dynamic physiological patterns can be modelled as basins of attraction in the phase space of the body, as regions of its virtual, and are experienced as background affects, as sharp or diffuse feelings of well-being, unease or any of a variety of intermediate states. Events on the fast/personal scale are seen neurologically as the formation of resonant cell assemblies or RCAs. Viewed diachronically (that is, on a relatively slow mid-term/habituation or long-term/developmental time scale), the patterns of this physiological flow regulation coalesce through childhood, change at critical points entering and leaving puberty, and often settle down into stable habits during adulthood. In other words, system patterns gradually crystallize or actualize as intensive processes disrupt previous patterns; this can be modelled as the construction of new attractor layouts, and is experienced as being out of touch with your new body (the famous gawkiness of adolescents).

Psychologically, the first-order or personal body politic engages in affective cognition, making sense of the situations in which its somatic life is lived in socio-political embeddedness. This making sense is profoundly embodied; the body subject opens a sphere of competence within which things show up as 'affordances', as opportunities for engagement, and other people show up as occasions for social interaction, as invitations, repulsions or a neutral 'live

and let live'. In most synchronic episodes a quite precisely limited virtual repertoire of affective cognitive response is available (a limitation of all that the body could do, modelled as a regularly recurring attractor layout) and efficacious (although we can at any time be overwhelmed by events that seem 'senseless' to us and that scramble our sense-making 'codes'). Diachronically, however, we can see changes at critical points as intensive processes disrupt actual sets of habits; this can be modelled as the production of new attractor layouts, and is experienced as psychic turmoil or exciting novelty. During childhood, such transitions in affective cognition are well mapped by developmental psychologists, while even in adulthood traumatic events or flashes of insight can profoundly rearrange our habitual ways of making sense, that is, rearrange the virtual repertoire, modelled as the production of new attractor layouts.

A second-order body politic is composed of individuals who are themselves first-order bodies politic. Here we find the interaction of the personal with the group compositional scale, where encounters can be one-off occurrences or can be patterned and customary or even institutionalized (and thus operate at the border of group and civic). A second-order body politic is at minimum a couple, but can be larger; a second-order body politic has itself somatic and social aspects in both physiological and psychological dimensions. A second-order body politic has a physiology, as it regulates material flows (1) among its members (the first-order bodies politic as the components of its body) and (2) between itself (its soma as marked by its functional border) and its milieu. For example, a second-order body politic might regulate the production, distribution and consumption of food and drink: think of the way a family kitchen is a distribution node for affectively charged material flows.

This regulation of group system dynamics can be seen as construction of a virtual repertoire, modelled as the production of an attractor layout, and affectively experienced as the background affect or mood of the group. A second-order body politic can also be studied psychologically, as it regulates inter-somatic affective cognition, the emotional and meaningful interchanges (1) among its members, and (2) between their collective affective cognition and that of other bodies politic, at either personal, group or civic compositional scales. In other words, groups have characteristic ways – a limited virtual repertoire – of making sense of what happens, on the basis of which decisions take place as actualizations or selections from that repertoire. These decisions can be seen as channelling toward an end state, modelled as the approach to an attractor in the group's state space, and experienced as a spontaneous agreement in which the collective subject makes up its mind: 'all of a sudden it dawned on all of us that this is what we had to do.' In terms of its temporal scales, a short-term event for a second-order body politic is an encounter of first-order bodies politic. In the mid-term, we see repeated patterns of such encounters or subjectification practices, and in the long term, we see the becoming-custom of such practices, their deep social embedding.

See also Alienation; Body Without Organs; Geopolitics; Posthuman Rights; Posthuman Disability and DisHuman Studies; Trans-corporeality.

John Protevi

BODY WITHOUT ORGANS

In 'To Have Done with the Judgement of God,' a radio play broadcast on

28 November 1947, Antonin Artaud declared war on the organs, introducing the idea of a body without organs that would be free from the capturing confinements of automatic reactions and habitual patterns. In their co-authored philosophy books *Anti-Oedipus* (1972) and *A Thousand Plateaus* (1980), Gilles Deleuze and Félix Guattari propose Artaud's body without organs as a concept to critique western Enlightenment forms of autonomous subjectivity. While Deleuze and Guattari never explicitly relate the body without organs to the posthuman, the concept may be relevant to understand why N. Katherine Hayles in *How We Became Posthuman* can conclude that 'we have always been posthuman' (Hayles 1999: 291).

For Deleuze and Guattari the body without organs is an evolving concept. In *Anti-Oedipus* it is introduced in relation to the body of 'the schizo' that resists the habitual organization of the body. Hence the reference to Artaud, who in all his delirious and artistic expression points out that underneath the traditionally coded body with an assigned place and role in society, underneath the organs, there is a chaotic, messy world full of intensive potentiality. Men, women, children; all have their place in a social hierarchy. Physical labour, bearing children, sitting up straight in class; all have an orderly place for their organs. The (schizoid) body without organs defies the social code and deliberately 'scrambles all the codes' (Deleuze and Guattari 1972: 15). In *A Thousand Plateaus* Deleuze and Guattari invite us to 'make a body without organs,' to experiment (artistically, socially and philosophically) and find new ways of relating to the body: 'Why not walk on your head, sing with your sinuses, see through your skin, breath with your belly?' (1980: 151) They elaborate the liberating

strategies against the stratifying regimes of the socially accepted body, starting with a call for doses of caution: the anorectic body, the masochist body, the addicted body, the paranoid body – they are all bodies without organs that demonstrate that such resisting strategies are not without danger and can turn out to be deadly. But there are no preset rules, except to be watchful and wise, acknowledging at the same time our fragility and need for freedom and the creation of new possibilities for life.

The body without organs is the sub-personal, not-yet-organized level of affective qualities that allows new perceptions, new connections and new affects. Because it dives below the categories and codes, the body without organs can make cross-cutting connections between the human and the non-human: materially on the level of the combination of human and animal DNA, or on the affective level of the proximity in movement (speed and slowness) in processes of becoming-animal (e.g. prowling as in a becoming-cat). So a second way of understanding the body without organs goes beyond the concept of the human body altogether, when transversal relations between species emerge. Thirdly, even further, the non-organic itself can be considered a body without organs. The earth is a body without organs, full of vibrant matter (Bennett 2010). Most fundamentally, metal is a body without organs. Metal elements can be found in all human, animal and inorganic matter. In its primordial and transformative quality, metal is even the prime conductor of all matter, indicating an immanent power of corporeality in all matter (Deleuze and Guattari 1980: 411). These in-human and inhuman extensions of the body, beneath the organs and beyond human corporeality and into the geology of the earth, make the body

without organs a posthuman concept (Pisters 2014).

More specifically, based on these transversal extensions, the body without organs can also be productive in the context of the technosphere. In her book *How We Became Posthuman*, Hayles discusses how the model of the human since the Enlightenment has been subjected to alienation by cybernetic machines and artificial intelligence. Hayles brings together both scientific theories and fictional narratives of literature that equally construct ideas about the posthuman in the computer age. She discovers two tendencies. On the one hand, there is an apocalyptic narrative that indicates the fear of the loss of humanity, loss of control and the dissolution of the human self. These are the stories where technology is conceived as separate from the human body: ‘Only if one thinks of the subject as an autonomous self, independent of the environment, is one likely to experience the panic performed by Norbert Wiener’s *Cybernetics* and Bernard Wolfe’s *Limbo* (Hayles 1999: 290). On the other hand, Hayles emphasizes (scientific and imaginary) stories that propose a contrasting vision of the human in relation to the contemporary technoworld: ‘When the human is seen as part of a distributed system. . . it is not a question of leaving the body behind but rather of extending embodied awareness in highly specific, local and material ways that would be impossible without electronic prosthesis’ (290–1).

Hayles’ conception of the posthuman is explicitly related to the articulation of the human with intelligent machines. However, by disentangling certain assumptions about the human conceived as an independent entity, she opens up possibilities for the posthuman to survive in close circuits with other life forms, human, otherwise embodied and inorganic, that

we depend on. The body without organs suggests that we did not have to wait for prosthetic machines, extensions of men by technology, to understand that the 'scrambling of the codes' is first and for all connected to a desire and fundamental need to deliver our automatic reactions and habitual self-contained forms of subjectivity. In acknowledging our deep and ever-changing transversal connections

to all other entities on the earth, the body without organs proposes indeed that we have always been posthuman.

See also Alienation; AI (Artificial Intelligence); Earth; In-Human the; In/Human; Contemporary, the; Otherwise Embodied Others.

Patricia Pisters

C

CAMP

The notion of the camp presents both some residual humanist features and distinct posthuman elements. It raises imperatively the question of the relationship between posthumanism and the inhuman aspects of the contemporary world order. The origins of the word ‘camp’, according to the *Oxford English Dictionary* (*OED*) (1989: 809), are military, and the first definition is ‘Martial contest, combat, fight, battle, war’. The idea of camp as a site of battle is one that I want to keep constant, precisely because I see the camp as a site of critique, resistance, opposition and, in the end, combat.

The *OED* has more than two pages defining camp, beginning with the military and transferring to ‘the temporary quarters, formed by tents, vehicles or other portable, improvised means of shelter, occupied by a body of nomads or men on the march, by travellers, gipsies [*sic*], companies of sportsman, lumberman, field-preachers and their audiences, or parties “camping out”; an encampment.’ By the twentieth century, such ‘temporary quarters’ included ‘quarters for the accommodation for detained or interned persons, as in *concentration camp*’. As Charlie Haley has argued, ‘defining the camp is a central problem of our contemporary moment’ (2009: 1), and he has meticulously worked to document the spaces and ideas of the camp at the beginning of the twenty-first

century, including ‘how camp spaces are currently discussed, imaged and constructed’ (2009: 2).

Central to any discussion, imagining and construction of the camp is a notion of humanity that rests on the possibility of containing the inhuman. Specifically, we have to ask *who* are the residents of camps, *who* constructs the camp and *how* are its residents, and the camp itself, imagined? Is it possible to reimagine the space of the camp in the name of *other* histories – Romani histories, for one, and histories of encampment that can be posited as critique, as future, as possibility? If the Paris Commune was a form of encampment, and we take seriously the political practices of the Romani camp, how do we then understand the states of exception that mark the concentration camp and the refugee camp? These multiple, contradictory meanings and practices of the camp are constructed through and formed by categories and notions of in/humanity. I would push us to take these questions seriously – to claim this continuum of meanings – as we enter into a consideration of the politics and practices of the posthuman.

In order to understand the camp as a temporary space, marked, at the same time, as a figuratively permanent constitutive outside, we come to the definition of the camp put forth by Giorgio Agamben in *Homo Sacer*, as the *nomos* of the modern. Agamben argues:

But what is first of all taken into the juridical order is the state of exception itself. Insofar as the state of exception is 'willed', it inaugurates a new juridico-political paradigm in which the norm becomes indistinguishable from the exception. The camp is thus the structure in which the state of exception – the possibility of deciding on which founds sovereign power – is realized normally.

1998: 96–7

This new juridico-political paradigm has been produced through the concentration camp, the refugee camp, the migrant camp, the Romani camp and the prison camp at Guantánamo Bay, which itself has existed as a space of exception created in the wake of the War of 1898 – a US Naval Base on Cuban soil – and in its subsequent iterations as a containment camp for Haitians in the 1990s and an extraterritorial, extrajudicial prison in the wake of 9/11. Camps have not simply been produced and maintained as states of exception, they have grown and spread globally. Camps exist in cities and spaces from Kenya to Calais, from Dhaka to Turkey, and from Jordan to Chennai. Recent history has seen Second World War-era concentration camps, former mass murder sites – including Dachau in Germany and Sajmište in Serbia – turned into refugee camps. Thus the state of exception has achieved spatial dominance, with large areas of the world maintaining sovereign states of exception for the *longue-durée*, as sites of death and of what Agamben has called 'bare life'. Camps, spread across Europe, Africa, the Americas and Asia, have reproduced the state of exception on such a large scale that, we could argue, necropolitics, as conceived by Achille Mbembe (2003), has, in fact, triumphed over biopolitics to become the dominant productive machinery of sovereignty.

The space of encampment, and the meaning of the camp, has also been a site

of contestation across various iterations and significations, from the military to the temporary to the site of internment or concentration, from practices of leisure and holiday to those of bodily or affective excess. In this way, the state of exception produced by the camp can be seen, also, as a site of possibility, where the camp and practices of encampment can be taken up as critique, as resistance, as opposition, as politics and as archive. Hannah Arendt, in 'We Refugees', claims the refugee as the agent of a new political position, arguing: 'refugees driven from country to country represent the vanguard of their peoples – if they keep their identity' (1943: 119). Arendt's argument in that last clause 'if they keep their identity' was a call to claim refugee status; the status, as she says earlier in the essay, of the 'so-called *schmorrer*', or beggar, as a call to solidarity and a new understanding of belonging, rather than fighting 'like madmen for private existences and individual destinies' (114).

In the current moment, it is crucial that we claim the camp – from the *lager* to the refugee camp, from the Romani encampment to the mahala, from the slum to the tower block. Such claiming can be the basis for a new politics, one that takes seriously the connections and intimacies that make up the human and non-human; the relation of human to animal, to material objects and productive practices, to the Commons and the larger world. Claiming the camp means taking up a political economy that is not based on the Lockean fiduciary trust, on ownership and enclosure. Rather, we can take up new questions of temporality and temporariness, usefulness and practice, common space and common sites, community formations and serious engagements with (gendered, racialized, classed, sexual, embodied) difference.

Claiming the camp for me, as a Romani woman, means, on the one hand, claiming

the genocide against Roma and Sinti, claiming our existence in the *lagers*, the extermination camps set up by the Nazis and their allies to destroy our people and our history. It means coming to a recognition of that history, of those who were murdered and those who survived, and of the generations who have come after, still marked by the loss of our people, our history, our place in the world. On the other hand, it means taking the Romani camp – in its old and new formations – as one of the means of our survival and one of the possibilities of our dignity, our difference, our politics and our community, that has been the site of our archive and our history. Elsewhere, I have written about the camp as a living thing, as the site of decolonization; it can only become such if we claim it as our history, our archive, our living present (Brooks 2013: 2).

Again, we can draw from Agamben, but this time to take up the camp as possibility, as the site of another politics:

It is even possible that, if we want to be equal to the absolutely new tasks ahead, we will have to abandon decidedly, without reservation, the fundamental concepts through which we have so far represented the subjects of the political (Man, the Citizen and its rights, but also the sovereign people, the worker, and so forth) and build our political philosophy anew starting from the one and only figure of the refugee.

Agamben 2000: 16.7

This conception of the refugee is one basis upon which we can build a new political philosophy, but, for me, it is the idea of the camp that opens up new political possibility. Paul Gilroy (2004: 16) argues for a 'planetary humanism' based on ideas of decolonization put forth by Fanon and Césaire, and asks us to move beyond the 'camps' of race, the nation-state and

empire; I argue that we cannot take up the idea of a planetary humanism without claiming the camp and its multiple legacies, its problematics and its inhabitants. Furthermore, the camp moves beyond the individual and the collective, moves beyond the human, as the subject of the political. The camp incorporates history and archive, space and nature, protest, resistance and critique. It incorporates trajectories of eviction and expulsion, collateral damage and flight; it takes up new forms of temporality and can posit new claims against capital, sovereignty, the nation-state and regimes of citizenship. It is Zuccotti Park, certainly, but also Geneva Camp in the centre of Dhaka and the Jungle in Calais; by claiming the camp as protest and as the constitutive outside of the city, we can open up space for other politics, for other subjects, for other histories and other futures.

See also Expulsions; In/Human; In-human; Necropolitics; Lampedusa; Occupy (after Deleuze); (Un)Documented Citizenship; Nomadic Sensibility.

Ethel Brooks

CAPITALOCENE AND CHTHULUCENE

We are not posthuman; we are compost. We are not homo; we are humus. We are terran; we are earthlings; we are many; we are indeterminate. We bleed into each other in chaotic fluid extravagance. We eat our own snakey tails in sympoietic whorls to generate polymorphic ongoingness; we are enmeshed with the ouroboroi of diverse interlaced netherworlds. We are chthonic, of and for the earth, of and for its unfinished times. We live and die in its ruins. We tunnel in the ruins to germinate

in the seams. We can yet be resurgent. There may still be time. Composting is so hot.¹

The outrages meriting names like Anthropocene or Capitalocene are about socio-ecologically, historically situated human beings (not humankind all the time everywhere) destroying places and times of refuge for people and other critters. The Anthropocene and the Capitalocene designate double death, the killing of the conditions of ongoingness.² These are appropriately ugly names for unprecedentedly destructive webs of systemic processes. Their consequences, their materialities, are already etched into the rocks, airs, waters and flesh of terrans, in chemical and nuclear signatures, in heat-trapping gasses, in hot acid seas. Capitalocene is one of those necessary but insufficient words that pop into one's mouth unbidden. Unhappy with the false and arrogant humanist universalism of Anthropocene, I started lecturing about the historical extractionism and extinctionism of the Capitalocene (and of the Plantationocene, that name for processes for making wealth through radical simplification, rooted in global transportations of peoples, plants, animals and microbes and in slavery, colonialism, hetero-normative familialism, racism and other forced systems of production and reproduction, all of which made the great accelerations of the Capitalocene possible).³ But no one invents terms like Capitalocene *de novo*; notice how many people propose similar important terms at the same time. We lust for names to designate a shared, intolerable and flatly unnecessary condition. The established disorder is not necessary; how many times and in how many ways must we learn to notice this fact? Not only was 'my' Capitalocene part of a cat's cradle game of invention, as always, but Jason Moore had already developed compelling arguments

to think with. Moore himself first heard the term 'Capitalocene' in 2009 in a seminar in Lund, Sweden, when then graduate student Andreas Malm proposed it. In an urgent historical conjuncture, words-to-think-with pop out all at once from many bubbling cauldrons because we all feel the need for better netbags to collect up the stuff crying out for attention.⁴

However, the Anthropocene or Capitalocene are perhaps really more boundary events than epochs, like the K-Pg boundary between the Cretaceous and the Paleogene.⁵ The Anthropocene and Capitalocene mark severe discontinuities; what comes after will not be like what came before. The scale of destruction wreaked in the Anthropocene, in the Capitalocene, has consequences. There will be no *status quo ante*. Loss is real and ongoing. Mourning is required, and it is and will be hard. The boundary that is the Anthropocene/Capitalocene means many things, including that immense, irreversible and unequally borne destruction is really in train, not only for the eleven billion or so people who will be on earth near the end of the twenty-first century, but for myriads of other critters too. (The incomprehensible but sober number of around eleven billion people will only hold if current worldwide birth rates of human babies remain low; if they rise again, all bets are off. Anti-racist, anti-imperialist feminists stopped talking about this; shame on us.) The edge of extinction is not just a metaphor; system collapse is not a thriller. Ask any refugee of any species. Our job is to make the Anthropocene and Capitalocene as short and thin as possible and to cultivate with each other in every way imaginable epochs to come that can replenish refuge.⁶

Right now, the earth is full of refugees, human and not, without refuge.

'Chthulucene' is a simple word. It is a compound of two Greek roots (*khthôn* and *kainos*) that together name a kind of time-place for learning to stay with the trouble of living and dying in response-ability on a damaged earth. *Kainos* means now, a time of beginnings, a time for ongoing, for freshness. Nothing in *kainos* must mean conventional pasts, presents or futures. Thick times have many shapes; arrows entangle, double back on themselves, proliferate and lead astray; times are bumptious materialities. Besides all that, there is nothing in times of beginnings that insists on wiping out what has come before, or, indeed, wiping out what comes after. *Kainos* can be full of inheritances, of remembering, and full of comings, of nurturing what might still be, as well as noticing what still is. Resonating in sympoietic complexity, *kainos* plucks the threads of thick, ongoing presence, with stringy hyphae infusing all sorts of temporalities and materialities.

Chthonic ones are beings of the earth, both ancient and up-to-the-minute. Chthonic ones are replete with tentacles, feelers, digits, cords, whiptails, spider legs and very unruly hair. Chthonic ones romp in multi-critter humus but have little patience with sky-gazing anthropos. Chthonic ones are monsters in the best sense; they demonstrate and perform the material meaningfulness of earth processes and critters. They also demonstrate and perform consequences. Chthonic ones are not safe; they have no truck with ideologies; they belong to no one; they writhe and luxuriate in manifold forms and manifold names in all the airs, waters and places of earth. They make and unmake; they are made and unmade. They are who are; they are what are. They do not do 'I' very well; they are sym-poietic, not auto-poietic. No wonder the world's great monotheisms in both religious and secular guises have tried

again and again to exterminate the chthonic ones. The scandals of times called the Anthropocene and the Capitalocene are the latest and most dangerous of these exterminating forces, these Singularities dealing out double death. Living-with and dying-with each other potently in the Chthulucene can be a fierce reply to the dictates of both Anthropos and Capital in the exterminationist times of the Moderns. It turns out that the chthonic ones are not dead; they writhe and slither within all of earth. Like Medusa, they are mortal and on the move. Like the octopuses, squid and cuttlefish appreciated in fifth-century BCE Greece, the chthonic ones are critters of aporia. They secrete inky darkest night; they are artisans of disguise; they are relentlessly polymorphic; they entangle the world in their numerous tube-feet-lined, stinger-endowed tentacles.⁷ The chthonic ones are spiders of the sea; they are predators; they are not exterminators.

We need a name for the dynamic ongoing sym-chthonic forces and powers of which people as humus are a part, within which ongoingness is at stake. Ongoingness is not futurism; ongoingness is full of continuities, discontinuities and surprises. Maybe, but only maybe, and only with intense commitment and collaborative work and play with other earthlings, flourishing for rich multispecies assemblages that include human people will be possible. I am calling all this the Chthulucene – past, present and to come. These real and possible timespaces are not named after SF writer H. P. Lovecraft's misogynist racial-nightmare monster Cthulhu (note the spelling difference), but rather after the diverse earth-wide tentacular powers and forces and collected things with names like Naga, Gaia, Tangaroa (burst from water-full Papa), Terra, Haniyasu-hime, Spider Woman, Pachamama, Oya, Gorgo, Raven, A'akuluujjusi and many many more. 'My'

Chthulucene, even burdened with its problematic Greek-ish tendrils, entangles myriad temporalities and spatialities and myriad intra-active entities-in-assemblages – including the more-than-human, other-than-human, inhuman and human-as-humus. Even rendered in an American English-language text like this one, Naga, Gaia, Tangarao, Medusa, Spider Woman and all their kin are some of the many thousand names proper to a vein of SF that Lovecraft could not have imagined or embraced – namely the webs of speculative fabulation, speculative feminism, science fiction and scientific fact, so far.⁸

We need ugly words like Anthropocene and Capitalocene to do needed critique; we need the snakey no-name/thousand-name ones for actual living and dying as earthlings. It matters which stories tell stories, which concepts think concepts. Mathematically, visually and narratively, it matters which figures figure figures, which systems systematize systems.⁹

See also Anthropocene; Epigenetic Landscape; Expulsions; Extinction; Gulf Labor; Kin; Vibrant Matter; Survival; Posthuman Critical Theory.

Notes

1. Sticker made by artists Beth Stephens and Annie Sprinkle with Kern Toy Design, www.sexecology.org.
2. 'Double death' is from Deborah Bird Rose, 'What if the Angel of History Were a Dog?', *Cultural Studies Review*, 12(1): 67–78, 2006.
3. Will Steffen, Wendy Broadgate, Lisa Deutsch, Owen Gaffney and Cornelia Ludwig, 'The Trajectory of the Anthropocene: The Great Acceleration', *The Anthropocene Review*, 2(1): 81–98, 2015. The very useful notion of the great acceleration for dating the ugly thing called Anthropocene dates to 2004, in an attempt to describe graphically the growth curves of natural and social systems from 1750 to the present. Like all such global aggregates, the data mask vast and diverse inequalities and also threaten to mystify the sympoietic natural-technical processes for making such data, as well as making such inequalities and ontological homogenizations. Still, the striking shared inflection points around 1950 of so many heterogeneous exponential growth curves (human population, species extinctions, use of paper, carbon emissions, metals extraction, industrial animal production, forced and free human migrations, etc. etc.) cry out for situated historical analysis of webbed processes, and not for enthralled appeals to the mathematics of exponential growth curves as if they described natural laws and necessary directions of time.
4. For his first widely available Capitalocene argument, see Jason Moore, 'Anthropocene, Capitalocene, and the Myth of Industrialization', <https://jasonmoore.wordpress.com/2013/06/16/anthropocene-capitalocene-the-myth-of-industrialization/>, 16 June 2013, and 'The Capitalocene, Part 1: On the Nature and Origins of Our Ecological Crisis', http://www.jasonmoore.com/uploads/The_Capitalocene_Part_I_June_2014.pdf, 2015 [accessed 15 March 2016].
5. Scott Gilbert pointed out that the Anthropocene (and Plantationocene) should be considered a boundary event like the K-Pg boundary, not an epoch. See Donna Haraway, Noboru Ishikawa, Scott F. Gilbert, Kenneth Olwig, Anna L. Tsing and Nils Bubandt, 'Anthropologists Are Talking – About the Anthropocene', *Ethnos*, 81(4): 1–30, 2015. As far as I know, this conversation is the first place the term Plantationocene appeared (p. 22).
6. Refuge and resurgence are developed in Anna Tsing, *The Mushroom at the End of*

the World: On the Possibility of Life in Capitalist Ruins (Princeton: Princeton University Press, 2015).

7. Marcel Detienne and Jean-Pierre Vernant, *Les ruses de l'intelligence: la mètis des Grecs* (Paris: Flammarion et Cie, 1974). The Titan goddess Metis is of an earlier, more tangled age than Zeus and his siblings. Despite efforts to build her into Olympiad genealogies by marrying her to Zeus, in my stories of the Chthulucene, Metis remains true to her earth-wide tentacular kin.
8. Os Mil Nomes de Gaia/the Thousand Names of Gaia was the generative international conference organized by Eduardo Viveiros de Castro, Déborah Danowski and their collaborators in 2014 in Rio de Janeiro. See Haraway, 'Entrevista,' by Skype, 21 August 2014, <https://www.youtube.com/watch?v=1x0oxUHO1A8>. For all the videos from The Thousand Names of Gaia/Os Mil Nomes, see <https://www.youtube.com/c/osmilnombresdegaia/videos> [accessed 17 December 2015].
9. This glossary entry relies heavily on Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press Books, 2016).

Donna Haraway

COMMONS, THE

In *What is Philosophy?* Deleuze and Guattari argue a philosophical praxis based on the production of concepts. Such concepts, they contend, are intertwined with the problematic forces they are created to address, 'without which they would have no meaning and which can themselves only be isolated or understood as their solution emerges' (Deleuze and Guattari 1994: 16). The commons can be

understood as one such concept, as a something – relation, affect, space, time, lack – that is shared by all, used by all, and accounts for all things in/of/on the common(s). The commons is a constant emergence of common social, economic and environmental relations and practices. They are spaces of experimentation, for both theorizing and practising, providing a lens for critique and affirmation, a method for resistance and creation. They might be purely affective, tethered to a specific location, or an unpredictable entangling of both. Perhaps they are a riot, a party, a free space, an invisible space, a non-space, a commonplace. The interpretation of the commons as such finds further support in Deleuze's explication of philosophical production; he clarifies that while some concepts require specialized, extraordinary or affectively charged words, 'others make do with an ordinary, everyday word that is filled with harmonics so distant that it risks being imperceptible to a nonphilosophical ear' (Deleuze 1994: 7–8). Suffice to say, it would be hard to find a more apparently mundane word that 'common', yet this simplicity belies the contradictory, complex, multiple and ever-evolving praxes that denote the commons of the past and present.

The commons of advanced capitalism are myriad, multiple, contradictory and, at times, imperceptible. They have taken shape as digital (Terranova 2004), cultural (Lessig 2002), intellectual (Moten and Harney 2013), aesthetic (Moten 2003), historical (Linebaugh 2014), environmental (Shiva 1997), domestic (Federici 2012) and urban (Harvey 2012) commons. As a practice of communal management of resource access, the commons determines transversal relations between all living beings and their common environment. With thousands of years of practical knowledge, the concept of the commons can

easily transverse entrenched dichotomies of nature–culture, human–non-human and individual–collectivity, relying on self-organizing and process-based formations to find points of relationality to enact becoming-in-common. As a practice, commoning might also regulate the production and dissemination of immaterial resources, like knowledge, culture and communication. The commons as a political praxis may operate based on capitalist, anti-capitalist or sharing economic lines (Caffentzis and Federici 2014; Gibson-Graham 2006). They can be globalized, localized, ‘glocal’, as immense as our galaxy or as specifically and minutely singular as the sustainable ecology of a three-toed sloth. A commons might manage resources that are finite, as is the case with natural resources, or impossibly infinite, as is the case for knowledge and cultural commons.

With this complexity, multiplicity and constant state of becoming, the commons of the anthropocene present an ideal conceptual terrain to experiment with an actualized posthuman ethico-politics. Such a posthuman commons would extend the dictum *omnia sunt communia* to its vitalist materialist horizon, the inclusion of all forms of life and accountable to, not subsumed by, affective and immaterial relations. These moves, following Rosi Braidotti, might inspire ‘an ethics based on the primacy of the relation, of interdependence, which values non-human or a-personal Life’ (Braidotti 2013: 95). Towards activating this posthuman ethics being-in-common, it is necessary to identify the salient and generative commonalities of existing manifestations of the commons and commoning.

As abiding financial, social and ecological crises reverberate across the globe, the commons have made a resurgence as a promising line of flight. The historical

study of the commons, exemplified in the work of Silvia Federici (2004, 2012), Peter Linebaugh (2014) and Maria Mies (1998), points to the commons, or rather their privatization and destruction, as a key point in the development of modern capitalism, patriarchy and colonialism. Likewise, a survey of feminist economic and geographic studies reveals that forms of common resource management have successfully persisted at the heart of many communities, especially throughout the global South, albeit requiring ongoing struggle against colonialism, neocolonialism and multi-national exploitation (Shiva 1997; Ostrom 1990). This work has shown that ‘commoning’ is the principle by which human beings have organized their existence on this earth for thousands of years, and that ‘there is hardly a society that does not have the commons at its heart’ (Caffentzis and Federici 2014). Yet these approaches to the commons focus primarily on material or physical commons – the land, natural resources, fisheries, the ocean, the air. Here, the relations that constitute the common are grounded in physical locations, embedded in a common earthly territory, and often come with pre-formed structures and institutions to manage common resources. While such commoning touches the ecological agency and relations of posthuman ethics, the continuation of basic anthropocentric ideals – wage relation, social institutions, established forms of governance – inevitably stymie the realization of a posthuman commons that is an immanent, embodied and everyday practice (Papadopoulos 2012).

The commons as method of tracing codes, flows and potential ‘lines of flight’ is also addressed in the (post)*operaismo*-inspired work of Antonio Negri, Michael Hardt, Cesare Casarino, Paolo Virno and Matteo Pasquinelli. Here, too, the concept of commoning embodies a relational,

subject-making process, which assists in charting the development of advanced capitalism. This reading identifies important shifts in labour, production and accumulation, all of which move towards immaterial relations and production. Here, the concept of the multitude replaces the commons, as 'a form of political existence that takes as its starting point a One that is radically heterogeneous to the State: public Intellect' (Virno 1996: 201). The concept of the multitude was popularized through Hardt and Negri's adaptation of it in their widely read *Empire* trilogy, which mapped the emergence of immaterial capitalist relations, particularly forms of immaterial labour, biopolitical production and globalized financial systems (Hardt and Negri 2000, 2009).

While these innovations stretched the concept of the commons beyond the unforeseen horizons of financial, cognitive and communicative capitalism, their analysis did nothing to displace the centrality of the human as ruler of the earthly commons. The praxis of a posthuman commons demands an ongoing commitment to fleshing out the web of lively and mechanical interconnections that remain unseen prior to the establishment of a common relation (Pasquinelli 2008). However, a posthuman common that criss-crosses the material and immaterial, the organic and the technological, can illuminate the structures and relations of that support the dominance of western humanism and traditional forms of governance (Papadopoulos 2010). Through their dialogical exploration, *In Praise of the Common*, Cesare Casarino and Negri consider the possibilities of 'unveiling' wrought by collective praxis, or 'the common nature of social life'. But even this generative possibility of 'unveiling in and of itself is only half the story: as soon as such an unveiling is about to take place, the fundamental

question becomes to find the specific, adequate, historical form through which it should determine itself' (Casarino and Negri 2008: 104). This function of collective praxis underscores the ability of commoning practices to root out existing hierarchical and anthropocentric relations.

While the investment in collective political praxis itself may be interpreted as implicitly accepting human superiority over the common, a more affirmative reading of this collective praxis involves an infinite multiplicity of non-human species, forces and entities, all of whom self-organize the reproduction of life and creation of transversal subjectivities through their immanent and unpredictable common relations. Rather than precluding all non-human matter and agencies at the start, a posthuman collective praxis might help unveil the common nature of humanism in social life, freeing both political practices and singular, bounded humanist subjectivities towards unknowable possibilities. Casarino and Negri's dual emphasis on exploring the transformative gestures of collective praxis, and on experimenting with collective relations in search of an adequate form, establishing a basic commonality from which to stage the posthuman commons of the future. This commons is no longer limited to the material (re)production of life itself, but includes the production of radical new modes of transversal subjectivities, generative and inclusive commoning relations, and wholly new ways of becoming-in-common in and with the world (Read 2011).

The emerging conception of a posthuman commons is that 'ordinary, everyday word' that has found 'specific, adequate, historical form(s)' that live up to the needs and pressures of our age. As a meld of cross-species/trans-material social relations, ecological embeddedness and

political economics, the posthuman commons activates the affective forces induced through the process of radical concept-making. With this renewing well of energy, the force and liveliness of posthuman conceptions of the commons enable the multiplication of immanent and embodied forms of transformative practices and subjectivities. In this, many existing commons can be viewed as already an expression of the posthuman politics to come, one that will continue to innovate collective posthuman forms of relationality, subjectivity, and political praxis (Dyer-Witheford 2006). These characteristics resonate with feminist Braidotti's conceptualization of 'becoming-posthuman':

a process of redefining one's sense of attachment and connection to a shared world, a territorial space: urban, social, psychic, ecological, planetary as it may be. It expresses multiple ecologies of belonging, while it enacts the transformation of one's sensorial and perceptual coordinates, in order to acknowledge the collective nature and outward-bound direction of what we still call the self.

Braidotti 2013: 193

Common to both posthumanism and the concept of the commons is a drive towards a more ethical mode of being-in-common, one which acknowledges and affirms the interconnected, transversal relations of all living matter. It is the radically transversal and materialist character of both that resound the transformative possibilities of a posthuman politics that is adequate to the challenges of the Anthropocene.

See also Feminist Posthumanities, Food; Occupy (after Deleuze); Political Affect; Posthuman Rights; Stateless State; Survival; Organization in Platform Capitalism; P2P (Peer to Peer) Economies.

Lindsay Grace Weber

COMMUTATION ONTOLOGY

The twenty-first century has encountered a proliferation of models. Models are conventionally considered as mediations between a subject as the agent of observation, and independently existing, external entities which become its object. This results in a human-bound, anthropocentric model, which is being challenged by current posthumanist approaches. The shift to a non-anthropocentric model is more than a mere decentring of a subject's position. The focus is shifted from the production of a subject to the production of subjectivity – the capacity to reciprocally change with the environment, and to affect and be affected in a relationship of commutation (Deleuze 1988b: 124). As subjectivity is defined by the capacity to change, it is not bound any more to the human realm and encompasses human and non-human entities, flattening the ontological ground. Quantum physics' spatial models and Leibniz's differential calculus as elaborated by Gilles Deleuze provide an alternative to discrete models of representation and are in tune with the process ontology of becoming that grounds the posthuman turn.

Quantum physics provides a formal model to conceptualize an ontology not based on representation subordinated to pre-defined identities, but on a commutation of agents involved intra-actively in their emergence. This epistemological model requires a discontinuity; a slicing through the continuum of reality where the agent of observation and the agent observed are 'co-constituted' simultaneously while space and time are enacted as products of this cut (Barad 2007: 139). In a similar manner, in Leibniz's model of reality and perception, space and time cannot be considered *a priori* but instead

are co-constituted ‘genetically ... in the ensemble of the differential relation in the subject’ (Smith 2012: 55). The calculus model has been generally criticized for distinguishing between the continuity of space–time and the discreteness of a matter that is pre-formed and given. In the above model, the present would proceed from the past in a deterministic manner and would lead to the future within a smooth, continuous fully definable movement. However, in Leibniz’s differential calculus model, the object and subject as well as the time and space are all the result of the differential relation: they are its products. The relation is external to the relata; in a way that it precedes and constitutes them, defining what Deleuze would term as ‘difference-in-itself’ (Smith 2012: 53).

In both the quantum and the differential model, there are no pre-existent entities to be empirically discovered by the subject but rather any temporal and spatial relations are contingent on how the cut has been enacted on the relationship of commutation. The basis for this commutation brings forward the inseparability of the objects and the ‘agencies of observations’ (Barad 2007: 114).

The result of this inseparability was observed by Niels Bohr as he could only measure the values of objects that participated in the experiment, as framed by the apparatus. His conclusion that ‘observation-independent objects do not possess well-defined inherent properties’ (Barad 2007: 196) finds resonances with the irreducibility of the principles of ‘clear and distinct’ developed by Descartes and reformulated by Leibniz. Leibniz envisioned that ‘conscious perceptions [of the subject/observant] are necessarily clear but confused (not distinct), while unconscious perceptions (Ideas) are distinct but necessarily obscure (not clear)’ (Smith 2012: 55).

Within Bohr’s conceptual framework, when the agential cut in the continuum of reality is enacted, that is the moment of a measurement could be described as clear but not distinct. This moment is clear insofar as relations can be drawn, space–time–matter is made specific, and an epistemological distinction between the object and the agency of the observation is established. However, the moment of the agential cut is not distinct insofar as it is ontologically inseparable from the continuity of the world. The causal structure of both models neither follows a fixed trajectory nor is completely left to chance. In the quantum model, determinism is avoided through the mechanism of the agential cut which intra-actively foregrounds certain exclusions and therefore opens up a potentiality that would be otherwise closed-off in a deterministic sequential causal structure (Barad 2007: 179–82). The model does not entail a preformed matrix of possibilities that a pre-traced path will actualize. The non-arbitrariness of the model lies in the fact that new exclusions and inclusions are enacted in every intra-action, therefore reconfiguring any possibilities.

Following Barad’s ‘ethico-onto-epistemology’ (Barad 2007: 185), a non-sequential co-constitution of cause and effect simultaneously emerges on each side of the agential cut. Humanist ethics, based on the human subject as the locus of responsibility, require a representation of the ‘other’. This condition of ontological separability is problematized by models based on entanglement (quantum physics) and the milieu (Deleuze’s model) as they co-constitute cause and effect, space, time and agency and they acknowledge no prior separability between the terms. The spatiality of this ethical model makes the anthropocentric temporal causal structures redundant and sets up a topological grounding for new ethical models. In the same way that

an entanglement refuses prior distinctions and pre-existing entities, a posthuman ethical model denies the split between the human and non-human. Instead, it rethinks the two terms as entanglements of each other with the boundaries that can be drawn between them as purely contingent on the epistemological cut that is enacted. A commutation ontology that recognizes the inseparability of agency and the simultaneity of cause and effect can radically shift human exceptionalism but also raise the ethical stakes as agency becomes distributed and spatial, instead of pre-given and temporal. As agency lays new ground in this nevertheless groundless model, ethics becomes extremely contingent to the material effects on the bodies that are constituted by the agential cut.

See also Locality/Non-separability; Post-human Ethics; Posthumanist Performativity; Ontological Turn; Multiverse.

Lila Athanasiadou

COMPUTATIONAL TURN

In the twenty-first century, the epistemological dominance of computing has not only reduced knowledge to information but information itself has come to coincide with large chunks of highly complex data that learning algorithms correlate and continuously model. This new form of discretization involves not only a breaking down of information chunks into bits that can be more easily reassembled and classified. Instead, in this century the computational turn has been demarcated by a new kind of information processing able to not only divide and add strings of data according to programmed functions. The development of learning algorithms in artificial

neural networks importantly shows that the task of breaking down has been superseded by the function of elaboration for which automated machines learn from data by establishing inferential relations between facial images and names, or voice frequency and patterns. The speed of correlation between independent chunks of data corresponds to algorithmic functions of elaboration for which this and that kind of information become inferentially processed, elaborated upon through the linear and non-linear logic of implication for which a general rule or truth can be determined. With the development of artificial neural networks and the method of machine learning, the turn to computation means the emergence of automated systems of knowledge (see *AI*).

The idea of automated knowledge, however, is not new and needs to be historically mapped back to the very invention of the alphabetic atomization of language. With the discretization of the continuity and locality of speech, the alphabet already defined a computational order of communication that established grammatical rules and a syntactical arrangement of letters that could contain infinite quantities of meaning. Despite the argument that computational functions are present in nature (i.e. the idea of a pan-computational universe), one cannot overlook how the historical invention of formal language rather expressed the computational function of breaking knowledge into bits but also re-assembling bits to transmit, store and communicate meaning. As long ago as the early 1700s, Gottfried Leibniz imagined a universal formal language able to express scientific and metaphysical concepts. His idea of *characteristica universalis* constituted the basis of the alphabet of human thought working as a discrete machine that could deliver ideas and things directly.

This symbolic order of knowledge was not represented in the form of the mathematical model of a *calculus ratiocinator*, but more importantly was a vision of the automated capacities to rational thinking insofar as computing could be embedded in machines that could perform calculus. Leibniz's early modern project of computing knowledge foresaw the link between discretization and automation and the emergence of a universal machine that could store, processes and transmit knowledge by means of a binary logic. Since then, the turn to computation has envisaged the possibility of inventing a general system of ordering, classifying, compressing and correlating data: a transcendental mode of thinking. Only after two centuries, with the invention or the thought experiment of the Turing Machine, could the automation of knowledge finally become more than a mere recombination of discrete bits. The method of discretization no longer has the task of breaking down complexity into finite units, but instead acquires the power of elaborating information to search for problem-solving solutions. From crunching numbers to the automation of problem-solving, the Turing Machine introduced a radical discovery in computation, namely the operative function or the performative activity of information. With the Turing Machine, knowledge fully enters the modern infrastructure of computational axiomatics or truth containing logic absorbing social activities of information communication and transmission. The consequences of this new form of automation re-write the history of Western culture through the industrial machine of the assembly line and Taylorist methods of production. By the late 1980s, the Turing Machine had developed to become interactive and dialogically responsive to the environment; no longer based on the deductive

logic of programmed truths, but on the capacities of automated systems to retrieve (and thus to directly act upon) large amounts of information. With the interactive machine, the computational methods of knowledge have also radically changed and involve no longer programmed, but programmable truths stemming from the capacities of algorithms to establish inference from the retrieval, correlation and classification of data. As knowledge becomes computationally processed by means of algorithmic procedures of searching and sorting data, algorithmic automation has become central to cultural production (through algorithmic-oriented search and analysis of computer simulations), to the political machine of governance (through algorithmic and data mining systems of security and control) and to the nature of machine thinking. More explicitly than ever, the computational turn is raising the question of what and who is producing knowledge.

It is possible to distinguish three distinct orders of knowledge (cultural production, governance and thought itself), which have become entangled with the twenty-first-century form of computational automation. The first order concerns how the computational infrastructure is transforming the very task of knowledge production within the humanities (an algorithmic-driven production of culture). The second concerns the way autonomic machines, data scraping and data mining techniques show how the governance of populations is increasingly tending towards the meta-governance of data, involving the algorithmic embedding of the social body within the body of data. The third order concerns the computation of thought itself; not the imitation of thinking, but whether computation is learning *how* to elaborate concepts through social, linguistic and

cognitive synthetic abstractions, and not simply learning *that*, i.e. specificities or context-bound knowledge.

Automated Criticality

In *How We Think*, Katherine Hayles argues that the computational turn has led to an irreversible transformation of analytic processing central to humanities research. As methods of research and knowledge production in the humanities have become computationally formed, Hayles suggests that code, algorithms and digital theory must become recognized as an integral part of knowledge production. Whilst computation involves quantitative methods of text analysis, the continental tradition in humanities has historically questioned the notion-based and mnemonic studies in favour of critical, reflective and comparative learning. Hayles insists, however, that technical modes of knowledge are to be integrated and not opposed to critical modes of learning. As technology has a direct impact on modes of understanding and learning, Hayles argues that web-based and machine reading offer new capacities to process mass amounts of information that fundamentally extend knowledge production and not only possibilities of knowledge storing.

Algorithmic Sovereignty

The issue of how computational processing can extend the limits of knowledge and whether it can enhance the possibilities of critical thinking raise the question of governance at the core of the computational turn. As autonomic computing subtends the ubiquitous use of statistical methods to calculate risks, so has technogovernance, as Michel Foucault anticipated, become operative or able to act upon or respond directly to contingencies and

variations. The shift towards a non-rational model of power has meant that governance has acquired a systemic functionality, which is inclusive of exceptions as these become captured by the performative production of norms, emerging as and when these are needed. No longer dependent on *a priori* axiomatics, but on the indeterminacy of exceptions, the systematic quality of governance works to predict erratic conducts and to statistically produce truths assembled by the data-driven computational machine. Here prediction involves forward-looking evaluation of data (the computational stratification of population within the fractal matrix of data, metadata, big data, software programs, algorithmic processing) establishing a conduct of conduct, or regimes of intelligibility run by machine.

From this standpoint, not universal truths, but the mutability of contingency – lawless nature or unknown unknowns – have become the dynamic motor of a computational mode of prediction aiming not simply at avoiding but at streaming risk towards its inevitable consequences. With the computational turn, the dominance of uncertainty and its unprogrammable implications have accelerated the proliferation of autonomic responses. Here fear, anxiety and panic, as well as erratic behaviour and continuous distraction are the motor of a social media culture of hyperpresence, and have become the univocal determinant of polarized positions, short-circuiting decision-making through YES and NO. As algorithms become the executors of sovereign decisions acting *when* and *if* the unselected amounts of data can become functional in streaming, anticipating and structuring risk, then the computational turn comes to coincide with an apparatus of governance operating not only on bodies, but through the datification of biological, physical and cultural specificities.

See also AI (Artificial Intelligence); Metadata Society; Altergorithm; Execution; Neocybernetics; Postimage.

Luciana Parisi

CONTEMPORARY, THE

In the aftermath of the ruptures of 1989, when postmodernity ultimately turned *posthistoire* in certain quarters of ideology production,¹ a pervasive present seemed to have triumphed for ever over past and future alike. At the final stage of the imminent breakdown of the grand narratives of progress and emancipation, with globalization and digitalization prioritizing spatial over temporal matters, exclusive and exclusionary relations with a particular understanding of contemporaneity became something of a norm. Obsessively and violently colonizing the present as the only temporal zone relevant for capitalist valorization and geopolitical tampering necessitated the methodical obliteration of what may cause threats to the monopoly of the now. Hence, the discursive and material neutralization of the past by a cultural economy of memorialization and museification is only paralleled by the temporal philosophies of finance and security, both predicated on notions of anticipation, 'futures' and pre-emption. Combined, retromaniac nostalgia and the policing of tomorrow elicited a dispersal of contemporaneities; the production of a ubiquitous present of however multiple presents blocks futurity as much as it does historical thought.

Most conceptions of time and temporality based on a critique of the present state of power relations and the projection of a coming revolution reject any affirmation of the present as a sign of stasis, anomie or surrender. Yet pausing for a moment with the contingency of that affirmation, one

might imagine a reflection of and *in* time and temporality that precisely looks for a relation to the present that would allow escaping the logic of deferral and postponement towards which the revolutionary left is often tending. Drawing on Nietzsche's notion of the untimely and the anachronistic, as prerequisites of being truly contemporary, philosopher Giorgio Agamben renders 'the contemporary' as the individual 'who firmly holds his gaze on his own time so as to perceive not its light, but rather its darkness' (Agamben 2009: 44). To be contemporary then means to inhabit a stance toward the present that pays attention to the 'unlived'. Agamben thus proposes 'an archeology' that 'returns to that part within the present that we are absolutely incapable of living' (ibid.: 51). In this view, to be contemporary is the capacity to recompose the present by having it being 'touched' (53) by the past, in order to actualize its trans-temporal potentialities.

Alternative models of a less melancholic and instead urgent politics of the present have been developed in the fields of posthuman, postcolonial, feminist or postracial, as well as in recent environmentalist, climate change and anthropocene discourse. Leaving behind linear and teleological patterns of thinking time, the 'absolute boundary between here-now and there-then' is being questioned by thinkers conceiving 'new temporalities (spacetime-matterings)' such as feminist physicist Karen Barad (2014: 168). 'There is nothing that is new,' Barad maintains, 'there is nothing that is not new' (ibid.). In other words, one cannot (not) be surprised by what is taking place in time, while traditional notions of cause and effect become lost in the nonlinearity of 'spacetime-matterings'. Deconstructing any dichotomy between (historical) humanity and (timeless) nature, the revision of temporality according to the complexities of an updated

materialist ontology which fully acknowledges the transformative, hybrid entanglements of technology, geology, biology, physics, politics, etc., may yield a concept of the present to be appropriately framed as 'the contemporary'. Such framing may be expanded to be organized around the realization that the realm of the now is always shared by others of whatever kind and time. The 'shared inhabitation of time', as artist and theorist Shuddhabrata Sengupta from Raqs Media Collective once put it, 'leads one to think of different registers of temporal existence', because, contrary to the assumption 'that contemporaneity has a certain single direction and a certain single velocity', it may be possible 'to think of these inhabitations of shared moments of time leading to movements in very different directions and at different speeds' (Raqs Media Collective, Sundaram and Zyman 2012). The emphasis on multidirectionality and multiveLOCITY certainly is key to an understanding of the contemporary that avoids any reification of the present as homogeneous, merely temporal and operative disjunctively with regard to past and future. Heterogeneous, 5-D, non-identitarian and inclusive, the contemporary in this other sense is a moving assemblage of temporalities, spatialities, materialities and livelihoods that is not necessarily dependent on a future to be activated. Although potentially 'drawing energy from the thinkability of the future' and thus facilitating 'a transformation at the in-depth level' (Braidotti 2006a: 207), the contemporary also thrives on radical coevalness, or what anthropologist Johannes Fabian has identified as 'the elements of a processual and materialist theory apt to counteract the hegemony of taxonomic and representational [i.e. visualist] approaches' (Fabian 2002: 156). Furthermore, the contemporary is the subject of a justice 'beyond all living present', as Jacques Derrida called it, that is of 'the principle

of some responsibility', based on a 'non-contemporaneity with itself', concerning 'those who *are not there*, of those who are no longer or who are not yet *present and living*' (Derrida 1994: xix). Assemblage and assembly of disparate temporalities, posthuman ontologies and political projects alike, the contemporary conceived as a reality of becoming and an ethical resource relinquishes the reductive contemporaneity of *posthistoire*. This way, to enter the contemporary means to leave the present as now-time for the potentiality of a communality of temporalities, in which the thinkability of the future is connected to, but not limited by, an archaeology of a shared present touched by whatever past.

See also Afrofuturism; Art; Art in the Anthropocene; Metamodernism; Ecopathy; Posthuman Museum Practice,

Note

1. For a useful discussion of the problematic notion of 'postmodernism' as a 'special moment in *posthistoire* thought' see architectural historian Anthony Vidler's chapter 'Postmodern or *Posthistoire*?' in his *Histories of the Immediate Present: Inventing Architectural Modernism* (Cambridge, MA: MIT Press, 2008), 191–200.

Tom Holert

COSMOPOLITICS

Cosmopolitics points towards the reinvigoration of the planetary sphere of political theory and action in the age of ecological anxiety. It arises out of the realization that the triumphalist rhetoric of cosmopolitanism is out of place in a world in which the cultural and political assumptions on which it rested have been radically

destabilized. The confidence with which cosmopolitanism could assert the validity of an affirmative and progressive political narrative that was destined to eclipse outdated modes of national identity has been undermined by the apparent reversibility of the processes of globalization, both economically and in terms of political consciousness. The cosmopolitical proposition recognizes the desirability of an ambitious reframing of politics that reaches beyond settled categories, borders and territories, but also the practical and philosophical difficulties in recomposing planetary politics on a more inclusive basis.

Even during the rise of globalization in the 1990s, advocates of cosmopolitanism were forced to acknowledge that there was nothing inevitable about the emergence of a global, plural, popular political consciousness as a consequence of increased mobility and interconnectedness, with theorist Pheng Cheah stating that 'an existing global condition' should not be mistaken for an 'existing mass-based feeling of belonging to a world community (cosmopolitanism)' (Cheah and Robbins 1998: 31). In the wake of the global economic crisis beginning in 2008, the material conditions for the production of sentiments of trans-national and post-national belonging have retreated, bringing a retrenchment of cultural parochialism and popular cynicism towards the political motives of global elites and their cultural agents. In place of the accepted rules and restrictions of political rationality based on the interchange between nation-states and citizen-subjects, the cosmopolitical proposal opens out onto what Isabelle Stengers has referred to as the 'unknown constituted by ... multiple, divergent worlds' (2005: 995) and their potential articulations.

The stalling of the cosmopolitan mission, and the mobilization of the cosmopolitical proposition, stem also from

a more fundamental cause. Despite the broadness of the cosmopolitan outlook in comparison to the narrowness of nationalist essentialism, the vision of the cosmos to which it appeals has been revealed as both anthropocentric and ethnocentric. Awareness of the momentous scale of anthropogenic changes to the natural processes of the Planet summed up by the Anthropocene and accelerated by ever-more tangible evidence of climate emergency and species extinction has rendered redundant attempts to think the politics of the cosmos in purely human terms or solely in reference to the Western political tradition. The timeliness of cosmopolitics lies in the potential it offers to open up for discussion the automatic exclusions inscribed in cosmopolitanism, thereby lifting the restriction on imagining a planetary community that is inclusive of all kinds of human and non-human actors.

Cosmopolitics signals the emergence of an expanded notion of politics which, as Bruno Latour has argued, both goes beyond 'give-and-take in an exclusive human club' (2004b: 454) and dislodges unreflecting assumptions about the cosmos as a 'finite list of entities that must be taken into account'. The opening up of the list of entities entitled to participate in cosmopolitical debate could be seen in the rise of a planetary jurisprudence that in the case of the Constitution of Ecuador codifies the rights of Pachamama or nature, while the Swiss Constitution now recognizes the right to dignity of plants and other organisms. The novelty of cosmopolitics as a supra-political project lies in making explicit the connection of humans to other species, but also to entities with a distinct materiality and non-human agency, from rocks and rivers to particles and physical forces.

The ecological urgency of the cosmopolitical proposition can be detected in

Peter Sloterdijk's call for a 'new constitutional debate' involving a 'network of processes' to 'reconstitute the collective of Earth Citizens as a collective subjective in various arrangements'. Such a process, responding to the revival in the Anthropocene of a neo-Hobbesian State-of-Nature, would as he argues necessarily have to take into account 'the cohabitation of the citizens of the Earth in human and non-human forms' (Sloterdijk 2015: 337–9). Cosmopolitics shows the way beyond the business-as-usual consensus around the subject and boundaries of the domain of global politics to tackling the deep-rooted conflict of interest between globalized elites and the planetary poor, who are least well equipped to delay the impacts of climate change. It also reflects recognition of collective, political responsibility on the level of humankind for the transformation of the cosmos from a species-neutral backdrop to an unwitting extension of the human realm.

See also Anthropocene; Planetary; Ecosophy; Earth; Geopolitics; Non-Human Agency; Posthuman Rights.

Maja and Reuben Fowkes

CRITICAL POSTHUMANISM

Critical posthumanism is a theoretical approach which maps and engages with the 'ongoing deconstruction of humanism' (cf. Badmington 2000). It differentiates between the *figure* of the 'posthuman' (and its present, past and projected avatars, like cyborgs, monsters, zombies, ghosts, angels, etc.) and 'posthumanism' as the contemporary social *discourse* (in the Foucauldian sense), which negotiates the pressing contemporary question of what it means to be human under the conditions of

globalization, technoscience, late capitalism and climate change (often, very problematically, by deliberately blurring the distinctions between science fiction and science fact; cf. 'science faction' in Herbrechter 2013: 107–34).

The prefix 'post-' (in analogy with the discussion of the postmodern and postmodernism following Lyotard 1992b) also has a double meaning: on the one hand, it signifies a desire or indeed a need to somehow go *beyond* humanism (or the human), while on the other hand, since the *post-* also necessarily repeats what it prefixes, it displays an awareness that neither humanism nor the human can in fact be overcome in any straightforward *dialectical* or historical fashion (for example, in the sense: after the human, the posthuman). The *critical* in the phrase 'critical posthumanism' gestures towards the more complicated and non-dialectical relationships between human and posthuman (as well as their respective dependence on the *nonhuman*). Posthumanism in this critical sense functions more like an anamnesis and a *rewriting* of the human and humanism (i.e. 'rewriting humanity', in analogy with Lyotard's notion of 'rewriting modernity': Lyotard 1991). *Critical posthumanism* asks a number of questions that address these complications: how did we come to think of ourselves as human? Or, what exactly does it mean to be human (especially at a time when *some* humans have apparently decided that they are becoming or have *already* become *posthuman*)? What are the motivations for this *posthumanizing* process and when did it start? What are its implications for nonhuman others (e.g. the 'environment', 'animals', 'machines', 'God', etc.)?

The adjective *critical* in the phrase 'critical posthumanism' thus signifies at least two things. It refers to the difference between a more or less uncritical or

popular (e.g. in many science fiction movies or popular science magazines) and a *philosophical* and reflective approach that investigates the current *postanthropocentric desire*. This desire articulates itself, on the one hand, in the form of an anticipated *transcendence* of the human condition (usually through various scenarios of disembodiment – an approach (and an entire movement that is best designated by the term ‘transhumanism’) and, on the other hand, through a (rather suspicious) attempt by humans to ‘argue themselves out of the picture’ precisely at a time when climate change caused by the impact of human civilization (cf. *Anthropocene*) calls for urgent and responsible, *human* action.

The other meaning of ‘critical’ is a defence and possibly a re-invention of some humanist *values* and *methodologies* which, in the face of a fundamental transformation provoked by digitalization and the advent of ubiquitous computing and social media, appear to have become obsolete, or to be in urgent need of revision (especially critical methodologies which are related to traditional forms of ‘literacy’, ‘reading’ and ‘thinking’). The question here is how to remain ‘critical’ in the sense of developing reading techniques, forms of conceptualizations and subjectivities that are both self-reflexive and aware of their own genealogies (i.e. able to stay ‘critically’ connected with humanist, and pre-humanist, traditions and especially ‘literal’, ‘literary’ and ‘textual’ approaches).¹

Studies of literature’s twenty-first-century extensions² have questioned the broader resonances of the idea that the literary is currently being ‘overtaken’ by processes of digitalization, globalization and technoscientific change. In this current supposedly ‘post-literary’ moment, a critical posthumanist (and ‘countertextual’) approach is both aware and wary of the

contemporary desire to leave the humanist apparatus of literacy and its central institution of literature, with all its social, economic and cultural-political implications, its regimes of power and its aesthetics behind.

To counter the trend of seeing posthumanism merely as the ‘next theory fashion’, my *Posthumanism: A Critical Analysis* (Herbrechter 2013) takes as its starting point the question as to what extent poststructuralism and deconstruction have anticipated current posthumanist formulations and critiques of subjectivity. This aspect is particularly important with regard to the current discussion about the importance and future role of the humanities. The first academic publications that systematically engage with the idea of the posthuman and posthumanism appeared in the late 1990s and early 2000s (in books and articles by Neil Badmington, Rosi Braidotti, Elaine L. Graham, N. Katherine Hayles, Cary Wolfe and others), all of which approach posthumanism through a more or less poststructuralist or deconstructive lens. They do so, however, by embracing two new aspects: a return to or of the question of technology (as it had been provocatively formulated by Heidegger (1977)) and the question of the future of the humanities.

An increasing part of the academy and the (theoretical) humanities in particular have been embracing this new context to form new, interdisciplinary alliances with the sciences and critical science studies (e.g. with Bruno Latour’s actor–network theory, speculative realism or new feminist materialism). One major aspect concerns the redefinition of the relationship between humans and technology – or the role of the history of ‘technics’ for human (and non-human) evolution. Donna Haraway’s early work on the cyborg (in the 1980s) received the widespread discussion it deserved.

Attempts to rethink the ontological aspect of technology and the political role of technological determinism, however, also look at previous philosophies of technology (especially in Heidegger, Ellul and Simondon), most prominently in Bernard Stiegler's work. In the aftermath of the so-called 'science wars', which highlighted at once the necessity of cultural recuperations of scientific practice and the call for a new dialogue between the sciences and the humanities, the new or 'posthumanities' (cf. the title of Cary Wolfe's influential series with University of Minnesota Press) are set to overcome the traditional 'two cultures' divide at last. This is, however, happening under extremely adverse conditions, namely the material base of an increasingly globalized advanced and neoliberal capitalism, and the transition from 'analogue' (humanist, 'lettered', book or text-based) to 'digital' (posthumanist, 'code', data or information-based) societies, cultures and economies.

The currently emerging 'posthumanities' therefore have to engage with the positive but also the problematic aspects of the transformative potential that a new dialogue or alliance between the humanities and the sciences contains. The focus on the posthuman as a discursive object, on posthumanism as a social discourse and on posthumanization as an ongoing historical and ontological process allows both communities – the humanities and sciences – to create new encounters and test new hypotheses that may lead to greater political and ethical awareness of the place of the human, the nonhuman and their environments (especially in connection with pressing issues like climate change, depletion of natural resources, the destruction of biodiversity, global migration flows, terrorism and insecurity, biopolitics etc.). Basically,

what is at stake is a rethinking of the relationship between human agency, the role of technology and environmental and cultural factors from a post- or non-anthropocentric perspective (Braidotti 2013). Postanthropocentric posthumanities are still about humans and humanities but only in so far as these are placed within a larger, ecological, picture (cf. for example the institutionalization of 'medical humanities', 'environmental humanities' and 'digital humanities'). The latter, in particular, will have to address the role of new and converging media and their social and cultural implications, as well as the proliferation of digital and virtual realities and their biopolitical dimensions (e.g. new forms of surveillance and commodification, new subjectivities and 'biomedia'; cf. Thacker 2004).

Critical posthumanism thus draws together a number of aspects that constitute 'our' early twenty-first-century reality and cosmology and links these back genealogically to their beginnings and pre-figurations within humanism itself (cf. Herbrechter and Callus 2005, 2012).

See also Anthropism/Immanent Humanism; Posthumanism; Decolonial Critique; Posthuman (Critical Theory; Speculative Posthumanism).

Note

1. This is one of the main concerns of the Critical Posthumanism Network, which I co-direct with Ivan Callus and Manuela Rossini; (see <http://criticalposthumanism.net>).
2. See for instance the journal *CounterText* (<http://www.euppublishing.com/loi/count>).

Stefan Herbrechter

DECOLONIAL CRITIQUE

To think and live race is to think and live history in every atom of one's body. Unlike the essentialist stain that haunts concepts of sexual difference, racial difference is purely the effect of violent cultural encounters with differing manners of living. Yet, despite this historically constructed character, we cannot shake it off: we continue to embody race as the damning mark of difference that W. E. B. DuBois named 'hair, skin, and bone'. Decolonial scholarship on race, especially that inflected by queer theory, locates this violent history of racialization as the site of the production the concept and figure of 'the human'. It insists that racialization, a central tool of the colonial scene, drives the emergence of the modern concept of 'the human'. For decolonial critique, racialization is endemic to 'the human', not a pesky by-product or problematic effect of it.

To bring race and racialization into contact with posthumanism is, therefore, not a simple task. As the 2015 Special Issue of *GLQ*, 'Queer Inhumanisms', makes amply clear, the divisions between decolonial, queer scholarship on racialization and scholarship on posthumanism are fraught politically, historically and even ontologically. The co-editors, Dana Luciano and Mel Chen, explain in their Introduction that they chose 'inhumanisms' in an effort 'to recollect and foreground the very histories of dehumanization too often overlooked in celebratory posthumanisms' (2015: 196).

The divide between the two fields, however, is not merely historical: it is ontological.

Racialization, from a decolonial perspective, is not an aberration of history produced by yet another of 'the human's' constitutive exclusions or otherings. Racialization does not run along the same ontological lines as, for example, sexual difference or gender: it is not that the basic mechanism of constitutive exclusion was also applied to non-European bodies and populations in a manner that differed historically from the application to non-male bodies. The project of decolonial critique is not the task of another corrective to the unjustified normativity of the concept and figure of 'the human'. Rather, the founding commitment of decolonial critique is a challenge to the very ontology of 'the human' as an endemically violent conceptual apparatus.

This clear focus on racialization and its anti-black logic as the essential structure of 'the human' particularly distinguishes this scholarship from that of posthuman feminism, with its roots in the debates about the concept of sexual difference. As the essentialist/constructionist debates of the 1990s displayed, the concept of sexual difference lies on the razor's edge of a universalist, biological determinism and geopolitically specified, social constructionism. Emergent out of this tension, posthuman feminism approaches embodiment through the axes of sexual difference, gender binaries and polymorphously perverse sexuality. This work tends to

emphasize the socio-epistemological instabilities of these metrics, focusing particularly on the constitutive exclusion of sexual difference as the 'other' or 'particular'. By historicizing this phenomenon in the seventeenth- and eighteenth-century normalization of bourgeois sexuality, posthuman feminism opens onto the immanent plasticity of embodiment and, ultimately, *zoe* for the posthumanist project. This historical location places it in provocative tension with decolonial feminists, such as Hortense Spillers and Maria Lugones, who argue (with different geopolitical referents) that gender is always already a product of colonial modernity, interpellating only those subjects already in the throes of identification with the figure of 'the human'. The differences between the foci on sexual difference and gender in these critiques remain to be parsed. From the perspective of decolonial critique, however, the effort to undo 'the human' through the axes of either gender or sexual difference still works within the closed economy of colonial modernity.

At a general level, both posthumanism and decolonial critique share a common point of departure – namely, the demand to move through and beyond the figure of 'the human'. The decolonial emphasis on the violent dehumanization endemic to the figure of 'the human', however, orients decolonial scholarship towards a different set of historical coordinates than those assumed by posthumanism. The following is a brief account of these different historical coordinates, which manifest distinct ontologies operative in the two projects.

Posthumanism largely places the figure of 'the human' in the European Enlightenment era of seventeenth-century rationalism and eighteenth-century liberalism. This epistemological-political construction, so the critique goes, birthed a humanism that stakes an unassailable

claim to universalism. In this manner, posthumanism inherits the long traditions of Anglo-American and European feminisms, with their nineteenth-century roots in precisely this problematic eclipse of the gendered character of Enlightenment humanism. Posthumanism, a late twentieth-century emergence, complicates and extends this fundamental critique to the entangled arcs of technological mediation and nonhuman sentient life, valorizing *zoe* and embodiment as the ontological sites of interrogation.

Decolonial theories of racialization, especially those grounded in the post-identitarian epistemologies of queer theory, generally assume one, if not both, of two geohistorical coordinates: fifteenth-century European colonialism and/or nineteenth-century chattel slavery, especially in the United States. The distinctions between these two geohistorical sites are crucial, but I generalize them here as one movement to explain how they both place racialization at the primary and essential origin for the construction of the figure of 'the human'. These geohistorical coordinates thereby instantiate different social ontologies from those assumed in posthumanism.

Decolonial scholarship emerges out of classical postcolonial critiques, such as Frantz Fanon, Aimé Césaire, Edward Said, and also out of slightly later iterations, such as Gloria Anzadúa, Stuart Hall, Paul Gilroy, Sadiya Hartman, Hortense Spillers, Eduard Glissant, Maria Lugones and perhaps especially Sylvia Wynter. It is Wynter who gives the most expansive and emphatically materialist account of the decolonizing of, as she calls the figures, 'Man1' and 'Man 2'. I offer a brief overview of her work as an exemplar of the decolonial critique of Man.

Wynter's work is historically expansive and the full bibliography of her published

work is, as yet, difficult to assemble. In 'Unsettling the Coloniality of Being/Power/Truth/Freedom: Towards the Human, After Man, Its Overrepresentation – An Argument,' Wynter locates the emergence of the problematic figure of Man 1 in the writings of the Renaissance humanists of the fifteenth century, the same century that brings European colonialism to various parts of the globe. Focusing on 'the theosophical knowledge system of the medieval order of Latin-Christian Europe' (2003: 20), Wynter argues that the shift in this period from supernatural causation to natural causation enables and enlivens two other global shifts: the massive expropriation and enslavement of two human groups ('Indos' and 'Negroes'); and the possible rise and development of the physical sciences as a new order of human cognition, which would come fully to fruition in the work of Darwin. According to this same Renaissance humanist 'closed order of knowledge', wherein 'Nature' replaces 'God', the figure of the 'Negro' emerges as the secularized 'name of evil' (2003: 307), leading Wynter to place early definitions of 'race' in Peter Martyr's texts of 1516, with the first attempt at racial classification in the work of Francois Bernier in 1684. The fifteenth-century contemporaneous movements of European colonialism and Renaissance humanism thereby mark the emergence of what Wynter names 'Man1', a complex conceptual apparatus that locks the figure of the human directly into the violence of colonialist racialization. 'Man2' then emerges as the nineteenth-century 'biocentric' concept of post-Darwinian science, building on the late eighteenth-century racializing taxonomies of Linnaeus, that carries the binary violence of Man/Other endemic to the prior theological apparatus into the fully secularized discourses of science and their intertwining with bourgeois capitalism.

Across Wynter's expansive historical arguments, she also develops a radically materialist account of the embodiment of these conceptual apparatus that offers a particular point of contact with threads of posthumanism. Wynter builds on Fanon's invention of sociogeny to argue for a neurochemical account of our embodiment of racialized differences. As she writes in 'Unparalleled Catastrophe for Our Species? Or, to Give Humanness a Different Future: Conversations', sociogenic scripts of symbolic life/death repeat and sediment normative evaluations of our shared social worlds by activating 'the opiate-reward (placebo) and opiate-blocking (nocebo) neurochemical system of the ... uniquely evolved human brain' (2015: 58). This materialist turn towards the neurochemical embodiment of both positive and negative evaluations carried by the conceptual apparatus of 'the human' offers an intriguing bridge to the Deleuzian, Harawayan techno-mediation threads of posthumanism.

See also Afrofuturism; In/Human; Necropolitics; Neocolonial; Postmedieval; Real Cool Ethics; Socially Just Pedagogies.

Shannon Winnubst

DIFFRACTION

'Diffraction' is Donna Haraway's term for a reading method that is neither negatively critical (dismissive) nor reflexive (identity-political). Haraway ([1992] 2004a, 1997) argues against the politics of negation as well as she argues against the politics of reflection. Negation puts the negated on a pedestal and may therefore not be the best feminist reading strategy. For example, negating the work of Bruno Latour for its genderblindness, its neat separation of the

social and the technical and its overlooking of the labour and suffering of laboratory animals does not change the work or do any good for feminism. Instead, a negatively critical evaluation of Latour's scholarship and writing draws more attention to Latour and less to feminism. Likewise, Haraway says that 'reflexivity, like reflection, only displaces the same elsewhere' (1997: 16) and is equally not critical enough. For instance, if I were to reflect on the French philosophy of Michel Foucault, I would first expose my feminism and then I would use what has become of feminism within the confines of my analysis in order to expose Foucault's masculine bias, notwithstanding the fact that both (my) feminism and Foucauldian historical epistemology exceed such expositions! A certain pattern of repetition underlies both negatively critical and reflexive analyses as a dismissive feminist analysis tends to repeat the negated minutely and reflexive feminist analysis does the same by carefully mirroring what a text or other cultural artefact does to a preconceived feminist subject. Both methodologies ultimately leave the negated or the displaced unchanged. Diffractive readings try to circumvent these consequences and provoke change.

Diffraction is first and foremost a reading strategy that does justice to cracks in the academic canon (van der Tuin 2015a). Readings of texts that follow the canon are readings that carefully reproduce the established parameters of academic scholarship. Such reproduction may be caused by negation or reflection. Imagine performing a feminist reading of the work of X. The result is a distancing act: both feminism and the work of X are left untouched because the reading method assumes that feminism and X's work are separate entities and that 'feminism' is a known and stable position (it is either

liberal or Marxist/socialist or lesbian or sexual-difference or...). Diffractive readings take off elsewhere and have differing effects. Imagine accidentally picking up a book written by Y or encountering an artwork of Z. It may very well be that the reader or viewer is interpellated by Y's writing (van der Tuin 2014) or affected by Z's artwork (Papenburg and Zarzycka 2013) before having consciously recapitulated one's position as scholar, one's feminist stance or the makers' canonical representation. This implies that one cannot presume to know when and where scholarship begins, when and how feminism is triggered or how a text or artefact is liked or disliked. The diffractive moment is when such interpellations or affections happen. The surprise of an interpellation or of affect is taken to be a moment of insight that is of importance for the production of knowledge.

Karen Barad (2003, 2007) has worked out the consequences of Haraway's diffraction by furthering the argument that diffractive readings can be made productive for feminist scholarship:

Moving away from the representationalist trap of geometrical optics, I shift the focus to physical optics, to questions of diffraction rather than reflection. Diffractively reading the insights of feminist and queer theory and science studies approaches through one another entails thinking the 'social' and the 'scientific' together in an illuminating way. What often appears as separate entities (and separate sets of concerns) with sharp edges does not actually entail a relation of absolute exteriority at all. Like the diffraction patterns illuminating the indefinite nature of boundaries – displaying shadows in 'light' regions and bright spots in 'dark' regions – the relation of the social and the scientific is a relation of 'exteriority within'. This is not a static relationality but a doing – the

enactment of boundaries – that always entails constitutive exclusions and therefore requisite questions of accountability.

Barad 2003: 803

This quotation demonstrates not only that diffraction has a quantum physical background and is firmly based in the counter-intuitive insights offered by quantum physics. The quotation also makes clear what the outcomes of a diffractive reading of texts are: they expose ‘exteriorities within’. In other words, not only do diffractive readings question the separation of the social and the technoscientific; and the separation of feminist, queer and science studies oeuvres. They also provide insight into the nature of difference *without* a capital D.

Diffractive readers do not care about canonical renderings of texts or of artefacts because they zoom in on how texts, artefacts and human subjects interpellate or affect each other. Instead of submissively following a (counter-)canon, diffractive readers ask how texts, artefacts and humans may inform each other as a result of their preconscious or sub-subjective entanglement. Scribbling ‘cf. Ernst Cassirer’ in the margins of a text written by Gilbert Simondon is a diffractive moment that may have far-reaching consequences. The diffraction may lead to an analysis of how Cassirer and Simondon inform each other, leading to a concept as yet unknown to the philosophy of technology (see Hoel and van der Tuin 2013). Again, in Barad’s terms:

a diffractive methodology is a critical practice for making a difference in the world. It is a commitment to understanding which differences matter, how they matter, and for whom. It is a critical practice of engagement, not a distance-learning practice of reflecting from afar ... We do not uncover preexisting facts about inde-

pendently existing things as they exist frozen in time like little statues positioned in the world. Rather, we learn about phenomena – about specific material configurations of the world’s becoming.

Barad 2007: 90–1

Just like quantum physical interference is not about particles hitting an obstacle or about waves being disturbed by an obstacle but about the pattern emerging from the entanglement of object (like light) and measuring device, the diffractive reading of texts and/or artefacts through one another is about the patterns emerging. These patterns do not depend on canons.

See also Joy; Critical Posthuman Theory; Feminist Posthumanities; Mattering

Iris van der Tuin

DIGITAL CITIZENSHIP

The question of citizenship has been at the heart of philosophical interrogations since at least Plato’s *Republic*. The Enlightenment, with its particular way of connecting rationality, ethics and politics into an integrated whole, has cemented the question as central to our thinking about the relationship between individual and collective, between citizen and government. At the same time, from the Greek banishment of *techne* into the realm of those excluded from citizenship (women and slaves) to the highly critical stance toward technology in twentieth-century philosophy – such as Heidegger, Ellul, Illich and Adorno – there is a ‘devaluation of technology in Western philosophy’ (Frabetti 2011), a distinct uneasiness, if not a downright refusal, to consider technology with the same depth of attention as art, ritual or politics. Digital citizenship thus is a field in which the two come

together as a result of profound changes brought about by the proliferation of the digital, which in turn affects the way we become and express ourselves as citizens.

Politics and Practice

From Lippmann to Habermas and beyond, the argument has been made again and again that there is a close relationship between democracy (to which the notion of citizenship is closely related) and configurations of communication and information exchange. With John Hartley, one can thus approach the question of digital citizenship not so much in terms of individual conduct or participation, but as referring to the question of the ‘infrastructure’ of democracy, or the ‘technologies of democracy’, i.e. ‘the mechanisms through which democracy and the public are created, sustained, and operated’ (Hartley 2003: 269). These mechanisms have been affected by technological change, and quite dramatically so.

On a very immediate level, it has been argued that ‘varied properties [of the internet] enable new forms of participation, which may either change or replicate existing social relations’ (Mossberger, Tolbert and McNeal. 2008). But on a more general level, our sense of self, our ways of becoming, our modes of expression, our practices of relating to others, and so forth, are equally affected, and these elements are central to the development of the political desires that drive us.

The ‘democratizing’ effects of the internet have been discussed at length, all too often in simplistic terms, pitching one set of facile generalizations against another. Between the announcement that ‘[t]he Net interprets censorship as damage and routes around it’ (attributed to John Gilmore) and the assessment that the ‘decline of the quality and reliability of the information

we receive [is] distorting, if not outrightly corrupting, our national civic conversation’ (Keen 2007), we find numerous attributions of direct causality – such as in the case of the Arab Spring – between new media and varying states of culture and politics.

On the level of *political practice*, which includes forms of government and governance, non-governmental work, voicing of consent or dissent, campaigning, resistance, value production and identity formation, new media may not be a sufficient ‘cause’, but they are nonetheless instrumental to actors and social movements such as the Arab Spring and enable new forms of activism such as hacktivism (Coleman 2013), ‘leaking’, online campaigning, citizen journalism or ‘crowdsourcing for democracy’ (Aitamurto 2012) and *sousveillance* (‘watching the watchers’).

As a result, political institutions, and in particular the governments of traditional nation states, appear weakened by these new forms of communication and participation. However, if Facebook and Twitter are playing their role in political dynamics, it is necessary to understand these platforms themselves as *institutions*, i.e. as ‘multifaceted systems incorporating symbolic systems, cognitive constructions and normative rules’, which ‘provide stability and meaning to social behavior’ (Scott 1994). In this sense, we need to interrogate the affordances of new media platforms and maybe go as far as considering software as an institutional arrangement in its own right (Rieder 2012a). With Hartley (2003), we can describe these platforms as ‘technologies of the public’ that are shaping public discourse, for example by introducing socio-technical regimes of ‘issue visibility’, where issue hierarchies are often set by combinations of crowds and algorithms. These questions can be brought

into contact with notions of the public sphere, in relation to Habermas or not (Calhoun 1993).

These new public spheres and discourses are characterized by the emergence and transformations of modes of expression and communication, as well as the structuring of dissemination, debate and production of meaning through online platforms (YouTube, Instagram, Twitter, Facebook, etc.) and the multidimensional modes of circulation between them. Mobile telephones allow for making photos and videos on the go, their manipulation through editing or visual filters, instant sharing, commenting and complex forms of ordering or collection-making. Other visual-narrative formats, such as information visualization, web documentaries, etc. add to the proliferation of *forms*, the core characteristic of which is their embeddedness (hyperlinks, related items, comments, etc.) and the blurring between reception and production (Kessler and Schäfer 2009).

The Making of Digital Citizens

New visual and textual forms of (self-) expression and participation affect not only the political landscape as such, but also the development of political and civic subjectivities. In this respect, citizenship is frequently discussed in connection with youth and, in particular, with the question of how to 'produce' citizens, i.e. how to make sure that young people are learning the ethos and skills required for civic and political participation. The concept is often discussed in similar terms as the now less current notion of the 'digital divide': use, and in particular competent use, defines an in/out logic, where the often explicit goal is to bring as many people as possible into the fold. Citizens are, in a sense, simply understood as the functioning units of a liberal

society: 'Digital citizens are those who use technology frequently, who use technology for political information to fulfill their civic duty, and who use technology at work for economic gain' (Mossberger et al. 2008).

However, does use of technology imply participation or engagement in a political sense? The larger social context and the actual ramifications for participation and engagement are complex and it is difficult to generalize findings focusing on individuals. While one can indeed point to studies indicating correlation between frequency of internet use and civic engagement, larger trends undermine overly optimistic conclusions: 'why is it that Internet use is at an all-time high while civic engagement overall continues to decline?' (Greer 2008).

Engaging with this issue begins with the critical questioning of terms like 'digital native', where technological competence is equated with growing up in an environment where digital devices are readily accessible. The question of digital citizenship in relation to youth – and why not considering older people's activism like the Spanish seniors organizing in the 'iaio-flautas' movement¹ – needs to go beyond the question of access and basic skills in order to interrogate people's 'capacity to project identities in collective spaces' (Bennett 2007) and to develop an idea of how they engage political practices and imaginaries without ignoring the affordances of the medium. This includes the question how movements like Anonymous may function both as a gateway to political activism and as an avenue for *slacktivism*, the low-threshold illusion of actual political participation (Coleman 2013).

Infrastructure of Citizenship

Digital citizenship, understood in a wider and more fundamental sense than simply

familiarity and daily use, requires us to interrogate technology as a place where power and knowledge find mechanized expressions, and politics are circumscribed by particular interfaces, information architectures and modes of ordering. This means not only analysis and critique of the platforms themselves, not only analysis of particular political moments that link to them, but also reflection on the design and production of tools that shape human relations and experience – in other words, we need to interrogate the infrastructure of citizenship and politics.

This needs to go hand in hand with a critical distance from what Morozov (2013) calls ‘solutionism’, the belief that every social problem can and should be solved by technological means. It is worthwhile to remember that ‘not all political actors are individual human agents: a wide variety of agents, or “actants” in Latour’s terminology, have political effects while not being political subjects in any conventional sense’ (Karatzogianni and Schandorf 2012). We need not go as far as thinking that, by producing particular software designs, we are ‘coding freedom’ (Coleman 2012), but if software has become a crucial element in political practice, the time for ‘embedding the humanities in engineering’ (Fisher and Mahajan 2010) has come.

New media environments have not only accommodated forms of political practice that are, ultimately, directed towards emancipation and political participation, they are also sites and agents in more brutal struggles, including phenomena such as state-sponsored censorship, cyberwarfare and the fully digital theatre of war of which the much-discussed drone ships are but one element. The notion of a ‘morality of things’ (Verbeek 2011) never becomes as tangible, as *insisting*, as in the practice of designing a technical object that is never a mere description, but always

(also) a prescription. With Hume, one could say that it forces us to leave the ‘is’ for the uncomfortable domain of the ‘ought’. Here, we will need a new kind of ethical thinking that is up to the challenge (cf. Braidotti 2013).

See also Algorithmic Studies; Metadata Society; Organization in Platform Capitalism.

Note

1. See <http://www.iaioflautas.org>

Bernhard Rieder

DIGITAL PHILOSOPHY

The expression *digital philosophy* is used to denote a number of theoretical perspectives concerning the ultimate nature of reality. Advocates of digital philosophy maintain, via a variety of different and often irreconcilable voices, that the universe is fundamentally discrete. That it is, in fact, digital. The digital, according to these views, is a universalizing ontological principle: a principle that is believed to be operative well beyond the technological constraints of computational media, and which is held to characterize both mental states and physical entities as informational and, therefore, as also computable.

The origin of digital philosophy can be traced back to the work of the computer pioneer Konrad Zuse. In the late 1960s, Zuse put forth the hypothesis of a computation-based physical universe. Zuse believed that ‘objects and elementary dimensions of physics must not be complemented by the concept of information but rather should be explained by it’ (Zuse 1993: 176). Focusing on the operations of cellular automata,¹ Zuse (1970) extended

the latter's discrete model of organization to the structure of the cosmos, and advanced the thesis that the entire universe is nothing but the output of a deterministic computation. Today, digital philosophy draws in part on Zuse's insights to develop a diverse body of theories that hold that there is a fundamental informational and quantitative principle underlying the universe, which processes the latter's evolution in real time.

To a greater or lesser extent, this sort of Aristotelian prime mover has been identified in terms of a computational mechanism. Some see it as a discrete system similar to a cellular automaton (see Fredkin 2003; Wolfram 2002); others view it as a quantum computational process (see Lloyd 2007; Deutsch 1997), or as a universal Turing machine (see Schmidhuber 1997). Generally, however, all of these perspectives consider information to be more fundamental than matter and energy. The notion of computation, in turn, comes to the fore as a concept that supersedes both mathematics and physics: it is viewed as a principle or as a cause, or indeed as 'a physical activity' (Toffoli 1982: 165), that might be able to account for what the theoretical physicist John Archibald Wheeler has called 'it from bit' (1990: 310).

Digital philosophy maintains that, 'if our universe is digital, then all the things in it are too, including human bodies and brains' (Steinhart 2004: 183). It therefore holds that computation is not just a tool to simulate reality, but rather the ontological ground of reality itself. This claim is advanced explicitly by the computer scientist Edward Fredkin, who is perhaps one of the most radical proponents of digital philosophy (and who gave it its name). For Fredkin, physical laws are nothing but algorithms or on/off instructions, and subatomic particles are nothing but units of binary information. His Finite

Nature hypothesis (see Fredkin 1992) presumes that all things in nature, along with their properties, can be shown to be discrete. Consequently, Fredkin argues that continuity and infinity are just illusions, and that the past, present and future of the universe all evolve in a step-like fashion. In this respect, it is possible to say that digital philosophy proposes an ontology in which computation is seen as a sort of lowest common denominator for all that exists. It is possible to say, therefore, that at the core of digital philosophy one finds not only the systematic quantitative transformation of the qualitative, and the belief that the immaterial will lead to the material, but also a profound re-assessment of the relation between simplicity and complexity.

This is evident in the work of Stephen Wolfram (2002), who uses cellular automata to demonstrate that, by following basic discrete rules, very simple computational systems are capable of generating increasingly complex levels of behaviour over time. Wolfram extends these observations to the universe itself, which he sees running on similar simple (and computable) rules that gradually construct complex results. In this sense, Wolfram defines his Principle of Computational Equivalence as explaining empirical phenomena via the most fundamental hypothesis: everything builds up from a simple level, and when a system has reached its own point of maximum complexity, it should be considered to be as complex as anything else. Wolfram maintains that this principle opens up a 'new kind of science' (Wolfram 2002). In fact, for him it is a 'new rule of nature' (ibid.: 720) with 'a quite unprecedented array of implications for science and scientific thinking' (5). Epistemologically speaking, the principle aims to prove the existence of an upper limit not only on the complexity

of possible real-life computations, but also on the heuristic capacities of science. Our most powerful computational tools, then, are just as powerful as the natural phenomena that they are intended to model. In Wolfram's view, however, it also follows from the Principle of Computational Equivalence that the natural is not superior to the artificial, because algorithms can do anything that life does.

Digital philosophy is an orientation in contemporary science, yet its consideration of the physical nature of beings aims to say something about the metaphysical nature of Being. From a historical perspective, because of its search for an origin or a unique source of existence and becoming, this digital metaphysics recalls pre-Socratic philosophies. Moreover, when tracing a genealogical trajectory for digital philosophy, one should also include Pythagoras' belief that number is the unifying principle of the real, Democritus' atomism, Zeno's demonstration of the contradictions of continuity, and Galileo's description of the universe as written in a code that needs to be deciphered. However, there can be little doubt that the most important philosophical reference for digital ontologists is Leibniz. Despite its many variants, digital philosophy can be seen as a contemporary re-elaboration of Leibniz's monadology of discrete and self-contained units of being. Digital philosophy's monist metaphysics is meant to offer an answer to the Leibnizian question of 'why is there something rather than nothing' (Leibniz 1989a: 210). It does so by proposing, in a Leibnizian spirit, a world that is 'the simplest in hypothesis' but 'the richest in phenomena' (Leibniz 1989b: 39).

The mathematician Gregory Chaitin has openly acknowledged that 'digital philosophy is Leibnizian' (2007: 236). Chaitin pays tribute to Leibnizian ideas on complexity and randomness in his

Algorithmic Information Theory, arguing that the complexity of a law is to be measured by comparing it with the complexity of the data that this law attempts to account for (see Chaitin 2006b and 2006c). According to Chaitin, a rule must be simpler than the outcome of its application. In this respect, a law truly explains something only if its input is concise whilst its output is not. Chaitin consequently applies his algorithmic theory of information to biology (for example, he makes DNA the simple input that generates a complex organism as its output; see Chaitin 2012), and to the development of everything that exists. 'All is algorithm,' he claims (2007: 235), for the essence of objects is to be conveyed by the shortest program able to express that object's informational content. In this view, it is computational processing, rather than mathematical equations, that can best describe the real: in Chaitin's theory there is no formal reduction to static and eternal perfection, but rather an operative compression, which leaves room for the comprehension of the dynamism of empirical phenomena.

Digital philosophy might well be 'a new way of thinking about how things work' (Fredkin 2003: 189), yet many developments in science and technology have made this digital cosmology possible. Digital philosophy can be seen to have grown out of the twentieth-century technoscientific belief that information is essential to the universe, and to attest to the fact that the computer is 'a new and fundamental philosophical concept' (Chaitin 2006b: 11). Whether this concept should be taken as a metaphor or (as digital philosophy maintains) as revealing universalizing metaphysical truths remains open to debate.

One possible objection to digital philosophy follows from considering that other

technoscientific developments have, in the past, also introduced foundational modes of interpreting the universe and everything in it (for instance, in terms of clockwork mechanisms or electric impulses). Similarly, the philosophical soundness, as well as the technocultural usefulness, of systematizing both physical reality and cognition into what is ultimately a pancomputationalist framework, according to which every process is computation, is questionable, and indeed questioned.² Perhaps one of the greatest contributions of digital philosophy is that of assigning to computation an onto-epistemological relevance and operativity, beyond those of mathematics and physics. This contribution might help a posthuman society to recognize, and engage with, the potentiality of computational systems – systems that are so fundamental to that society – to generate being and knowing. However, whether this computational being and this computational knowing are all that there is to be and know remains a question that should still be critically addressed. To do so vis-à-vis the constructions of experience and subjectivity that the posthuman condition engenders involves considering that digital philosophy might well find its place in the posthuman predicament in virtue of the profound reassessments of agency and nature that it affords. However, according to the views proposed by the authors mentioned in this essay, it is neither ‘matter’ nor ‘life’ (important concepts in posthuman elaborations of experience and subjectivity) that ultimately account for these reassessments of agency and nature, but rather a fundamentally mechanical category such as computation.

See also Algorithm; Algorithmic Studies; Computational Turn; Informatic Opacity; Execution; Digital Citizenship;

Extended Cognition; Plasticity; Postimage; Robophilosophy.

Notes

1. First studied in the 1950s as a model of biological organization, a cellular automaton consists of a collection of cells (i.e. spaces) on a line or a grid. A cell might be black or white; its colour changes via a set of discrete steps, which are determined by simple rules based upon the states of the adjacent cells.
2. See, for instance, N. Katherine Hayles’ investigation of the ‘Regime of Computation’ (Hayles 2005) in science and culture, and the argument ‘against digital ontology’ proposed by the philosopher of information Luciano Floridi (2009).

M. Beatrice Fazi

DIGITAL RUBBISH

Rice might seem to be an improbable object to link to digital media technologies. Yet in areas of Asia where e-waste recycling occurs, high levels of heavy metals, including cadmium and lead, have been found in rice samples, which have been contaminated through polluted water and soil (Fu et al. 2008). What appear to be dematerialized and harmless devices, digital media technologies instead are material and toxic entities that generate waste across their lifespan. At the same time, pollution from electronics remakes ecologies, organisms, bodies – and even food crops. The residues from digital media technologies accumulate as material effects that unfold through posthuman registers, since the strata that electronic waste would contaminate, and the entities that would be affected by these new

material-ecological arrangements, exceed a human-centric approach to technology or ecology. The wastes from digital media give rise to new and posthuman technologies in the making.

'Digital rubbish' is the term I use to investigate the particular material processes and modes of mattering characteristic of electronic waste (Gabrys 2011). The common perception of digital technologies is that they are relatively light and resource-free, and that they are dematerialized in relation to other technologies and industries. However, electronics require considerable resources for their manufacture, and from the mining of minerals and metals for the essential operation of microchips and mobile phones, through to the use of numerous chemical solvents to etch circuit boards, to the increasing rates of consumption of electronics as well as the electronicization of environments, homes and transport through the 'Internet of Things' (Gabrys 2016b) and the increasing disposal of short-lived electronics, whether for scrapyards, repair shops in developing countries or landfills, it is evident that the modes of mattering in which electronics are entangled generate intensive and extensive environmental, political and social relations.

From sensors to smart grids to mobile phones, electronics are remaking the planet. These 'techno-geographies' (Simondon 1958) generate new materialities and milieus in and through which human and nonhuman processes unfold (Gabrys 2016a). Such electronic techno-geographies might also be approached as forming distinct posthuman conditions, where the particular concretizations of technologies, humans, nonhumans and milieus are not centred on or through a pre-existing human subject, but become constitutive of the possibilities for experiencing subjects and for new worlds to

form. Electronic technologies inform the types of relations, practices, experiences and becomings of human and non-human entities.

At the same time, it is not just through the making but also through the breaking of electronics that particular worlds come into being. Electronic waste is the fastest-growing waste stream, since given the rapid obsolescence of electronics the number of discarded technologies proliferates in equal measure to the new devices introduced. While 'mattering' is often approached as a process of things coming into being (Barad 2003; cf. Dolphijn and van der Tuin 2012), mattering also occurs through the dissolution of things and the residue and fallout left behind, as well as the new fossils that are formed (Gabrys 2006, 2011). From these remainders, new material conditions, human and non-human entities, as well as environments and techno-geographies form.

While the infrastructures, resources and material requirements that undergird digital media technologies are often overlooked, a posthuman encounter with these technologies then indicates that these are not seemingly dematerialized gadgets bound only to human users, but rather are expanded material-ecological concretizations and processes. Digital media technologies are material in multiple ways, but waste reveals most poignantly just how material these devices are. Digital technologies create wastes across the lifecycle of manufacture, consumption, repair and disposal. These wastes are toxic, difficult to classify, leaking and amorphous, relatively unseen, disproportionate in comparison to the size of the devices, productive of environmental and labour injustices, contaminating of bodies, carcinogenic, and polluting of soil and aquifers.

As this sprawling yet far from comprehensive list of electronics-related wastes

indicates, the modes of mattering to which digital media technologies contribute are multiple. Which is to say that digital rubbish is generative of more than just obvious material remainders in the form of discarded hard drives and computer monitors. Instead, digital rubbish is generative of processes of materialization that splinter off in multiple directions depending upon whether electronics are being manufactured, minerals are being mined for their internal workings, or cast-off personal computers are circulating to landfills or processing plants. To focus on these material aspects of digital rubbish is to commit to a particular material-political and ecological construction (Stengers 2008) of the effect of these technologies.

While electronics continue to proliferate, and seem to offer up newfound levels of speed, efficiency and productivity, they at the same time generate material-political and environmental problems that are distinctly posthuman in character.

Electronic wastes form new ecologies and new materialities that together also produce new organisms and relations, which can be harmful in their effects (as the rice contaminated with heavy metal at the beginning of this entry indicates). Digital rubbish then suggests not only that we might attend to the overlooked materialities and material relations of these technologies, but also that we develop an expanded approach to these materialities that does not settle on a fascination with the ruins of consumption, merely, but that creates new material explorations and material practices that address the splintering and complex inputs, outputs and posthuman transformations that accompany our techno-ecological digital lives.

See also Mattering; General Ecology; Obsolete Technologies; Noise.

Jennifer Gabrys

E

EARTH

The Earth is a planet, of an age of about 4.54 billion years and defined by its geological formations, density, biosphere, hydrosphere and an atmosphere that sustains life. It is more than a world for humans and defined by its life-sustaining conditions and its planetary relations (Woodard 2015). On a planetary level, it is one complex dynamic system where biosphere, atmosphere and many of the geological spheres interact; on an extra-planetary level it is as dynamic, part of the gravitational pull, periodic rotation, cosmic rays and the radiation of the sun. Buckminster Fuller called it 'spaceship earth', marking the speculative beginnings of post-planetary design: 'We are all astronauts' (Fuller 1969: 14), who spin in space travelling at 60,000 miles an hour, in the midst of rich non-human life as well as the intensive relations to other planets and the sun.

The Earth is also a complex ecosystem where one should never mistake humans to be the centre of action; they are merely one part in a larger loop of processes. One way to refer to it is by way of a 'holarchy arisen from the self-induced synergy of combination, interfacing, and recombination' (Margulis and Sagan 1995:18).

Besides the life of the organic and the inorganic spheres, it is also a mediasphere – by which we don't have to think only of the Jesuit fantasies of the immaterial reality of cognition such as Teilhard de Chardin

did – or what cyberculture then rehashed with a dose of Silicon Valley excitement – but the different visualization systems that give us operational representations of the planet. This is the view of the Earth since the *Vostok I* space flight in 1961 carrying: the first human to orbit the planet and able to describe the ground-detached view. It's the Earth that features on the cover of the first *Whole Earth Catalog* in 1968, and on the inside pages hailing the imagery of the satellite era: the necessary coffee table book of 243 NASA images, in full colour, from the Gemini flights in 1965 – for only \$7. The Earth furnishes the home.

Our understanding of the Earth is mediated by a variety of representational techniques and is itself a product of the technological era. 'They alone shall possess the earth who live *from the powers of the cosmos*', quoted Walter Benjamin (2008: 58) in his short text 'To the Planetarium' from 1928, analysing technological ways of organizing the *physis* – both the gaze upwards, and from up there, back downwards. The satellite-based images of the Earth since the 1960s and leading up to the famous Blue Marble of 1972 (the *Apollo 17* flight) mark subsequent examples in the series of images that define the Earth from space. The escape velocity (Virilio 1997) that allows accelerating objects from aeroplanes to spaceships to leave the Earth's gravity-bound surface is also what then allows us to see the Earth from above. The old etymology of the Earth as *eorþe*, referring to something different from the

heavens and the underground, gives way to a dynamic of vectors where the Earth becomes defined from the heavens. The energetic powers of acceleration transform into the visual survey from above. As Fuller puts it, writing in the late 1960s, 'However, you have viewed more than did pre-twentieth-century man, for in his entire lifetime he saw only one-millionth of the Earth's surface' (Fuller 1969). This media-enhanced understanding of the Earth seeps into the biological work of Margulis and Sagan even, when they narrate the new metamorphosis of visual epistemology that this technological thrusting and imaging brings about. It brings forth an imaginary of the orbital that is shared by satellites and astronauts: 'As if floating dreamily away from your own body, you watch the planet to which you are now tied by only the invisible umbilicus of gravity and telecommunication' (Margulis and Sagan 1995: 18). They use such images and narratives to contribute to the idea of a holarchic view where the human is part of the micro- and macrocosmos. For them, the event is a sort of a planetary-level mirror image that carries Jacques Lacan's concept from babies to space: to perceive 'the global environment' as the 'mirror stage of our entire species' (ibid.).

Much more than an echo of a psycho-analytic stage for the planetary design, the mediated vision turned back on the Earth itself was instrumental to a range of political, scientific and military considerations. Seeing the Earth from space was one such thing that had an effect on climate research (also impacted by nuclear testing; see Edwards 2010). It had an effect on military planning and geopolitical evaluation. It opened up again a holistic view of the planet as one, although at the same time as a complex system of a non-linear kind. It contributed to a variety of cultural moods and movements. Even the gaze

to the otherworldly away from the Earth was a way to sharpen the focus on the planet but the technological gaze toward deep space with telescopes such as Hubble was never just about space and the interplanetary.

Geographical surveys benefited from the developed lenses and image processing of satellite-enabled remote sensing (Cubitt 1998: 45–9). The perspective back to the Earth has enabled the fine-tuning accuracy of corporate digital maps such as Google Earth and a massive military surveillance system too.

The Earth is constantly targeted by satellites and remote sensing systems such as the Planetary Skin Institute. The institute is one among many systems that offer a polyscalar view of a multiplicity of processes for analysis. It boasts the ideal of reading these as 'scalable big data' that benefits communities and can 'increase, food, water, and energy security and protect key ecosystems and biodiversity' (quoted in Bishop 2016). Alongside such systems as Hewlett Packard's Central Nervous System for the Earth (CeNSE) it creates real-time surveillance systems that intend more than mere observation. As Ryan Bishop (2016) argues, these are massive level systems for constant data-based interpretation of the various scales of the Earth that indeed define a specific corporate-security angle to the planet.

Our relations with the Earth are mediated through technologies and techniques of visualization, sonification, calculation, mapping, prediction, simulation and so forth: it is primarily through operationalized media that we grasp the Earth as an object of analysis. Even the surface of the Earth and geological resources used to be mapped through surveys and field observation. But now this advances through remote sensing technologies (see also Parikka 2015). One can argue that they are in a way

extensions of Leibniz's universal calculus, which offered one way to account for the order of the Earth, including accidents like earthquakes (such as the infamous one in 1755 in Lisbon). But as the architect-theorist Eyal Weizman argues, this calculation of the Earth is now less organized according to the divine order of the Christian deity and more about the 'increasingly complex bureaucracy of calculations that include sensors in the subsoil, terrain, air, and sea, all processed by algorithms and their attendant models' (Weizman, Davis and Turpin 2013: 64). Also practices of meteorology are to be understood as such cultural techniques and media operations that order the dynamics of the sky as analysable data. The terrestrial opens up through what circulates above it, the atmosphere becomes a way to understand the ground and the orbit is where the understanding of the Earth begins by way of massive data-driven remote sensing systems. The *nomos* of the Earth that defines its geopolitics is one that reaches out to the heavenly spheres as much as to the data-intensive operations of multiple scales (see Bratton 2015).

See also Anthropocene; Anthropocene Observatory; Four Elements; General Ecology; Geomythologies; Terrestrial; SS = Security/Surveillance; Medianatures.

Jussi Parikka

(MATERIAL) ECOCRITICISM

'We need to make some connections between literature and the sun, between teaching literature and the health of the biosphere' (Rueckert 1996 [1978]: 109). With these words, coming as an outburst of discontent for the absence of *bios* from literary criticism, William Rueckert was adding a crucial signpost in the direction

of the ecological humanities. It was the end of the 1970s, and until then the planet's bio-geo-chemical cycles, non-human beings, elements, the Earth and the Sun, had noticeably been the 'stone guests' of literary studies. Almost consistently, they were treated as *subjects* but bereft of subjectivity – *symbolically* present but absent as concrete entities, material actors. Still, Rueckert's point was, the world in which we teach and study literature, the world in which literature is made, is the same world in which humans, along with innumerable other species and beings, live. What physically affects this world, affects all the activities happening in it, including our intellectual and cultural productions. Even more, all these cultural productions do not spring out from the void, but *emerge* in the process of our evolution as living things. And so, like the simplest one-cell organisms, this expression of life that we call 'literature' ultimately depends on the energy provided by the sun; like them, it is intrinsically at home in the biosphere.

A critical practice meant to understand the role of literature 'in an immensely complex global system in which energy, matter, and *ideas* interact' (Glotfelty 1996: xix), ecocriticism is an incitement to consider 'culture' not as apart from 'nature', but to see nature and culture, world and text, as mutually permeable. In its numerous methods and forms – encompassing or intertwining with feminist approaches and nature writing analyses, animal humanities and biosemiotics, environmental justice and postcolonial studies, petrocriticism and 'toxic discourse' – ecocriticism invites us to see how world and texts are connected, how they meet and eventually combine.

This can mean many things. For example, it means to examine how literary creations mirror the ecologies of the 'outside world', or how they culturally respond to the crises

affecting these ecologies. But it can also mean another interesting thing, namely, that the world itself becomes a *text* in which these crises, along with all the crossings of nature and culture, are scripted. This idea of the 'world as a text' is not to be interpreted in the radical deconstructionist sense, implied by Derrida's often-misunderstood assertion there is no '*hors-texte*'. Rather, it suggests that the world's complexity can be seen as a story emerging from the process of becoming-together of nature and culture – and that it is only thinkable as their inextricable co-emergence: *natureculture*.

Based on these premises, the encounter of ecocriticism with posthumanism is a coherent upshot. As Serpil Oppermann writes, 'With their intersecting stories and theories, posthumanism and ecocriticism have something in common: they introduce changes in the way materiality, agency, and nature are conceived' (Oppermann 2016). That this is necessarily confluent with a vision that, like the posthumanist view, is meant to overcome our 'historic' solitude, is palpable: in line with posthumanism, in fact, ecocriticism and the literary imagination it heeds augment the population of our cultural world, relocating the human in a wider web of connections by staging a 'performative metaphor that allows for otherwise unlikely encounters and unsuspected sources of interaction, experience, and knowledge' (Braidotti 2013: 38). Therefore, just like the posthuman does not erase, but rather *completes* the picture of the human by situating it in a relational ontology of '(fractious) kinships' with the nonhuman (Bennett 2010: 112), ecocriticism tries to offer a more realistic picture of our cultural practices by taking them *beyond* their alleged distance from the natural world.

The reconsideration of materiality, agency and nature becomes even more radical with *material ecocriticism*, a theoret-

ical development of ecocriticism that, following the onto-epistemologies of the new materialisms, takes material relationships as its objects of enquiry (Iovino and Oppermann 2012, 2014a). 'Material relationships' refers here not to the mere materiality of substances, processes and things, but to the entanglements of bodily and discursive relationships that constitute our life, both socially and biologically. 'Matter' is here regarded in two basic aspects: first, as formative and creative; secondly, as interlocked with meaning and with discursive practices (e.g. power, race, gender, class, ethnicity, identity, justice, etc.). Material ecocriticism is therefore a perspective focusing on the corporeal dimension of human and non-human agents, phenomena, collectives and environments, both in their reciprocal and meaning-producing permeability, as well as in their cultural representations and social perceptions. As a consequence, another important characteristic of material ecocriticism is that it extends the focus of interpretation beyond the conventional categories of text. Not only does it analyse literary texts representing, for example, situations of environmental risk, but it also sheds light on the way the ecologies of risks are inscribed on material realities. Toxic bodies, polluted ecosystems and the various 'landscapes of risk' in their multiple aspects become, in this sense, corporeal texts which express the material forces and discursive practices at work in a society's natural-cultural dynamics. *Diffracted* through the prism of the new materialisms, thus, ecocriticism investigates matter not only *in* texts but also *as* a text, contending 'with the vexing sites where figures, narratives, concepts, and histories bear the marks of their worldly entanglements' (Alaimo 2015: 300). In this perspective, the matter of the world is read as a 'storied matter': an eloquent text emerging from the concurrence of material-discursive forces

and expressing the interactions of human and non-human actors. A *material* ecocriticism becomes in this way an attempt to elicit the implicit message of this worldly textuality, using literary representations as prisms to possibly bring out the predicaments of the more-than-human collectives in which our lives are embedded.

A key role is played by the concept of diffraction, here employed to read concepts and bodies 'through one another in ways that help illuminate differences as they emerge' (Barad 2007: 30). As Karen Barad suggests, in order to think the natural and the cultural together, without 'holding either nature or culture as the fixed reference for understanding the other', we need 'a diffraction apparatus' (ibid.). Material ecocriticism's objective is that of working as a 'diffraction apparatus' to see these entanglements; it wants to act as a critical lens that enables us to think the natural through the cultural and the cultural through the natural, reminding us of the 'compositional' structure of our world (Latour 2010a) – a *common* world of manifold beings and alien affinities, a 'pluriverse ... traversed by heterogeneities that are continually *doing things*' (Bennett 2010: 122). The concept of diffraction also considerably affects the idea of interpretation (Iovino 2015). In fact, just like the presence of the experimenter contributes to determine the behaviour of the subatomic particles in a quantum experiment, the interpreter's presence contributes to the agency of the interpreted text (Oppermann 2015). Even if matter is *per se* endowed with agency, the *narrative* agency of matter acquires its meaning and definition chiefly through a reader. This practice of 'reading' is our participation in the world's 'differential becoming' and is itself responsible for crafting further levels of reality; it is, as Wendy Wheeler says about the processes of semiosis and inter-

pretation which characterize life, 'fed back into [the] world ... producing new layers or strata of understanding' (2008:154).

Seen in this light, 'interpreter' has here two meanings, which are complementary to one another: the first is 'reader'; the second is 'actor'. Interpreting their objects, ecocritics *read* them into being: they literally voice their objects, contributing to create narratives about them, also emphasizing that the world's textuality is a reciprocity through which human and non-human agents are constitutive of the reality we know. But ecocritics *act*, too. They carry on a more or less explicit (in any case, inescapable) form of cultural activism. There is, in other words, no neutrality in experiencing, knowing and telling a story: if, as Barad again says, 'we are a part of that nature that we seek to understand' (Barad 2007: 67), the way we exhibit this understanding belongs in the process of becoming of this very reality. Every interpretation is therefore an act of mediation between text and cognition, essential to the *use* of such text: in the congealing of discursive and material factors which originate reality in all of its forms, interpretive practices are 'a material practice for making a difference' (Barad 2007: 381). This process has ethical and cognitive outcomes, in that it not only relocates the horizon of human action into a more complex and interconnected geography of subjects and forces, but also enables ways of seeing that compel new posthuman ethics and less destructive behaviours. To *read* bodies and landscapes as the storied embodiments of countless intra-acting agencies – pollutants, political choices, non/human creativities, and natural dynamics – might indeed reveal unexpected proximities which prompt us to redesign the maps of agency and responsibility, thus creating a deeper awareness in matter of 'sustainability'.

Like its consonant approach 'elemental ecocriticism' (Cohen and Duckert 2015a),

material ecocriticism discloses an attempt to think the world ‘disanthropocentrically’, to use Cohen’s insightful coinage (2013b: xxiv). To ‘anthropo-dis-center’ our sight means to literally swerve our priorities, liberating the world’s bodily natures from the discursive – and material – delusions of human-centred narratives. In our ‘post-geological’ epoch – call it Anthropocene, Plantationocene or Capitalocene (Haraway 2015a, 2015b) – the critical tools of (material) ecocriticism can be usefully complicit in the ‘joint efforts and collective imaginings’ (Braidotti 2013: 197) necessary to this veering move.

See also Diffraction; Ecomaterialism; Mattering; Naturecultures; Neo/New Materialism; Ontological Turn; Storied Matter; Trans-corporeality; Literature of Liberation; Material Feminisms; Posthuman Critical Theory.

Serenella Iovino

ECOHORROR

Ecohorror is a relatively newly delineated subgenre of horror that nevertheless has deep roots in the genre. If horror is a genre about fear, concerned with exploring what frightens us and perhaps temporarily exorcising or taming that fear, ecohorror is a genre that deals with our fears and anxieties about the environment. It grows out of and includes narratives that have been referred to, variously, as natural horror, creature features, and ‘nature strikes back’ narratives, in which the central narrative is frequently one of some element of the natural world attacking humanity. Classic examples of this narrative include *Them!* (1954), in which spiders mutated by atomic testing in the New Mexico desert must be defeated, Alfred Hitchcock’s *The Birds* (1963), in

which birds attack humans for no discernible reason, and Steven Spielberg’s *Jaws* (1975), in which a great white shark terrorizes a New England coastal community, also with no obvious reason. While *Them!* presents its creatures as the direct result of human intervention, *The Birds* and *Jaws* present their attacking animals simply as instances of nature’s Otherness. More recent examples of this type of ecohorror narrative can be found in creature features from the Syfy Channel and low-budget production company The Asylum, including, for instance, *Mega Shark Vs. Giant Octopus* (2009), *Sharktopus* (2010) and *Sharknado* (2013). The subgenre isn’t just about sharks, of course, although sharks (whether modern or prehistoric) are a popular choice. Other modern examples feature piranhas, spiders, birds, crocodiles or alligators, bears, rats, snakes, and sometimes even bugs.

Many of the modern creature features are campy and difficult to take seriously, but they nevertheless reflect real anxieties about the natural world and its existence outside of human control. This anxiety is highlighted by such films’ similarities to other types of horror. In her blog *Horror Homeroom*, horror scholar Dawn Keetley argues that *Jaws* is essentially a slasher film featuring a shark instead of a masked human murderer; furthermore, she writes, ‘Whether they render it in shark or human form, though, both *Jaws* and *Halloween* disclose the terrifying confrontation with the nonhuman (the inexplicable, irrational, and implacable) at the heart of horror.’ This confrontation with the nonhuman is central to ecohorror.

Ecohorror is not limited to the ‘nature strikes back’ narrative, however. Stephen Rust and Carter Soles provide an expanded definition of the genre in their introduction to a special cluster of articles about ecohorror in *Interdisciplinary Studies in Literature and Environment (ISLE)*, writing

that this larger definition ‘includes analyses of texts in which horrific texts and tropes are used to promote ecological awareness, represent ecological crises, or blur human/non-human distinctions more broadly’ (2014: 509–10). Ecohorror, they continue, ‘assumes that environmental disruption is haunting humanity’s relationship to the non-human world’ (510). This definition of ecohorror broadens the genre’s scope both in terms of what texts it might include as well as in terms of its relevance to theories of the posthuman.

This expanded definition means that ecohorror appears not just as a distinct subgenre of horror but as an effect that may surface within other horror narratives as well. One instance of its environmental disruption can be found in taxidermy’s presence in horror film. Animal taxidermy repeatedly recurs within the genre, although it usually remains in the background, only briefly attended to (if at all), as in *The Blob* (1958), *Night of the Living Dead* (1968), *Frogs* (1972), *The Exorcist* (1973), *Dawn of the Dead* (1978), *Willard* (2003), *Shark Night 3D* (2011), and *Cabin in the Woods* (2012). Rachel Poliquin writes, ‘All taxidermy begs the question, what is it? Perhaps we no longer wonder *what* species the preserved creature once was, but the ontological question *what is it?* Is always lurking with taxidermy’ (2012: 38). These questions do not apply only to the taxidermy itself; taxidermy’s presence evokes these questions in a more general sense and highlights horror’s already existing anxieties about the nonhuman, death and the lines between categories such as human/non-human, life/death and animate/inanimate. Furthermore, taxidermy in horror evokes Mel Y. Chen’s animacy hierarchy, in which some types of life or being are valued more highly than others (with sentient life at the top of the hierarchy and inanimate objects at the bottom). Chen describes the opposite of

animacy as ‘the inanimate, deadness, lowness, nonhuman animals (rendered as insensate), the abject, the object’ (2012: 30). Taxidermied animals illustrate this end of the scale, as do many horror film monsters (zombies, vampires, animal monsters), while the humans who star in the films exist at the opposite end of the animacy hierarchy. Applying Chen’s animacy hierarchy helps reveal both the value system the audience brings to such narratives and also the breakdown of this value system in these films. This breakdown can be seen clearly in *Night of the Living Dead*. Surrounded and overwhelmed by creatures and objects lower on the animacy hierarchy than they are (i.e., zombies), the human characters (and their animate superiority) are destroyed and their place on the hierarchy is revealed to be extremely unstable. Thus taxidermy in horror film serves the broader functions of ecohorror, blurring the lines between human and nonhuman.

This blurring of lines can be taken even further within ecohorror. Although discussions of ecohorror have often emphasized attacks by the natural world or invasions ‘from our immediate natural environment’ (Tudor 1989: 62), this emphasis is built upon a presumed separation between humanity and the non-human world. Human and non-human are not separate, however, so it is crucial to also consider ecohorror narratives that examine the connections between the two. This means blurring the lines between ecohorror and body horror. In *The Fly* (1986), for instance, the horror comes not only from Seth Brundle’s bodily disintegration over the course of the film but also from the disintegration of the boundaries between human and fly. And in Junji Ito’s manga *Uzumaki* (1998–99), in which a Japanese village is contaminated by spirals, the horror comes both from the way human bodies are twisted and changed by the

spirals as well as from the transformation of some humans into snail people.

Another source for this kind of ecohorror is the parasite-focused horror narrative. These parasite-focused horror narratives (e.g., Mira Grant’s novel *Parasite* and its sequels) draw attention to the ways in which humans wish to see themselves as in control of their bodies, their lives and even the natural world, while simultaneously highlighting the limits of this control. After all, we are influenced – sometimes significantly – by the organisms living within us. This inclusion of parasite narratives within ecohorror highlights the subgenre’s connection to the posthuman. If posthumanism is a mode ‘in which there are no solid demarcations between human and animal and in which the human is coextensive with the emergent natural/cultural world’ (Alaimo 2010: 151), then parasite narratives certainly reflect this. Because this blurring of lines takes place within the horror genre, however, the lack of such solid demarcations is not necessarily represented as a positive thing; instead, these narratives ask their readers or viewers to consider the dangers of such interconnectedness (Tidwell 2014). As Donna Haraway writes, ‘[a] great deal is at stake in such meetings [between species], and outcomes are not guaranteed. There is no teleological warrant here, no assured happy or unhappy ending, socially, ecologically, or scientifically’ (2008: 15). Connections between species, as both Haraway and posthuman ecohorror reveal, are not inherently positive but may just as easily be harmful or dangerous. This is why, as Alaimo argues, ‘[t]rans-corporeality is a site not for affirmation, but rather for epistemological reflection and precautionary principles’ (2010: 144).

Ecohorror reflects our fears about non-human nature in a variety of ways. Perhaps animals will attack us, perhaps we will lose our place at the top of the animacy hier-

archy, or perhaps we will have to acknowledge our interconnectedness with other beings. In doing so, ecohorror risks reinforcing those fears and the categories they are built upon, but ecohorror also asks us to reconsider some of those fears and to imagine what might happen if we were not to insist so vehemently upon such divisions.

See also Animacies; Animal; Anthropocene and Chthulucene; Trans-corporeality; Posthuman Literature and Criticism.

Christy Tidwell

ECOLOGIES OF ARCHITECTURE

Reinventing architecture can no longer signify the relaunching of a style, a school, a theory with a hegemonic vocation, but the recomposition of *architectural enunciation*, and, in a sense, the trade of the architect, under today’s conditions.

Once it is no longer the goal of the architect to be the artist of built forms but to offer his services in revealing the virtual desire of spaces, places, trajectories and territories, he will have to undertake the analysis of the relations of individual and collective corporeality by constantly singularizing his approach. Moreover, he will have to become an intercessor between these desires, brought to light, and the interests that they thwart. In other words, he will have to become an artist and an artisan of sensible and relational lived experience.

Guattari 2013: 232

In a desperate attempt to catch up with forms of contemporary media culture, architects tend to perpetuate earlier notions of culture as representation rather than culture as forms of life (Lash 2001: 107). Architecture has yet to break with culture as reflection still firmly embedded in its

concepts of Utopia, Type, History, City, Geometry, Landscape and Ornament. To speak of the *ecologies of architecture* is to break with judgement for experience, to break with the propositional knowing-that for the impredicative knowing-how (Ryle 2009: 25–61). As the self-declared empiricist (i.e. pluralist) Gilles Deleuze put it in his book on Nietzsche, it is not about justification, 'but a different way of feeling: another sensibility' (Deleuze 1983: 94). If to think differently we have to feel differently then the design of the built environment has no other purpose but to transform us (Kwinter 2014: 313). While engineering focuses on solutions, architecture dramatizes the problem so that we may stumble upon a new emancipatory potential (Kipnis 2013). After all, problems always have the solution that they deserve (Smith 2012: 307).

Pedagogy of the Senses

Posthuman architecture ought to focus on the encounter between thought and that which forces it into action. While accepting multiple nested scales of reality, the ecologies of architecture challenge the alleged primacy of the 'physical' world. What we engage with is the world considered as an environment and not an aggregate of objects. The emphasis is on the encounter, where experience is seen as an emergence which returns the body to a process field of exteriority (Colebrook 2004). Sensibility introduces an aleatory moment into thought's development, thus turning contingency into the very condition for thinking. Not only does this upset logical identity and opposition, it also places the limit of thinking beyond any dialectical system. Thought cannot activate itself by thinking but has to be provoked. It must suffer violence. Art and architecture may inflict such violence. They harbour the potential for breaking up the faculties'

common function by placing them before their own limits: 'thought before the unthinkable, memory before the immemorial, sensibility before the imperceptible, etc.' (Deleuze 1994: 227). The eco-logical 'perspectivist' assault on the ego-logical representational thinking inevitably impinges upon the identity of the subject. Where Kant founded the representational unity of space and time upon the formal unity of consciousness, difference fractures consciousness into multiple states not predicatable of a single subject. In other words, difference breaks with the differentiation of an undifferentiated world in favour of the homogenization of a milieu or *umwelt* (Deleuze and Guattari 2004: 62). To speak of Whiteheadian superject is to break with earlier notions of subject as a foundation (Whitehead 1978: 29). 'Desiring-machines' connect, disconnect and reconnect with one another without meaning or intention (Deleuze and Guattari 2008: 288). Paradoxically, actions are primary in relation to the intentions that animate them the same way that desiring is primary to volition. Individuality is not characteristic of a self or an ego, but a perpetually individualizing differential. It is not the subject that has a point of view, rather it is the point of view that has its larval subject (Deleuze 1980). Deleuze explains: 'Each faculty, including thought, has only involuntary adventures' and 'involuntary operation remains embedded in the empirical' (Deleuze 1994: 145). This constitutes his famous 'pedagogy of the senses'.

Asignifying Semiotics

The ecologies of architecture rely on cartography to overturn the theatre of representation into the order of desiring-production (Deleuze and Guattari 2004: 12). The ultimate ambition is to debunk *hylomorphism* – where form is imposed

upon inert matter from without and where the architect is seen as a god-given, inspired creator and genius – and to promote the alternative immanent morphogenetic approach that is at once more humble and ambitious (DeLanda 2002: 28). There lies a (r)evolutionary potential in creating the ‘new’, defined as the circulation of de-coded and de-territorialized flows that resist the facile co-option by re-coding or capturing (Deleuze and Guattari 2008: 379). To speak of univocity of expression is to break with equivocity of the hegemonic linguistic sign. Action and perception are inseparable, as are forms of life and their environments. If the objects of knowledge were separated from the objects of existence, we would end up with a duality of mental and physical objects – bifurcation of nature – that leads to an ontologically indirect perception. By contrast, the premise of the ecologies of architecture is that perceptual systems *resonate* to information, where information is defined as a difference that makes a difference (Gibson 1986: 249; Bateson 1972). This ‘direct realism’ is grounded on the premise that, from the outset, real experience is a relation of potential structure rather than a formless chaotic swirl onto which structure must be imposed by cognitive process (sapience). The world is seen as an ongoing open process of mattering, where meaning and form are acquired in the actualization of different agential virtualities (Barad 2007). Following Deleuze’s argument, it is possible to assert that the genetic principles of sensation (sentience) are thus at the same time the principles of composition of art(efact) (Deleuze 2003).

Niche Constructionism

Architecture ought to reclaim its vanguard position within the Epigenetic Turn which embraces *tekhne* as constitutive of posthumanity, and not just the other way around

(Stiegler 2008–11: 12). Experience is not an event ‘in’ the mind. Rather, the mind emerges from interaction with the environment. The predominant homeostatic notion of structure in architectural thinking has to give way to the event-centred ontology of relations. The metastability of existence (formerly known as sustainability) is to be mapped in the very act of becoming. The Affective Turn in architecture concentrates on perception which occurs not on the level at which actions are decided but on the level at which the very capacity for action forms, the virtual (Massumi 2002: 79). If representation is a means to an end (to classify), schizoanalytic cartography is a means to a means (to intervene) (Guattari 2013). Teleology cannot be used as the sole design criterion because the freedom of action is never a de facto established condition, it is always a virtuality (Evans 1997: 16–17). This proto-epistemological level of potentialization (priming) is already ontological (Massumi 2015a: 71). It concerns change in the degree to which a life-form is enabled vis-à-vis its (built) environment. Their reciprocal determination commits contemporary architecture to ecology in general and ethico-aesthetics in particular (Guattari 1995). The psychotropic cry that ‘we shape our cities; thereafter they shape us’ is to be taken literally. Only recently have biologists conceded the effect that ‘niche construction’ has on the inheritance system (Jablonka and Lamb 2005; Odling-Smee, Laland and Feldman 2003). They confirm that a life-form does not only *passively* submit to the pressures of a pre-existing environment (evo), but also *actively* constructs its existential niche (devo), that being the city in the Anthropocene. The implications for the discipline of architecture, considering its quasi-causal role in the neo-Lamarckian *Baldwian Evolution* (evo-devo), remain significant and binding (Wexler 2010: 143).

Futurity

The New Materialisms in general, and the Affective Turn in particular, seem to be gaining momentum to such an extent that even some of the scholars of this affiliation have been urging caution (Colebrook 2010: 168–9). However, as far as the discipline of architecture is concerned, this otherwise healthy dose of scepticism is not only premature but also counterproductive. In its history, architecture has undergone a gradual disassociation from the material realm and become an ultimate white-collar profession. The consequent withdrawal from reality (thesis of autonomy) has been variously seen as ‘bad’ escapism or a ‘good’ strategy of resistance (Hays 1981). The urge to ward off the givens and to continue to contemplate (possible) alternatives is praiseworthy. But idealist bracketing and messianic ambition come at a price. Architects might end up painting themselves into a corner of impotence by depriving themselves of the (virtual) means to intervene. After all, intervention has always been the main trait of (any) materialism. The best strategy of resistance seems to lie not in opposition but in (strategic) affirmation (Braidotti 2012). The recognition of the present–future relation provides a point of departure for an ecological account of anticipation and/or creation akin to Isabelle Stengers’ thinking *par le milieu* (Stengers 2005: 187). What defines the concept of futurity is the inseparability of the event and its environment. Futurity is a condition of the present; it is the anti-utopianism of the ecologies of architecture *par excellence*.

See also Affirmation; Anthropocene; Ecosophy; Mattering; Metastability; Neo/New Materialism; Posthumanism.

Andrej Radman

ECOMATERIALISM

A bird’s-eye view of contemporary intellectual developments reveals an increasingly debated and widely exercised material turn unravelling transversally across entwined research fields. Ranging from science studies, ecophilosophy, ecocriticism and the environmental humanities to feminist philosophy, gender and queer studies, anthropology, art theories and media studies, this new paradigm has assumed various cross-developing forms and labels, such as new materialisms, neomaterialism, material ecocriticism and ecomaterialism. They all contest the master narratives of liberal humanist culture, fostering instead a revolutionary model of environmentality based on the idea of agentic materiality for the apprehension of current and future ecological complexities.

Of all the terms associated with the material turn, however, ‘ecomaterialism’ is the most underdefined, leaving us in doubt as to its being just another label that did not turn into a catchphrase like ‘new materialisms’ or ‘neomaterialism’. ‘Ecomaterialism’ inevitably leaves us guessing whether it can or cannot be used as a mere synonym for either of these terms, as it not only intersects and overlaps with their discourse, but is also similarly accompanied by a flourish of redefined concepts: matter, agency, nature, human, non-human, inhuman, posthuman, objects, things and relations. Despite this ambivalence, ecomaterialism is currently conceived as a project of theorizing the earth’s human and other-than-human dwellers in terms of multiple becomings with a detailed consideration of what, in fact, is the major concern of this approach: the global dynamic of crisis ecologies as a result of human-driven alterations of the planetary ecosystems, otherwise known as the compulsive powers of the Anthropocene. Even if all the environmental uncertainties,

geopolitical struggles and social dilemmas spilling out of multiple becomings create a paradoxical sense of worldly embodiment in the hybridizing mix of the Anthropocene epoch, an ecomaterialist philosophy of being and becoming played out on these cross-scale interactions is admittedly a needful mode of thought.

In the face of intensifying ecological crises and material intimacies, ecomaterialism assists in imagining a world that is not relentlessly objectified, systematically polarized and innately gendered, but is profoundly earth-centred with flexible disanthropocentric models. Accordingly, ecomaterialism is the epigenesis of the new materialist theories, developing in gradual differentiation through their platform and amplifying their ecological frameworks, but not in the sense of restoring a utopian ecological harmony, or calling for an idealistic biosocial view of life. Instead, the understanding of ecology it supplies is an understanding of 'life in a vortex of shared precariousness and unchosen proximities' (Cohen 2015a: 107). Ecomaterialism, in other words, compels us to reckon a living world with the protean conditions of being mineral, vegetal, animal and human; a material world in which earthly beings, things and forces are environed with the same ecological, geological and also biopolitical plight.

In essence, then, ecomaterialist thought is resolutely ecological – and admittedly in multiplex ways that acknowledge the environmental vicissitudes resulting from the 'unmappable landscapes of interacting biological, climatic, economic, and political forces' (Alaimo 2010: 2). By analysing how multiple becomings within these landscapes entangle bodies, ecosystems, geobiochemical forces, human narratives, discourses and actions, ecomaterialism becomes an ecologizing recourse to the material-discursive practices explored in the new materialist paradigm that often elicit unre-

solved conflicts between human and nonhuman 'forces, bonds, and interactions' as Michel Serres has put it in *The Natural Contract* (2002: 39). The human influence on Earth interfering with the evolution of the planet attests to these conflictual human–non-human–environmental interactions. But ecomaterialism suggests that despite the anthropogenic signatures in the geological record and in global landscapes, waterscapes and the climate, the human is the interstitial species of generative ecologies and vital materialities.

'Ecomaterialism' was first employed in this context by Jeffrey J. Cohen and Lowell Duckert in their introduction, titled "Howl," to the special issue of *postmedieval: a journal of medieval cultural studies*. Cohen and Duckert argue that ecomaterialism 'asks us to hear the howls of heterogeneous life forms – everywhere and from every thing,' and that it "compels us to think of our own existence as interstitial beings" (2013:5). In her response essay 'The Elements' in the same issue, Jane Bennett describes the term 'as an attempt to re-describe human experience so as to uncover more of the activity and power of a variety of nonhuman players amidst and within us' (2013:109). In this sense, 'ecomaterialism' refers to the new ecologies of what Cohen and Duckert call 'precarious bonds' (2013: 4) and unpredictable partnerships between the human and the nonhuman agents in conceptually fluid and materially porous landscapes. Cohen and Duckert reinvigorate the term in their introduction to *Elemental Ecocriticism*, inviting 'a deeper contemplation of ecomateriality' (2015: 269) in terms of elemental relations. Ecomaterialism, they claim, 'conjoins thinking the limits of the human with thinking elemental activity and environmental justice' (2015b: 5). In studying the collisions, frictions, confluences, and intimacies between the

human and the inhuman natures in their ongoing co-emergences, ecomaterialism also enacts a concern, not only for the globetrotting crisis ecologies with detrimental corporeal effects, but for the specific pragmatics of the ethical, social, and political conditions of multiple becomings. The end results are the complicated phenomena of toxic landscapes, acidic oceans, dying species, viral microorganisms, and changing climate, indefinitely being reshaped by the intermixing geopolitical forces with intensifying catastrophic effectivity that eventually triggers social unrest not containable in local geographies. This disenchanting material reality, as Karen Barad rightly points out, is undeniably 'sedimented out of particular practices that we have a role in shaping and through which we are shaped' (2007: 390). When humans sediment with the world they shape, the problematizing conditions of their enactment become seamlessly bound together with the nonhuman to disclose what is not only susceptible of materially based ecological change, but also of social transformations that often manifest as regional chaos, social struggles, and disrupted sociopolitical structures. The impacts of climate change on agriculture and ecosystems illustrate well how the ecological becomes an extension of the social, often resulting in political and social strife and crisis.

According to the World Bank report from November 2015, for example, 'climate change could drive more than 100 million people into poverty by 2030 largely due to difficulties producing crops' (Worland 2015). Climate change, the researchers claim, seriously impacts food security, land and water productivity, and livestock management (Hallegatte et al. 2016). Thinking through such high uncertainties in symbolic and material landscapes, ecomaterialism navigates a multitude of

shifting meanings that are pivots of ideological, cultural and environmental conflicts. Furthermore, analysing the vital but also convoluted materialities in which the non-human is entangled along with the human, ecomaterialism catalyses a disanthropocentric ideology that demands not only sustainable ecological policies but also a discursive change in cultural ethos.

Placing a concerted emphasis on multiple modalities of becoming that involve messy interactions of human and non-human agencies, flows of elements and geobiochemical forces in the highly problematized zones of naturecultures, ecomaterialism also liberates us from our speculative exceptionalism. It invites a practice of thinking with what is around and inside us, before and after us, to extend the connective tissue of our relations, our materiality and our creativity enmeshed in environmental complexities that unfold from the threshold of their ecological, philosophical and literary labyrinths. Ecomaterialism, to put it bluntly, conceptualizes the human subject as both materially and cognitively involved in these complexities and multiple becomings. In this vision, the porous borders between human beings and more-than-human environments underscore a sense of the seamlessness of the join between material and social dynamics, and conscript the criss-crossing stories of human and non-human agencies grounded in an endlessly revisable narrative of life.

Although ecomaterialism is not a self-authenticating mode of thought, as it is not a static way of looking at the ecological decline the world at large is facing, it may well be that the most difficult task which the theorists are called upon to perform today is to expose the historically and culturally conditioned character of their disciplines, to preside over the dissolution of anthropocentric theoretical knowledge. Offering new

positions to theorize the current disparate, multivalent social and environmental phenomena may be the first step in developing ecological ways of being. These positions, however, must be able to produce workable solutions in order to override the persisting utilitarian humanist principles that are still operative in world cultures. And whether ecomaterialism opens this path as the next step is yet to be seen.

See also Anthropocene; In/human; Non-human Agency; Neo/New Materialism; (Material) Ecocriticism; Naturecultures.

Serpil Oppermann

ECONTOLOGY

Econtology is a neologism we need in order to address philosophically the problematic situation man has manoeuvred himself into in the twenty-first century. Modern categories, based on oppositional thinking, lack the clarity to analyse our current situation that has been labelled as the Anthropocene: the present geological epoch that started in the Industrial Revolution, during which humanity has begun to have a significant impact on the environment. Econtology combines ecology and ontology. Ecology is the science that analyses interactions between organisms and their environment. In this systemic approach feedback recursivity is the crucial mechanism that regulates processes in which all species, all articulations of being are involved. This insight inspired Gregory Bateson in *Steps to an Ecology of Mind* (1972) to redefine collective consciousness of nature as ‘mind’. From a cybernetic perspective he mapped reality as a pattern of patterns. By then Félix Guattari in cooperation with Gilles Deleuze had reworked Bateson’s notions of ‘schizo-

phrenia’ and ‘plateau’ in *Anti-Oedipus* (1972) and *A Thousand Plateaus* (1980), the two volumes of *Capitalism and Schizophrenia*. Patterns are the eco-social substance of a mental ecology. In *The Three Ecologies* (1989) Guattari forged an environmental, a social and a mental ecology together. In this way nature, socio-cultural relations and individual subjectivity were interwoven into an ecological texture. I have labelled this threefold ecology as ECO3: physical, social and mental (Oosterling 2015).

Ontology is the philosophical study of the nature of being and becoming. What are the basic categories of being and how do beings relate? After the critique and deconstruction of metaphysics by Friedrich Nietzsche, thinkers inspired by his writings like Jacques Derrida, Michel Foucault, Deleuze and Guattari focused in their ‘reality check’ on forces instead of entities. The latter are secondary phenomena: ever-provisional results of the clash of forces that strive to incorporate or annihilate each other. Yet these forces in themselves are non-significant vectors. In order to understand their efficacy and comprehend their coherency – by asking not ‘what are they?’ but ‘how do they work?’ – their specific articulation as power relations need to be investigated. Forces are always already inscribed into patterns of being as power relations. This shift from force (*puissance*) to power (*pouvoir*) led thinkers of difference to the conclusion that ontology and politics – the exclusive domain where power relations are addressed – are no longer separate domains. Ontology is political by definition. Politics immediately defines being.

This asks for a more articulated definition of power. After Claude Lefort’s distinction between Politics and the Political and Foucault’s focus on a microphysics versus macrophysics of power, the interaction of forces can be analysed on different plateaus

or planes: macropolitically on an institutional and corporative plane whereupon politics and corporations as global players operate, mesopolitically on the plane of grass-root resistance where disciplined normality is contested, and micropolitically on the sub-individual plane of affects where people primarily connect and on which market strategies and branding control collective and individual desire. These levels can only be distinguished systematically and cannot be separately manipulated. They are interdependent, intertwined in networks, encompassing all life forces on earth.

Given these insights, ecological issues can be redefined from a network theoretical point of view as has been done by Bruno Latour in his Actor-Network-Theory (ANT). In our globalized, digitalized, technologically highly advanced network society, as analysed by sociologist Manuel Castells in the 1990s, everything is connected to everything and as such is influenced by and influencing every other thing. The ontological emphasis therefore is on relations, not on (id)entities. In our present state of hyperglobalization the complexity of interconnected processes has reached critical limits in which human indecisiveness can no longer be checked by human action. In the present Anthropocene, human action immediately and non-intentionally determines reality in its essential connectivity. This asks for a more precise notion of ontology.

According to Peter Sloterdijk, man's contemporary predicament is technorelational. *Dasein* is design (Oosterling 2010). Theory is a practice. Although ontology as a philosophical enterprise is highly theoretical, it has practical application in information science and technology. Theoretical physics deals with the immanent structure of reality. Yet, this cutting-edge research does not describe an objective

given. On a performative and practical plane the experimentation of theoretical physicists in their laboratories – scientific practices where reality is checked 'theoretically' – is already biased by the handling of tools and by the progressive translation of the results to a higher theoretical level, upgrading the findings of a particular case to a universal law.

Latour and Isabelle Stengers have analysed this scientific practice critically. The latter's co-research with Ilya Prigogine on what really takes place – methodologically and epistemologically – in laboratory practices of physicists led her to develop the notion of an ecology of practice:

An ecology of practices does not have any ambition to describe practices 'as they are'; it resists the master word of a progress that would justify their destruction. It aims at the construction of new 'practical identities' for practices, that is, new possibilities for them to be present, or in other words to connect. It thus does not approach practices as they are – physics as we know it, for instance – but as they may become.

Stengers 2005: 186

Within this (per)formative context the notion of political ecology is used. Political ecology is the study of the relationships between political, economic and social factors with environmental issues and processes. On a macropolitical plane environmental issues are politicized. This one-dimensional notion of political ecology, addressing power only on a macropolitical level, was introduced by Frank Thone in 1935 and elaborated by Hans Magnus Enzensberger in the 1970s and 1980s. Inserted in the Anthropocene perspective it needs multipolitical (Deleuze/Guattari/Foucault) and intrascientific (Latour/Stengers) explanation. Mesopolitically it thematizes power relations within an ecology

of practices. Micropolitically it deconstructs modern desire that is inscribed into the body in order to produce a disciplined subjectivity (Foucault) that is overdetermined by a discourse that opposes nature to culture (Latour). This multi-layered extension of political ecology politicizes ontology in a triple sense (Guattari). Latour problematized the simple notion of political ecology by asking whether the discourse of modernity allows the Anthropocene combination of politics and ecology: ‘To modernize or to ecologize? That’s the question’ (Latour 1998). In the final instance the modern opposition between culture and nature does not allow a critical estimation of the role of all participants – human and non-human, from minerals to technological media – in the immense transformation that the Earth is currently going through. Political implies an equality of all beings, not as actors with subjectivity, but as ‘actants’ with agency. In order to establish a multipolitical and intrascientific *explanation* of how reality works, the philosophical discourse on ecology needs an extended notion of ontology: eontology or econtology.

See also Ecopathy; Epigenetic Landscape; Ontological Turn; Neo/New Materialism.

Henk Oosterling

ECOPATHY

A Trip to the Beach

In his superb study *Anthropocene Fictions* literary theorist Adam Trexler (2015) has argued that the Anthropocene is as much an environmental development as it is ‘a cultural transformation’. Extending Trexler’s argument, my thesis here is that the Anthropocene is also *parallel to*, though not necessarily a *consequence of*, ecological

developments, what Fredric Jameson (1991) might have called a cultural dominant: a prevalent structure of feeling, a sentiment, or rather still, *mood*, shared so widely as to suggest it is one of the key characteristics of contemporary culture. The point here is not simply that the Anthropocene is on our minds, but rather that our bodies are on the Anthropocene, in the sense that one is not thinking about speed but is on speed – or LSD, or crystal meth, or rather still, asbestos: thoughts spinning, muscles tensed up, blood pumping, heart racing, increasingly out of control. *Ecopathy* is the cultural condition of being on climate change-speed, involuntarily dancing on a Thai beach long after the full moon has been obscured by the sun, joylessly bopping in the sunset as the rising tides wash away the sand at our feet, twerking beyond exhaustion, tripping over our own feet in agonizing pain. What follows below is an anecdotal account, I guess you could call it, of walking on these post-apocalyptic shores, avoiding the wasted bodies only to tread on the refuse of pins and needles every other step. One step, ‘hey, climate change’; the next, ‘oh, the last panda’, ‘drought’, ‘tsunamis’, ‘posthumanism’, and so forth, to the point that a walk on the beach resembles the experience of a walk on a garbage belt. The beach, or the field, that I most often stroll on is that of art, and culture more broadly. What I want to discuss here are some of the things I couldn’t help – because they were so ubiquitous, so embarrassingly omnipresent – but step on the past years. What I present you with, if you will, is a socio-cultural history of the sore soles of my feet after a stroll on the shores.

One of my earliest memories walking on the beach is a *Seinfeld* episode I came across which is set on the New York shores. The episode – ‘The Marine Biologist’, from the fifth season – weaves together a number of stories, two of which are of interest here.

In the first of these stories, Jerry Seinfeld's best friend George Costanza, who is, at this point, miserably unemployed, pretends he is a marine biologist so as to attract a nature-loving woman. The second story pertains to Jerry's idiosyncratic neighbour, Cosmo Kramer, who has been practising his golf swing off the New York coast, hitting balls into the ocean. In the final scene,¹ in which the stories are tied in to one another, George and his girlfriend are walking on the beach only to find a distressed whale stranded on the shore. Trapped in his lie, in which he is a scholar of ocean ecology, George feels forced to approach the whale to see what is wrong. As he comes close – quite surprisingly, given that he is not actually a marine biologist; indeed he doesn't even know that a whale is a mammal rather than a fish – he finds out what the problem is: a golf ball obstructs the whale's blowhole.

Seinfeld here addresses the Anthropocene, humanity's impact on the world around it – below, above, between, through, within – that is to say, quite literally, its imprint on the Earth's geology, through at least three distinct tropes. *First*, the Anthropocene is presented as a joke, as a pun. It is less a tragic reality – for we do not actually see Kramer's golf ball strike the whale, nor do we witness George's rescue – than a story told for laughs. *Second*, the Anthropocene is an accident, a coincidental effect of a careless but by no means malignant attitude towards nature. It is obvious that Kramer had no intention of hitting a whale. His so-called 'hole in one' was as unfortunate as it was unforeseen. At the same time, he wouldn't have struck the whale had he not mindlessly clubbed golf balls into the sea . . . *Third*, the Anthropocene is easily resolved. Even George, an idiot if there ever was one, an unparalleled narcissist, is able to save the whale. Finally, it might be noted that

Seinfeld's Anthropocene is exclusively white, western and male. In short, *Seinfeld* presents the Anthropocene as a funny mishap which can be straightened out by middle-aged white guys.

I take *Seinfeld's* approach to the Anthropocene, which is as hilarious as it is disturbing, to be characteristic of the attitude towards environmental problems in the 1980s and 1990s – or, for that matter, economic, political or moral issues. That is not to say that it was the only approach, that there weren't any NGOs and individuals ringing alarm bells, that Greenpeace activists weren't roaming the shores on the lookout for whale or seal hunters, or that there weren't any artists and writers worried about climate change and rising sea levels, about tsunamis and extinct animals. Indeed, when I posited this question to friends and colleagues, they pointed out numerous examples of texts that did just that. The art critic Tom Morton proposed Alan Moore's graphic short story 'Sunburn' (1970), which imagines a beach resort on the sun, while philosopher Nina Power reminded me of more or less the whole of Ballard's oeuvre.² Someone like Ursula K. Le Guin also comes to mind, as do Frank Herbert and of course Philip K. Dick. However, I would argue that in the eighties and nineties, *Seinfeld's* moral disinterest was the most common attitude towards the Anthropocene – the others, at the time, were what Raymond Williams (1977) might have called 'emergent', peripheral structures of feeling yet to take centre stage. Indeed, the very wording of the problems, the label of the Anthropocene, had by this time not yet been formulated.

Returning to the beach twenty-five years on, one finds its culture has changed beyond compare. George and Kramer have nearly been pushed out of the picture, crowded out by a more environmentally conscious

bunch – to be sure, not necessarily better or worse people, just people with other priorities. I am referring here above all to the popularization of post-apocalyptic eco-novels and films – ranging from, most recently, Kim Stanley Robinson's canon and Paolo Bacigalupi's *Ship Breaker* to Michel Houellebecq's *The Possibility of an Island* and (the filmic adaptation of) Cormac McCarthy's *The Road* – in which the chronotope of the beach signifies the border between land and water as well as between past and future, ruins and air castles, desolation and despair. If *Seinfeld's* trip to the beach was light-hearted and episodic, contemporary literature more often than not arrives there in a grave mood, as its final, destitute destination: it's here, or nowhere – and if it is here, I suppose, it is only briefly, echoing Foucault's final lines in *The Order of Things*: 'Man would be erased, like a face drawn at the edge of the sea' (2005: 422). But I am also thinking of an art project like Captain Boomer's 2008 installation *Beached Whale*. The Belgian collective created a realistic seventeen-metre-long carcass of a sperm whale, covered in blood, smelling of rot, which they installed on Scheveningen beach – and in later years other beaches all over the world. A team of actors was hired to play the roles of scientists, examining the mammal's cadaver. *Seinfeld's* white men were still in time to save the whale, but by the time Captain Boomer's men and women in white coats arrived they could do little more than grieve over it. Their sole function was documentation, the production and distribution of information, after the fact.

My argument here is twofold. First, I argue, like many others, that in the past decades, our relationship to the environment, beach, whale or elsewhere has gradually come to occupy the centre stage of our imagination. To put it in Williams's terms: it has intensified from an emergent

structure of feeling to a dominant one. I guess this much is obvious. More importantly, however, I want to argue that the nature of our engagement with the environment has changed. Of course, we've become more serious, but that's not what I mean. *Seinfeld's* interaction with the beach's ecosystem was not just humoristic; it's comedy was of a particular register: distinctly object-specific, local and short-lived. It begins and ends with the stranded whale. The sentiment in a post-apocalyptic film like *The Road* or the installation *Beached Whale*, in contrast, is objectless, global and protracted. In *The Road*, environmentalism is less a response to a particular problem than, if you allow me to stretch the term, an experiential *a priori* that informs every possible problem. Even the point of *Beached Whale* is less the image of a dead whale, than it is the sense of finality it implies. The plumpness, the solemnity, the blood, the rot, the smell, the scientists documenting after the fact: we're always already too late.

It would be a mistake to say that culture has relocated to the beach. Rather, it's the other way around: the beach, as chronotope, has moved into culture – a sort of chronomove, a chronomotive (I wish I had invented this term, but a quick internet browse suggests it already exists, and even appears to be trademarked). The number of novels in which rising sea levels and super storms have pushed the beach into or beyond cities like London and New York has increased exponentially over the past decades – I am thinking here again, of the likes of Robinson, Bacigalupi and Houellebecq, but also of the last chapters of less obvious choices like T. C. Boyle's *A Friend of the Earth*, Margaret Atwood's *The Year of the Flood*, Jennifer Egan's novel *A Visit from the Goon Squad* or David Mitchell's *The Bone Clocks*. In film, the trope of the retreating coastal line features in

anything from the blockbuster disaster flick *The Day After Tomorrow* to the independent eco-community feature *Beasts from the Southern Wild*. An interesting example in contemporary art is Olafur Eliasson's 2010 installation series *Driftwood*. In this project, the artist distributes driftwood he collected at the Iceland coast across Berlin. Placing the weathered wood at pavements, roundabouts, parking areas and alleys in the city, he both extends and reverses western culture's Romantic relationship to nature. On the one hand, the pieces of driftwood invoke mystery – of origin, of journey, of placing. It poses questions like: 'Where are these pieces of wood from?' and 'How did these pieces get here?' Or, simply: 'What do they mean?' and 'What do they invoke?' On the other hand, however, the weathered logs also suggest an alternate hierarchy between culture and nature, one where Kramer is no longer hitting golf balls into the ocean, but where the sea is pitching them back at us. What Eliasson's installations imply here is a different relationship between culture and nature, one in which the latter is not an external obstacle, or an incorporated means to an end, but always already an integral part. As Timothy Morton explains so evocatively in *The Ecological Thought* (2010): we coexist. It just that we've only now realized as much.

In his brilliant essay 'Art and Mood', philosopher Noel Carroll distinguishes between an emotion and a mood. An emotion, he writes, is a response to a state of affairs in the world. It is 'directed' towards a particular object, and is short-lived. If I am angry, after all, the anger is related to someone or something who has angered me. I might well depart with my anger if that person apologizes. For example: I am angry because my partner has put the organic waste in the regular bin instead of the recycling bin. 'You', I shout, or whisper, or think, depending on the

affective register of the relationship (maybe it's very repressive), 'are killing the planet!' If in response my partner apologizes, says, 'Oh, sorry, I wasn't thinking clearly for a second there' (imagine a conversation would ever run like that!), chances are I forgive that person instantly. An emotion is related to an externality that transgresses your affective boundaries, as it were. If it retreats, your harmony is restored.

A mood, by contrast, Carroll notes, is 'dependent on the overall state of the organism, its level of energy, the level of resources at its disposal for coping with environmental challenges, and the degree of tension it finds itself in as a result of the ratio of its resources to its challenges' (2003: 529, my emphasis). What Carroll suggests here is that whereas emotion is the effect of an external transgression of your affective boundaries, mood is the result of an internal, or rather still, an internalized disintegration of the affective register: a lack of sleep, maybe, or too much sleep, stress, relaxation, too little exercise, a lot of exercise, unhealthy food, smoothies, or all of them disorganize the body's affective automata, its intensities. Yes, I guess that's it: the organism's affective automata are out of sorts. Indeed, as Carroll continues, a mood is non-intentional, and often protracted: 'when I am irritable', he writes, 'in an irritable mood, there is no one in particular who irritates me. Everyone and everything that falls into my pathway is likely to become the locus of my foul mood' (ibid.: 526). In this case, the anger I feel towards my partner precedes the waste incident, nor is it, for that matter, related to my partner, though it may well be exacerbated by either of them. It subsequently will not reside when he or she apologizes. Emotion, Carroll perceptively suggests, cuts through detail, while mood 'pulls ambient detail into its orbit' (528).

The difference between *Seinfeld* and Captain Boomer, between Kramer's golf balls and the driftwood, is not only quantitative, but also qualitative. *Seinfeld* presents the Anthropocene, or whatever it was called at that time, as an emotion, oriented, local and short-lived, informed by a distinct event, a distinct transgression of our affective boundaries. Captain Boomer and Eliasson, in contrast, introduce it as a mood, an objectless, or 'object-lessable', global, protracted sentiment that informs, that cannot but inform, all other interactions. We no longer need to head out to the beach to experience how we've affected the environment; the beach is always already with us; the golf balls, the whale, the driftwood, invariably on our minds. As Naomi Klein writes in *This Changes Everything*, it's nothing less than an 'existential crisis' (2014: 15): a 'fear that comes from living on a planet that is dying, made less alive every day'. It's a fear that 'won't go away ... is a fully rational response to the unbearable reality that we are living in a dying world, a world that a great many of us are helping to kill' (28).³ It is, indeed, a condition, one that we were, and will be born with, for as long as, well, I guess, there still is a Mother Earth to give birth to us.

See also Ecosophy; Animism (Limulus); Metamodernism.

Notes

1. <https://www.youtube.com/watch?v=0u8KUgUqprw&feature=youtu.be>, [accessed 2 December 2016].
2. I would also like to thank the others who suggested artists, series and titles: Alexander Ayouпов, Jonathan Bignell, Mareike Dittmer, Raoul Eshelman, Manuel Graf, Jörg Heiser, Dorus Hoebink, Edwin van Meerkerk, Leszek Stalewski and Daan Vermeulen.
3. See Paul Robbins and Sarah E. Moore, 'Ecological Anxiety Disorder: Diagnosing the Politics of the Anthropocene', *Cultural Geographies*, 20(1): 3–19, 2013, for a very interesting discussion of the conflation between anthropobia and autophobia.

Timotheus Vermeulen

ECOSOPHY

According to Nobel Prize laureate Paul Crutzen (2002), we are living in the era called the Anthropocene, an era in which humanity is the geological force responsible for fundamental changes in the biosphere. As a geologist, the hole in the ozone layer and the increasing amounts of carbon dioxide in the deep Arctic ice gave him evidence to make this claim. But it is not *only* in terms of geology that these fundamental changes reveal themselves, Crutzen claims. Human presence is changing the earth in many different ways, and he has added to this more recently in articles written with a broad range of concerned scientists (Steffen et al. 2011; Zalasiewicz et al. 2010). Habitat destruction and the introduction of invasive species are causing widespread extinctions; ocean acidification changes the chemical make-up of the seas; urbanization vastly increases rates of sedimentation and erosion. Of course the discussions on these issues are ongoing and in no way in agreement on how serious this impact of humanity is (recently for instance new measuring methods showed us that global warming happens mainly in the northern hemisphere and that these warmer local intervals have happened before in global history; Moinuddin et al. 2013).

This, however, does not take away the conclusion that, taking an overview of the many changes that the Earth is going

through in our times, human dominance (or to be more precise, the dominance of 'modern man') reveals itself geologically 'on a scale comparable with some of the major events of the ancient past. Some of these changes are now seen as permanent, even on a geological time-scale' (Zalasiewicz et al. 2010: 2228). In a follow-up article, the authors went even further, claiming that 'The Anthropocene is here treated as a geological phenomenon, comparable to some of the great events of the Earth's deep past. But, the driving force for the component global changes is firmly centered in human behavior, particularly in social, political and economic spheres' (Zalasiewicz et al. 2011: 838). By stressing the various 'spheres' in which we live, Zalasiewicz et al. emphasize that the idea that human activity dominates the planet does not mean that humanity is somehow 'in control' of our age. On the contrary, our Brave New World realizes itself in many ways that were unforeseen; as consequences of long-gone activity, marginal accidents and a series of other 'swerves' that have begun to live lives of their own, folding themselves deeply in the surface of the Earth and the atmospheres embracing it, far beyond the reach of humanity. The new reality it produces, and is about to produce, is thus accompanied with new types of unrest (new types of weaponry even), in many ways unknown to us.

Crutzen and others state that the Anthropocene started over 200 years ago, or to be more precise with the improvements made to the steam engine by James Watt, and the new concept of technology this launched. Contrary to those mechanized processes that, quite randomly, helped us in our everyday activities in the pre-modern world, modern technology, it is claimed, was a *program* in that it introduced us to a new generation of machines that was all about optimizing our everyday procedures economically (the *increase* of profit is what

counts) and, because it came with a non-local source of energy (coal, oil, electricity), was largely indifferent to the environments surrounding these procedures (and thus in a way *necessarily* polluting them). Modern technology's uneasiness with its surroundings, informed ecocriticism and with that the first strand of ecosophy in the 1970s, with its most prominent author Arne Naess and his Deep Ecology Movement (also known as Ecosophy T). The Deep Ecology Movement, celebrating life from a deeply humanist perspective, had quite an impact, including politically, with various Green parties that have been fairly successful especially in post-war Europe, and that play a prominent role in the ecological debate to the present day. Continuing Naess's idea of 'self-realization' (see for instance Naess 1993), which was all about humans realizing themselves anew in relation to at least parts of nature (thus promoting a full scale 'humanization of the environment', as Braidotti put it (2006a: 116)), this 'Green Movement', though all too often found to the left of the political spectrum, holds a quite conservative if not reactionary agenda most of the time. The narrative of Naess fits Crutzen's threatening futures and those of other concerned scientists today: together with modern technology, modern humanity has removed itself from nature, and the revolution to take place is, very classical, a return to a State of Nature that has been left behind.

An alternative, much more posthuman ecosophy has been developed since the 1970s by scholars like Gregory Bateson. In his 1972 book *Steps to an Ecology of Mind*, Bateson introduces us to an ecology that was not so much aimed at 'protecting' nature and distrusting technology (and culture, and humanity at large). Echoing the way in which Alfred North Whitehead had already noted that all technology is necessarily an abstraction from nature, Bateson offered us an ecosophy that starts

from the complex transversal relations that make up everyday life, producing the series of assemblages in and through which we act. (In that sense there is no intrinsic difference between modern technology and the wheel.) Conceptualizing the mind, Bateson thus shows how thinking is necessarily a relational power, a consequence of the material assemblage.

What thinks and engages in trial and error is the man plus the computer plus the environment. And the lines between man, computer and environment are purely artificial, fictitious lines. They are lines across the pathways along which information or difference is transmitted. They are not boundaries of the thinking system. **What thinks is the total system which engages in trial and error, which is man plus environment.**

Bateson 1972: 491

This wholly other form of ecosophy, in which one does not start from *oppositions* between mind and body, man and animal, man and nature, nature and culture, technology and earth (to name just a few of the oppositions (implicitly) at work in Crutzen and Naess), but instead from *relations*, allows us to analyse the crises of today in a completely different way, if only because the role of ecological thinking as such now changes from critical (oppositional) to affirmative (mutual coexistentive): it is not so much in search of answers to problems posed by our era, but rather searches for ways to be interwoven with the movements and the swerves of today. Or better: this second form of ecosophy is not so much thinking *about* ecology but *does* ecological thinking. Being unlimited it rethinks our era *as a whole*, offering us a (possibly) *complete philosophy* and a (possibly) *complete idea* of what threatens peaceful coexistence not only between people and between states, but between

everything that matters. The analysis by Bateson in the early 1970s then offers us a very different analysis of environmental issues or ecological disasters as they are called. Bateson explains:

Let us now consider what happens when you make the epistemological error of choosing the wrong unit: you end up with the species versus the other species around it or versus the environment in which it operates. Man against nature. You end up, in fact, with Kaneohe Bay polluted, Lake Erie a slimy green mess, and 'Let's build bigger atom bombs to kill off the next-door neighbors.' There is an ecology of bad ideas, just as there is an ecology of weeds, and it is characteristic of the system that basic error propagates itself. It branches out like a rooted parasite through the tissues of life, and everything get into a rather peculiar mess. When you narrow down your epistemology and act on the premise 'What interests me is me, or my organization, or my species,' you chop off consideration of other loops of the loop structure. You decide that you want to get rid of the by-products of human life and that Lake Erie will be a good place to put them. You forget that the eco-mental system called Lake Erie is part of your wider eco-mental system – and that if Lake Erie is driven insane, its insanity is incorporated in the larger system of your thought and experience.

Bateson 1972: 491–2

In the late 1980s, Félix Guattari rewrote Bateson's ecology of mind in his famous essay *The Three Ecologies* (1989) expanding on this idea that the three ecological registers (environmental, social and mental ecologies) are necessarily entwined and can only be studied in their entwinings (relations). The kind of 'insanity' that Guattari analyses ('insanity' being a reference to the excerpt from Bateson above) always concerns all these three registers in

their interconnectedness, which means that to worry about Lake Erie is also to worry about the insanity that has overtaken kinship networks, domestic life and neighbourhood relations. Or to translate this to our age, the denuded dry landscape in inner Syria, and the major urbanization that followed cannot be seen as separate from the current civil war.

Especially in the post-2008 landscape, where a series of crises have surfaced and seem to hold the world in a tight grip (ecological, economical and geopolitical) a Batesonian/Guattarian analysis of the ecological and posthuman mind seems to be more needed than ever. Yet even in the late 1980s and the early 1990s Guattari himself noticed that we are running out of time: ‘Now more than ever, nature cannot be separated from culture; in order to comprehend the interactions between ecosystems, the mechanosphere and the social and individual Universes of reference, we must learn to think “transversally”’ (2000: 29).

It is depressing to conclude that these alternative ways of thinking ecology, as they have been developed by great minds like Bateson and Guattari, are only now, decades after their writings, being heard in a series of scholarly movements that are increasingly worried about the ongoing reign of the humanism. Thirty-five years after Bateson, twenty-five years after Guattari, thinking transversally, thinking the social, the mental *and* the environmental as ‘one’, has only just begun. The conclusion can only be bitter, as Michel Serres tells us: ‘We will pay for this blindness’ (2009/2014: 19).

See also Animism (Limulus); Ecopathy; Ecologies of Architecture; General Ecology; Planetary; Urbanibalism.

Rick Dolphijn

EPIGENETIC LANDSCAPE

The epigenetic landscape originated as a charcoal drawing by the British landscape artist John Piper, commissioned in 1940 by British embryologist-geneticist Conrad Hall Waddington to be used as the frontispiece to his volume *Organisers and Genes*. This precursor work in the field of epigenetics examined the processes governing embryological differentiation and the role of genes in guiding development. Waddington intended the image of the epigenetic landscape to represent the developmental process (common to all eukaryotic species, that is species with cells and cell nuclei) through which a pluripotent cell develops, over the course of interactions with its environment, to its specific, differentiated cell fate.

Pause for a moment to assimilate this information: this scientific model of developmental processes was originally a work of art. C. H. Waddington selected it – rather than a forking path, train diagram, tree diagram or any of the other possible scientific representations of development – to capture an essential aspect of animal life: how development progresses from genotype to phenotype, or from the hereditary genetic make-up to one specific morphology. After this initial image, which he commissioned during the London Blitz (and there is a story there, still to be told), Waddington moved away from artistic representations, though he also considered and discarded other visual models for development. Instead, by 1957 he had settled on the schematic representation of the epigenetic landscape with which we are most familiar today, an engraving-like image picturing a ball near the top of a hill fissured with channels that extend from the top to the bottom. In Waddington’s schema, the ball is a fertilized egg cell, and the hills and valleys indicate not only the different directions the developing cell might take as it differentiates, but also the

degrees of probability that the cell might take one particular direction in the journey to that ultimate cell fate.

The field Waddington founded, epigenetics, drew together the insights of embryology, the emerging field of genetics and evolutionary theory to explore morphogenesis: how it was that an individual organism developed from the hereditary genome. Although researchers now examine the interaction between the individual and the environment in fields as widespread as environmental toxicology, prenatal medicine, nutrition, psychiatry and cancer biology, the application of epigenetics in these fields reveals an epistemological narrowing of the concept to a focus on gene activation. Yet when naming this new field, Waddington borrowed the 'epi-' from the old term 'epigenesis', to emphasize that the field was also concerned with aspects of development that lay beyond, over, or above the gene.

The epigenetic landscape image lost currency in the late 1960s to be replaced with the more precise notion of DNA as code. Yet this image merits re-examination. As it was conceptualized, the epigenetic landscape linked time and space: the time it takes for something to develop from its pluripotent to its differentiated state, and the role of elements above the genes, the cell, even the environment around the organism, in the development of new life. Although the young Waddington was interested in morphogenesis – the explanation for how life took specific form – because of his years of experiments on chick embryos, in his later years he understood that the model for morphogenesis embedded in the epigenetic landscape could stretch beyond the individual to the environmental and social. He extended the application of this image to express not merely the course of one cell's development or the probability that the cell would, over time, develop in one direction or another, but also the forces explaining development and

evolution of the natural and social environments. As a core influence on the development of René Thom's catastrophe theory, the epigenetic landscape can be understood as an early model of the non-linear relations of the posthuman era, in which algorithms model the development of complex systems, linking individuals, species, economic markets and the global climate.

Why return to this image abandoned in the rush to understand genomics and most recently epigenomics? We might explore why this embryologist/geologist chose a work of art for his foundational intellectual image, and why the abstract and schematic graphic to which he then turned achieved great currency in the life sciences in the period just before the rise of the era of the gene as code. We might wonder what was lost with the turn to that second image, that ball on a fissured hill that has become the classic version of the epigenetic landscape. What ecologies did Waddington invoke when he chose to represent the relationship between gene and environment unfolding in the temporal course of development as a *landscape*? Did the epigenetic landscape contribute to our current vision of a general ecology? While the epigenetic landscape is currently under active reconceptualization across the life sciences, where it is serving less as a source of scientific content than as a methodological prompt, its form and function in the humanities has yet to be explored. In that role we may indeed find its most powerful legacy.

See also Algorithm; Animal; Art; General Ecology.

Susan M. Squier

EQUATION (MATHEMATICAL THINKING)

The notion of 'equation' is relevant to a posthuman glossary in that it illuminates the

ongoing discussion between rationalism and empiricism. It foregrounds the urgency of finding ways of accounting for an impersonal cognitive agency at work within mathematics (and thereby within computing, within technology) – and hence not only human rationality, but also the rationality attributed to nature. This entry hence supports the posthumanist interest in a critique of such anthropocentric shortcuts in that it discredits the view on mathematics as a toolbox of purely objective mechanisms: an impersonal subject is at work amidst the universality of mathematical objectivity (see *Maxwell's Demon*). How to address it?

The mathematical notion of the equation is first documented in the sixteenth century, when it seems to have been introduced as what we would today call a *terminus technicus* for organizing the practice of equalizing mathematical expressions. It seems to have been introduced to European Renaissance science and philosophy together with algebra: an *equation* is the *mathematical form* for rationalizing and reasoning identity. The term 'algebra' comes from Arabic *al-dschabr* for the 'the fitting together of broken parts', and its first appearance is usually referenced to the title of the Persian scholar al-Chwarizmi's book *Al-Kitāb al-muḥtaṣar fī ḥisāb al-ğabr wa-'l-muqābala* (The Compendious Book on Calculation by Completion and Balancing). Two things are important to point out right ahead: the mathematical term of an equation references a mathematical form for stating identity, and it does so precisely by *not* assuming identity to be given as a whole. In this regard, it crucially differs from the identity notion in philosophy – it helps to reason and rationalize identity, but in the original sense of Greek *mathema*, literally 'that which can be learnt', and *mathematics* for 'all that pertains to what can be learnt'.

Through this emphasis on learning (rather than knowing), and hence on math-

ematics as an *art*, the equational notion of identity is always already in pact with the mathematical irrational (the infinitary). It remains undetermined with regard to whether identity as a postulated principle is to be regarded as a logical device, or whether there is to be assumed a substantial reality of this principle in nature that can empirically be studied in physics (Monod 1972: 100–1; see also *Invariance*). This undeterminedness is indeed the key aspect which Michel Serres attributes to algebra for the advent of modern science and its paradigm of experimentation at large: experimentation, invention, consist in making the cypher under which nature hides appear, he maintains. 'At the beginning of the seventeenth century, when what we came to call the applied sciences first made their appearance, a theory spreads that one can find in several authors, although none of them is its sole source, which seeks to account for a harmony that is not self-evident' (Serres 2001: 140). Rather than looking at conceptual identity as the provider for self-evident harmony to look for in nature, what begins to spread, since Galileo and certainly with Descartes, Leibniz, Pascale, Fontenelle, so Serres, is 'the idea that nature is written in mathematical language' (ibid.). But Serres immediately points to the insufficiency of the term language here; he points out the constitutive role of algebra for the role of mathematics in experimentation, and specifies that

in fact mathematics is not a language: rather, nature is coded. The inventions of the time do not boast of having wrested nature's linguistic secret from it, but of having found the key to the cypher. Nature is hidden behind a cypher. Mathematics is a code, and since it is not arbitrary, it is rather a cypher.

(ibid.)

Serres' speaking of cypher here is to be taken in a mathematical sense: cypher is a

term for how, in mathematical notation, *nought* can be expressed. It literally meant zero, from the Arabic term *ṣifr*, for zero. A cipher constitutes a code that affords encryption and decryption such that once the operations have been performed, the 'text' or 'message' – nature, in Serres' cited passage – that it envelops has not been affected by these operations. Algebra, as the art of speculative completion and balancing, experimentally searches for the code *without having it to start with*: the equational notion of identity hence is capable of organizing the practice of equalizing mathematical expressions in experimental manner. 'Now, since this idea [i.e. that the harmony to be sought is not self-evident but depends upon experiment, VB] in fact constitutes the invention or the discovery,' Serres continues, 'nature is hidden twice. First under the cypher. Then under a dexterity, a modesty, a subtlety, which prevents our reading the cypher even from an open book. Nature hides under a cypher. Experimentation, invention, consist in making it appear' (ibid.).

This emphasis on an equational identity notion, whose determination correlates with its articulation in the characters of a cipher and by the rules of a code, bears two great promises: (1) it affords a thinking that is capable of leaving its object – that which it envelops in code and makes appear – unaffected, and thus gives new support to a scientific notion of objectivity; (2) this thinking proceeds algorithmically and formally, and hence can be externalized into a mechanism that can perform it decoupled from a human cogito, but at the same time this does not liberate thought from mastery and literacy. For 'reading' this cypher behind which 'nature hides' crucially depends upon dexterity, modesty and subtlety. In other words: a reasoning that can be externalized into a mechanism, and hence render obvious a not self-

evident harmony (an interplay of parts that function well, work together fittingly, etc.), must be considered strictly decoupled from any notion of truth: in this sense equational identity is genuinely abstract.¹

This article indexes Alfred North Whitehead's *Treatise on Universal Algebra* of 1898 as the moment in which algebraic abstractness begins to find a novel embodiment in 'information'. It will trace some of the 'genetical' heritage of mathematical abstraction whose lineages come together here.² When Whitehead wrote his *Treatise*, algebra needed to be addressed by means of what he suggested to think of as 'a comparative study' because it had given rise to 'various Systems of Symbolic Reasoning' (Whitehead 1910: vi). And those Systems of Symbolic Reasoning, as Whitehead calls them, had been looked upon 'with some suspicion' by mathematicians and logicians alike – as Whitehead puts it: 'Symbolic Logic has been disowned by many logicians on the plea that its interest is mathematical, and by many mathematicians on the plea that its interest is logical' (Whitehead 1910: vi).³ This confusion – literally, materially, a confluence of 'clarities' – constitutes the spectrum through which mathematics, since the early twentieth century, poses 'postmodern' challenges to every philosophy concerned with separating legitimate statements from illegitimate ones (Jean-François Lyotard 1984 [1979]).⁴ Today, we encounter Whitehead's algebra (systems of symbolic reasoning) in the 'artificial languages' articulated by computers – whereby calling it a 'language' is neither speaking in a metaphorical nor in a clearly defined manner. The challenging question that arises from the sheer performativity of algebra's abstractness is, from a philosophical perspective, how to acknowledge that there *exists* something like 'mathematical thinking'. This is a challenge for the modern tradition of science, with its dualism between nature (objective) and culture (subjective),

because it points out a certain impersonal subject (thought) amidst the very reign of objectivity (measurement and calculation).

Until the late nineteenth century, algebra was used almost synonymously with a theory of equations, and its symbolical notion was thought to encode quantity in its classical double-articulation as magnitude (metrical, answering to *how much?* presupposing a notion of unit) and multitude (countable, answering to *how many?* presupposing a notion of number). When Whitehead wrote his *Treatise*, this had changed: with Cantor's countable infinities (among many other factors that had been contributed, to name only a few of the most important names, by William Rowan Hamilton, Richard Dedekind, George Boole and Hermann Günther Grassmann), the classical distinction between multitude and magnitude had given way to a more abstract distinction between ordinality (answering to *the howmaniest?* as in *first, second, third*, etc., thereby implying an ordering place-value grid) and cardinality (*how many?* as in *one, two, three*, thereby implying the discreteness of the countable) (cf. Stenlund 2014). The generalized quantity notion was now that of 'sets'; the status of mathematics with regard to philosophy and the natural sciences, but also with regard to linguistic form (structuralism) and literary form (e.g. in Wittgenstein's notion of 'natural language' as 'mathematical prose') was profoundly unsettled thereby. This is what it means to say that mathematics is no longer concerned with quantity, but with symbolical systematicity (ibid.).

With this, the genealogy of the equation has come a long way, from the practice of equalizing mathematical expressions which once gave rise to the notion, and which then meant that arithmetic could not only be done with numbers (*arithmos*) understood in an Aristotelian sense (as ontological science), but with what we could call 'lettered/characterized numbers' that

entailed an intermediary symbolical-notational formality (codes or polytomic alphabets, elements that are not non-divisible, atomic, but partitionable in many ways). The decisive aspect is not that letters of the alphabet were newly used in mathematics;⁵ it is that alphabetic letters began to be used for the notation of numbers *in a manner that changed the concept of number*: numbers, now, could be articulated as an interplay between variable parts and constant parts. This was not the case in antiquity. Here, numbers were always determinate numbers of things, while the algebraic concept of number works upon what is a 'given' only in the form of a metrical measurement point. Eventually, this novel manner of thinking about numbers gave rise to sophisticated procedures of estimation like stochastic interpolation and extrapolation. Mathematics thereby came to be seen as an activity, an intellectual and practical art, and the resulting geometry was referred to not as 'elementary' (*stochastiké*, in the tradition of Euclid's *Elements*), but as 'analytical', 'specious', and eventually as 'population based' (modern stochastics, probabilistics). The notion of a mathematical *object* was called by the early algebraists *la cosa*, the unknown – or not exhaustively known – 'thing' (Esteve 2008).

This novel notion of the object triggered in philosophy (and in politics) the inception of concepts of *sufficient reason* on the one hand, and of *absolutism*, literally meaning 'unrestricted; complete, perfect'; also 'not relative to something else';⁶ on the other hand. Not relative to something else meant for mathematics that the role of proportion (A is to B as C is to D) as the classical paradigm for analysis – literally the dissolving (from Greek *-lysis*, for 'a loosening, setting free, releasing, dissolution'; from *lyein* 'to unfasten, loose, loosen, untie') what is analogue (from Greek *analogon*; from *ana* 'up to' and *logos* 'account, ratio') – was

generalized, and thereby also relativized; proportion was now addressed as 'proportionality', and reason was now relative to conditions of possibility and the inclinations of dispositions (see *Architectonic Disposition*). The practices of equalizing mathematical expressions unfold in this generalized role of proportion as proportionality, and the notion of 'equation', with the symbolic forms of organizing these practices, can be understood as the technical term to express this relativization of the analogical structure of proportion. It introduced a novel art, the *ars combinatoria*, and the practice of algebraically equalizing mathematical expressions culminated with Newton's and Leibniz's infinitesimal calculus as a novel *mathesis universalis* (a universal method) which triggered a fierce dispute in the eighteenth century between philosophical Rationalism (baroque-ish and 'orthodox' in spirit) and Empiricism (reformationist and 'modernist' in spirit). Immanuel Kant's notion of the transcendental, together with his programme of critique for philosophy, eventually relaxed the disputes (temporarily)⁷. Algebra, as the theory of equations, was now to provide insights not about the nature of elements immediately, but in rules that can be deduced from Natural Laws that reign in physics. Mechanics came to be seen as a particular case of a more general physics, including dynamics and soon thereafter also thermodynamics. It was now the formulation of these laws (no longer that of mechanical principles) that was to be stated in the form of equations, accessible critically through empirical experiment coupled with exact conceptual reasoning, and hence decoupled from an affirmation of any metaphysical (and theological) assumptions in particular.^{8,9}

This is the modernity with which Lyotard's 'computerized societies' inevitably have to break: the formulation of laws is equational, and it is because of this that laws

ought perhaps best to be understood along the lines of what Michel Serres calls 'the natural contract' (1991). Without such an account, the modernist decoupling of science from notions of the transcendent is being replaced with a fundamentalist (scientist) coupling up of experimental insight (empiricism) with the uncritical affirmation of a particular anthropological or sociological or ecological assumption (rationalism as realist reason; see *Negentropy*).

See also Architectonic Disposition; Negentropy; Invariance.

Notes

1. For an extensive discussion of mathematics; abstractness see Alfred North Whitehead, *An Introduction to Mathematics* (London: Williams and Norgate, 1917), especially the first chapter, 'The Abstract Nature of Mathematics'. How this role can be played today by a mathematical notion of information remains a largely open issue to this day. Cf. Serres 2007a and 2014.
2. A remarkable study on the Cogito in terms of a materialist genetic heritage is by Anne Crahay and Michel Serres, *La Mutation du Cogito: Genèse du Transcendantal Objectif* (Brussels: De Boeck, 1988).
3. See also the discussion of how Universal Algebra proceeded and evolved until the 1960s by George Grätzer (1968); as well as for a discussion of the subject's developments from the 1950s until 2012 Fernando Zalamea (2012), and the critical appreciation of Zalamea's book by Giuseppe Longo (2015).
4. It is for precisely this reason that Lyotard has staked the condition of knowledge in computerized societies as the central problem that triggers a break with the modern traditions (1984).
5. Indeed, the separation of a particular notational system for mathematics is a rather recent development compared to

the history of mathematics; it is a bifurcation after many centuries of using one and the same script for linguistic as well as mathematical articulations. Cf. Schubring (2016).

6. See the *Online Etymology Dictionary*, www.etymonline.com; also Jacobs (2010).
7. It seems not entirely implausible, at least, to think about the early twentieth-century foundational crisis as a continuation of just these disputes on higher levels of abstraction. For a largely unbiased account and a serious and open-minded suggestion of how to approach the dilemma, see Weyl (1994).
8. Due to its brevity, this summary follows the lineage in the critical tradition that has turned out as the predominant one, linking twentieth-century analytical as well as continental philosophy; it thereby understates the ideas of Leibniz, Lambert and others, who maintained that algebra, by its calculatory and symbolic methods, could actually be seen as opening up the closedness of classical logics in the Aristotelian tradition, thereby introducing an *ars inveniendi*, an *art of invention* into logics – an approach that was still pursued by figures as eminent for the nineteenth-century development of algebra as Charles Sanders Peirce (abduction) or Richard Dedekind (abstraction as a creative act). Against these ideas, Kant famously stated: ‘Die Logik ist ... keine allgemeine Erfindungskunst und kein Organon der Wahrheit; – keine Algebra, mit deren Hülfe sich verborgene Wahrheiten entdecken ließen’ (1800; here cited in Peckhaus 2006). For an introduction to the conflicts the unsettled status of algebra triggered in the empirical sciences themselves, see Stengers (2010), especially Book II, *The Invention of Mechanics, Power and Reason*, 68ff., therein ‘The Lagrangian Event’ (112ff.) and ‘Abstract Measurement: Putting Things to Work’ (129ff.).
9. The seminal study on the implications of this for axiomatics is by Robert Blanché

(1980); there is an English edition of this book by Geoffrey Keene (1962), but it excludes the crucial two chapters with which Blanché ends his study, discussing the implications for science and for philosophy. On the genealogy of philosophical notions of necessity and contingency, and the relatively recent upheavals with regard to this genealogy, see also Vuillemin (1996; 2009).

Vera Bühlmann

ETHEREAL SCENT

The Sense of Smell and the Posthuman Experience

People stink in science fiction movies. Heavily perspiring, they toil to survive an overpopulated planet earth (*Elysium*), a dump of apocalyptic proportions (*Wall-E*)¹ or in a disintegrating urban agglomeration on a global scale (*Blade Runner*). The wet spots under their armpits and on their backs, the dirty worn clothes and their hair that hangs in sweaty strands over their foreheads give away the human condition in all its future greasiness. The individuals who can afford it have left Earth and live in highly technologized environments that are immaculate, sterile and above all inodorous. In these feature films the difference between human and technology exposes itself also through the nose. *The Matrix* is exemplary of this: everything connected to human(ity) is dirty and smelly and the world of the machines (the matrix) is clean. The rebel forces live and work in the decrepit spaceship *Nebuchadnezzar*.² They dress in worn-out tatters where the sweat stains are clearly visible. In Zion – the last vestige of free and pure humanity – they party in a moist orgy. When Neo, Morpheus, Trinity and the other rebels upload in the matrix, all characteristics

of humanity seem to disappear. The tight costumes they wear, the sunglasses they use to shield their pure souls from the false truth of the hyperreality, and the superhuman forces they exhibit, mirror the powerful and efficient systems they fight. But even in this artificial world of the matrix their humanity reveals itself through smell. While interrogating a heavily sweating Morpheus, Agent Smith confesses he particularly can't stand the smell of humans: 'I feel saturated by it. I can taste your stink. And every time I do I feel I have somehow been infected by it. It's repulsive, isn't it?' That there is no such thing as smell in the matrix makes this fact even more significant. Humanity, unbounded by a biological body, fragrantly saturates all possible nodes of the network computer systems that construct the matrix.

Smell is an integral part of the body but also separate from it. That characteristic makes it the ideal vessel to transcend oneself. Since antiquity, perfume has always had a transcendental function. In ancient Egypt smell played an important role in rituals. The gods were considered to be fragrant beings. Besides, smell was considered to have protective worth. The well-known wax cones the Egyptians wore on their heads fulfilled a ritual value. They guided the spirits of the deceased in their transition to the world of the dead. In the Middle Ages, smell was also a means to contact the supernatural. Art historian Caro Verbeek argues that the incense diffused during holy mass was a spiritual medium. To the twelfth-century mystic Hildegard von Bingen, smoke was the most appropriate means to communicate with God because – just like Him – it is invisible and it exceeds our intellect.³ Today we see a revival of this spiritual power of fragrance in ethereal oils, scented candles, aromatherapy and potpourri mixes used in new-age-styled faith. Smell plays an important part in self-healing and the spiritual cleansing of the home. The aromas that

are used in these *rituals* are often synthetic derivatives of the smell of the wild. They create a better, more intense and controlled (i.e. hyperreal) experience of nature than real nature. And in their intensity they create an immersive experience similar to the one generated by the matrix. But whereas the cinematic experience is mostly visual, this one uses fragrance to transport the body to other spheres, as was done in the experiments with smell in the cinema from the early 1900s onwards. From Hans Laube's patent for Smell-O-Vision and Morton Heilig's Sensorama to the virtual reality systems of the nineties designed to effectively immerse gamers, and the more recent smell-o-internet or i-smell and o-phone,⁴ they all turned to smell as the next level in creating simulations that give an experience that is more real than reality.

This sensitivity to the embodied human experience was lost during the Enlightenment. Descartes separated body and mind and in this act created the modern human subject that can perceive, know and rule the world by the power of the ratio. The matrix as informational space is a contemporary representation of this world of the mind. However, just as Neo as 'The One' eventually succeeds in uniting body and mind, nature and culture, biology and technology, today in our technological society we see a reappraisal for the body as it is defined as an information processing system. The body as information is no longer centrally organized by the ratio of the individual subject. Just as the other information processing systems, as wetware it is part of the *infosphere*. As such it can be regulated and adapted by means of biotechnology. In this sphere, smell is one of the signals that can be coded, manipulated and networked. The protagonists in science fiction films still stank. The posthuman, as hybrid species between biology and technology, creates its own atmosphere to design itself and to

communicate with other human and non-human creatures in its network.

See also Sensing Practices; Art; Post-humanism; Noise.

Notes

1. Although the cleaning robot Wall-E is not actually a human, in its appearance (as an old and dirty model) and its intrinsic quality it shows more humanity than the actual humans who have left the trash in their high-tech spaceship.
2. Nebuchadnezzar was the king of Babylon and designed its famous Hanging Gardens that were well known for their fragrant plants.
3. Maurice van Turnhout, 'Geuren van betekenissen' ['Scents of significance'], *Trouw*,

7 February 2013, <http://www.trouw.nl/tr/nl/5009/Archief/archief/article/detail/3389818/2013/02/07/Geuren-van-betekenissen.dhtml> [accessed 13 April 2017].

4. Christina Agapakis, 'Smell-O-Vision', *Scientific American* 'Oscillator' blog, 12 November 2012, <http://blogs.scientificamerican.com/oscillator/2012/11/12/smell-o-vision/>; oNotes, <http://www.onotes.com/> [accessed 13 April 2017].

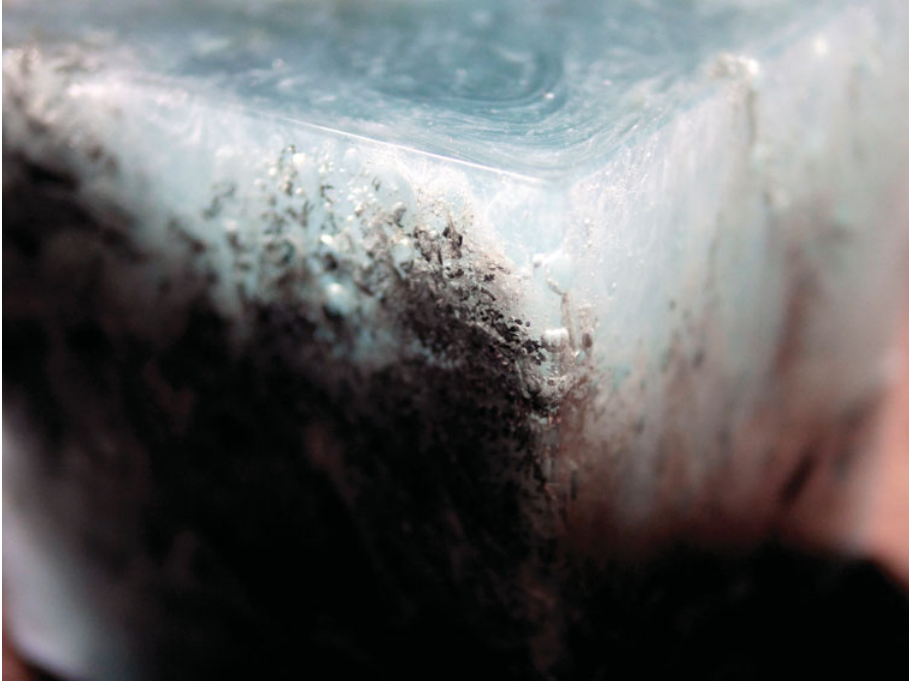
Wander Eikelboom

EXCLUSION ZONE

Irradiated broken glass collected from inside the Fukushima Exclusion Zone forms the outer layer of this sculpture. The



Trevor Paglen, *Trinity Cube*, 2015, irradiated glass from the Fukushima Exclusion Zone, Trinitite, 20 × 20 × 20 cm. COURTESY OF THE ARTIST AND DON'T FOLLOW THE WIND.



Trevor Paglen, *Trinity Cube*, 2015, irradiated glass from the Fukushima Exclusion Zone, Trinitite, 20 × 20 × 20 cm. COURTESY OF THE ARTIST AND DON'T FOLLOW THE WIND.

work's inner core is made out of Trinitite, the mineral created on 16 July 1945 when the United States exploded the world's first atomic bomb near Alamogordo, New Mexico, heating the desert's surface to the point where it turned surface sand into a greenish glass.

Trinity Cube was created by melting these two forms of glass together into a cube, then installing the cube back into the Fukushima Exclusion Zone as part of the *Don't Follow the Wind* project curated by the Don't Follow the Wind Collective (Chim ↑ Pom, Kenji Kubota, Eva and Franco Mattes, Jason Waite), Fukushima, 2015 – ongoing). The artwork will be viewable by the public when the Exclusion

Zone opens again, any time between three and thirty thousand years from the present.

See also Expulsions; Extinction; Geo-Hydro-Solar-Bio-Techno-Politics.

Trevor Paglen

EXECUTION

Execution is a function that operates within a range of systems, such as language, computation or biology. The following entry traces a few of these instantiations of execution in order to highlight the material discursive quality of any particular



Bourreau tranchant la tête d'une condamnée (Exécution de Léonora Galigai, 1617). PUBLIC DOMAIN IMAGE.

executing system, with the discussion moving across law and guillotine, language and *langue*, computer instruction and memory. In each case tracing the way in which execution produces situated posthuman couplings in a dynamic ensemble of such conjugating systems.

The word execution stems from *l'exécuteur du testament* (twelfth-century French), designating the executor of the will. Here we see how execution is from its inception embedded in regulatory forms of bureaucracy (Vallaro 2005). The ancestor of the executor of the will was the *bourreau*, whose function goes at least as far back as Ancient Rome, and who performed executions decreed by the court, with punishment acting here as spectacle and demonstration of power, perceived as a means to socially regulate crime and disobedience. This social function was actualized in the public square, where beheadings took place *live*. As an effectuation of a sentence, execution always relates to the now, to an actualization, a presence which is always already over.

Execution in this instance then is not dying, but specifically to be deprived of

being. It is not deceasing, nor is it homicide, it is death by punishment. It is sudden death forced upon a body of punishment which has no control over the violence executed by the system. In these iconic, self-presencing actualizations, we are made to forcefully witness execution's quality as an event, an act of a juridical, political, technical or biological discourse enacted decisively upon its sentenced subject.

Language can be seen as such a discursive system, one that executes by consisting of two separate dimensions: *langue* and *parole* (Saussure 1916). *Langue* as the system of language is the formalized structure, the underlying system of distinct signs, opposing *parole*, which is articulated speech. Thus *parole* is the executive side of language. The point of note in this instance is that exercising language is not a shift from the non-linguistic to the linguistic. It is the actualization and execution of a system into an instance of discourse.

In relation to this, subjectivity in language is inseparable from the moment of execution, the instance in which language as system becomes language-in-use (when *langue* is converted into *parole*). An execution deictically designates a speaker, therefore it is when entering language and converting the virtual system to actual use that the subject is constituted (Benveniste 1958). However, the subject evaporates in its own articulation of itself as it becomes a mere property of a symbolic system. Execution of language is thus related to the 'killing of the subject' (Barthes 1968) – it is in the actualization of the language system that the speaking subject produces itself as an abstraction separated from a body. Executable systems like language can therefore be said to be inherently violent, effectuating a killing, be it abstract or literal.

The tongue, the embodied executioner of language, the interface of executing *langue*, both gobbles and babbles. Following

Michel Serres' account of the five (human) senses, every time an organ – or function – is liberated from an old duty, it re-invents itself (Serres 2001). As *Hominina*¹ stood up from her quadruped ancestor, the tongue, freed from the vital necessity to sense danger, became a universal tool (Serres 2014: 2). According to Serres, the 'information imperative' is to receive, store, process and emit information. The tongue's embedded subjectivity has become a literal geographical expansion of the post-industrial and the nutraceutical² market. It divides bodies between obese/skinny, food between organic/fair-trade. It clears Amazonian rainforests for soya plantations used for feeding livestock (Morton et al. 2006). It fractions populations between young high-paid social entrepreneurs and the violently displaced. The tongue is a decisive and divisive organ of gentrification and land forming.

Such discursive systems divide and conquer, working to make entities executable according to their particular logics and delimited needs. In his foundational article 'On Computable Numbers, with an Application to the Entscheidungsproblem', Alan Turing provides a definition of computability as that capable of being enumerated and made into effectively calculable algorithms for execution upon and by machines (1936). In the further materialization of Turing's thesis into actual computing machines, the act of making things discrete, so as to be computable, becomes one of establishing machine-readable *cuts*. These are the switchable on and off state elements, or flip-flops that are enacted at the level of logic gates used to store and control data flow. Such flippable states constitute the material basis that allows for the writing and running of the executable binary instructions of machine code upon this 'manic cutter known as the computer' (Kittler 2010: 228).

Such cuts – execution performed by computation – are expressed at the temporal dimension of code execution, constantly rendering the now in networked and pervasive conditions. The fetch–execute cycle in computing is used to describe the operational steps of performing code instructions by a Central Processing Unit (or CPU) following its clock cycle. A CPU fetches each instruction from the memory and breaks it down into micro-instructions, including the controlling operation sequence, computing, transferring, reading, updating and storing data in memory (Burrell 2004). Thus what is written in a piece of source code should only be regarded as a partial instruction within a wider, dynamic ecology of many executing systems. When extending the notion of execution into any dynamic networked environment in which things are networked seamlessly and data is processed continuously, there are different 'micro-decisions' that are executed at the level of network protocols to control and regulate the transmission of data (Sprenger 2015). Such deep internal and operational structures of computation, data processing and digital networks execute a distinctive rhythm and temporality; a computational form of 'micro-temporality' (Ernst 2013: 57).³ These computational cuts and micro-decisions are intertwined, dynamic and subject to change at any moment in time. In other words, execution involves micro-instructions, micro-operations and a micro-temporality of things where codes, materials and actions are composed in a dynamic environment. This micro-temporal dimension of execution again draws attention to the phenomena of liveness; the dynamics of execution that constantly render the *now*.

Any such cuts in the name of executability can be compared to what Karen Barad refers to as 'agential cuts' (2007: 429). They are made in the name of a certain agency; in the case of computer code,

a computational agency. In its levelling of all data into a binary form of on and off, computational cuts enact a radical and seemingly non-discursive treatment of information. The data structures of computing are noticeable for the way in which they are particularly amenable to reconfiguration and application towards a range of operations (Lovelace and Menabrea 1842). Such a changing of states and configurations is, unsurprisingly, often strongly felt by any entities brought into contact with their executing logics. Turing himself was made to be acutely aware of this executive power of code, whether programmable, political or cultural. Definable as a war hero according to one set of patriotic parameters, he soon found himself rapidly switched from national saviour back to sexual deviant and criminal to be persecuted by the state. Computable according to some logics and configurations; uncomputable according to others. Such is the potential power and violence of any cut and its executability.

This violence of entangled and often competing executable logics inevitably leaves 'marks on bodies', in which the marks are 'the differences materialized' (Barad 2007: 89). From Turing's chemical castration to the growth of synapses catalysed by repeated stimulus, organisms bear the marks of inscription and execution. Implicit memory, in the Pavlovian tradition, is inscribed into long-term memory through habituation. The environment is constantly executing memory. Such is the power and force of trauma that it bootstraps long-term memory creation (Kandel 2006: 342). Nevertheless, memory is also *forgetting*, a dynamic process of constant read/write execution. The recalling of memories is based on chemical exchanges within highly mutable synaptic networks that require protein synthesis (Nader, Schafe and Le Doux. 2000). As memory is

reactivated, it mutates. Memory becomes an ongoing site of execution, rather than one of static storage, in which both habituation and deletion are crucial. The brain actively erases information as part of its regulatory processes (Hadziselimovic et al. 2014). In the absence of this regulatory function, a human becomes crippled by a form of neurological condition called hyperthymesia.⁴ Erasure and death are regulatory functions performed through execution and its continuous actualization.

The very etymology of execution is administrative, and as a regulatory processing of living beings, bureaucracy is the performance of the law. But a violent disjunction occurs in the conflation of law and execution: the state of exception; or the conflation of death and execution: capital punishment. Cuts, which are inherently exclusionary, also contain a ready potential of violent impositions of a system onto bare life (Agamben 2005). If the cut and its execution materialize on the one hand in the actualization of an event, they can also, in biopolitical fashion, take on an operative function as a self-perpetuating *threat* of violence to come. Such menacing *potential* events of crisis become important in actual execution, helping to prompt a range of pre-emptive forms of violent coded logics and crisis-oriented forms of execution (Cox 2015; Chun 2016).

Execution situates and is situated. Whether via the tongue, the guillotine, the CPU or the synapses, execution produces integral couplings of subjectivity and desubjectivity through systems such as those of language, of judiciary, of computation and of memory. A powerful force, leaving marks on bodies and indelible traumatic memories. Such ecologies of execution are manifold, and the effectuation of a system is always conjugating amongst a mesh of other heterogeneous agents, processes, energies and material strata.

See also Non-human Agency; Mattering; Ecosophy; Extinction; Necropolitics; Violence.

Notes

1. Originally described as one of the earliest ancestors of humans after they diverged from the main ape lineage.
2. A portmanteau of the words nutrition and pharmaceutical. Although the term can be attributed to Stephen L. DeFelice, food as medicine has a long tradition in western medicine, as Hippocrates famously put it in 'Let food be thy medicine and medicine be thy food.' The term is applied to marketed products as wide as isolated nutrients, dietary supplements and herbal products, specific diets, processed foods and beverages.
3. Taken from Wolfgang Ernst, *micro-temporality* refers to something that is processual and operative, a different understanding of historical and narrative macro time (Ernst 2013).
4. For further explanation on hyperthymia see 'What is Hyperthymia? The Highly Superior Autobiographical Memory (HSAM)', <http://hyperthymia.net/hyperthymia/> [accessed 13 April 2017].

Critical Software Thing

EXPULSIONS

At the Systemic Edge (A Ruminantion)

I use the term 'expelled' to describe a diversity of conditions. They include the growing numbers of the abjectly poor, of the displaced who are warehoused in formal and informal refugee camps, of the minoritized and persecuted in rich countries who are warehoused in prisons, of

workers whose bodies are destroyed on the job and rendered useless at far too young an age, of able-bodied surplus populations warehoused in ghettos and slums. But I also include the fact that pieces of the biosphere are being expelled from their life space – and I insist that the tame language of climate change does not quite capture the fact, at ground level, of vast expanses of dead land and dead water.

My argument is that this massive and very diverse set of expulsions is actually signalling a deeper systemic transformation, one documented in bits and pieces in multiple specialized studies, but not quite narrated as an overarching dynamic that is taking us into a new phase of global capitalism – and global destruction. As an analytic category, expulsions are to be distinguished from the more common 'social exclusion': the latter happens inside a system and in that sense can be reduced, ameliorated and even eliminated. Expulsions as I conceive of them happen at the systemic edge. In the types of complex systems I focus on, there are multiple systemic edges. This partly reflects the multiplicity of diverse domains in such systems: from prisons and refugee camps to financial exploitations and environmental destructions.¹

Today, after twenty years of a particular type of advanced capitalism, we confront a human and economic landscape marked by divergent dynamics. On the one hand, there is the familiar reconditioning of terrain in the direction of greater organizational and technological complexity, epitomized by the state-of-the-art space of the global cities that are proliferating in the North and the South. This extreme upgrading comes at a high price to those excluded from its riches (Sassen 2001, 2016a).

On the other hand, there is a mix of emergent conditions often coded with the seemingly neutral term of 'a growing surplus population.' A key underlying

condition of this 'surplus' is the accelerating expanse of territory that is devastated – by poverty and disease, armed conflict, brutal extractions of natural wealth by national and foreign firms (see Sassen 2014: chs 2 and 4). And then there are the governments rendered dysfunctional by acute corruption and a crippling international debt-regime, all of it leading to an extreme inability or lack of will to address their peoples' needs (Sassen 2016b). To this we should add the sharp increase in large-scale land-acquisitions by foreign firms and governments (ibid.).² These land grabs are generating additional mass displacements of whole villages and smallholder agriculture districts, all replaced by vast plantations which use excessive fertilizers and pesticides, thereby rapidly killing the land, which will in turn lead to yet another phase of land grabs and the resulting displacements.

It is this second emerging condition marked by extractive logics that concerns me here. It goes against the familiar notion that our modernity is marked by an irresistible growth in organizational and technological complexity. In vast stretches of our very modern world, we see shifts from the complex to the elementary: from the complex encasing of land that is the doctrine of 'national sovereign territory', to land in devastated nation-states as a commodity to be sold on the global market; and from the complexity of people as citizens to people as surplus – to be warehoused, displaced, trafficked, reduced to mere labouring bodies and body organs. I find that one critical component of these shifts that matters to my analysis is how much of the sharp rise in complex systems, instruments and knowledge winds up producing these kinds of simple brutalities.

In short, too many of our increasingly complex capabilities and knowledges do not even produce *complex* brutal outcomes

that are visible to us all. Thus a dam, for instance, makes visible its complexity and its enormous capacity to destroy whole areas of a region, submerging their villages and monuments and such. This type of visibility is absent, for instance, in the case of the complex financial instruments that can extract value from reducing the wages of millions of garment workers sewing simple clothing: extremely low wages can raise the stock-market value of the shares of the pertinent corporate firms because they show the firm is willing to maximize value extraction. This is a much-overlooked factor in critical analyses of low wages.

There are, thus, two vectors in the search for low-wage labour. The familiar one is that the firm can sell its products at a low price. But the far more significant vector in the corporatizing of more and more economic sectors is a positive valuation in the stock market when a firm demonstrates a will to lower costs no matter what – exploited workers, unsafe workplaces, environmental destruction and more. This is a profoundly insidious overlay to an already damaging search for mere low wages. It also feeds into a massive distortion of how we construct value in a corporatized economy that is increasingly part of a financializing process.

Beyond the specifics described above, we see a spread of this combination of rising complexity and expanding elementary extractions. It generates multiplier effects for one side of the process (large corporations, financial markets) even as it destroys the less advantaged. It weaves itself into how we measure the 'growth' of our economies – for instance GDP per capita – and generates an acute distortion as to what is valuable, what adds to 'economic growth'. Replacing smallholder agriculture with corporate plantations is registered as a massive growth in GDP per

capita. But it actually destroys the land rather quickly and buries the knowledge of smallholders about how to ensure a long life for land (notably, rotating crops that ensure fertility and minimize pests). Similarly in urban economies, replacing mom and pop shops (for selling flowers, or food, or a good latte) with a corporate outlet sucks knowledge (it takes knowledge and experience to run a mom and pop shop) and profits out of the locality and passes it on to central headquarters. The locality loses capabilities and, furthermore, part of its collective consumption capacity goes to headquarters rather than re-circulating in the locality. Corporate headquarters make gains. And these gains, further, can translate into positive valuations of their shares in the stock market. This shift is measured as a growth in GDP per capita so experts and governments see it as a positive.

These examples illustrate one aspect of what I mean by the systemic edge: it is that point in a process when our existing categories (analytical, conceptual, statistical) can no longer capture what is going on. There are simple and there are complex instantiations.

The second major domain where I deploy this type of analytics concerns the biosphere.³ The biosphere's capacities to renew land, water, and air are remarkable. But they are predicated on specific temporalities and life cycles that our technical, chemical and organizational innovations are rapidly outpacing. Industrialized economies have long done damage to the biosphere, but in at least some of these cases, and with time on her side, the biosphere has brought damaged land and water back to health. Current analyses and evaluations signal that we have gone well beyond this capacity for recovery in a growing range of conditions. We now have vast stretches of land and water that are

not merely damaged but plain dead – land overwhelmed by the relentless use of chemicals, and water dead from lack of oxygen due to pollution of all sorts. The surge of foreign land acquisitions by governments and firms examined above is one of many sources of this destruction. But these acquisitions are also partly a response to the crisis: more land and water need to be acquired to replace what they killed.

The trends described here point to accelerated histories and geographies of destruction on a scale our planet has not seen before, making substantive the notion of the Anthropocene, the age marked by major human impact on the environment. Many of these destructions of land, water and air have hit poor communities particularly hard, producing an estimated 800 million displaced people worldwide. But none of us is immune, as destructions can reach us all, spread by massive transformations in the atmosphere.

In my work, I have focused on diverse destructions and sites. This is a partial view that rests on the assumption that extreme conditions make visible trends that are more difficult to apprehend in their milder versions. Much of the land and most of the water on our planet is still alive. But much of it is fragile even when it looks healthy. Scattered evidence in news media suggests that the extent of this fragility may not be widely understood or recognized. For instance, polls show that few in the United States seem to know that more than a third of that country's land, including much of the cherished fertile Midwest, is actually stressed according to scientific measures, even if on the surface it looks fine. Or that some of the six major gyres that help keep our ocean currents going and oxygenated are becoming massive trash zones leading to the asphyxiation of marine life. Nor is it widely known that there are at least 400

clinically dead oceanic coastal zones. We made this fragility and these deaths.

We can think of such dead land and dead water as holes in the tissue of the biosphere. And the edges of these holes are also systemic – they tell us something that is larger than the particular site. I conceive of these holes as sites marked by the expulsion of biospheric elements from their life space, and as the surface expression of deeper subterranean trends that are cutting across the world, regardless of the local type of politico-economic organization.

As I examine at length in *Expulsions* (Sassen 2014), we have collectively produced conditions that override national differences: my guiding conceptual effort throughout the examination of concrete cases across our planet was to make visible the recurrence of environmentally destructive modes no matter how diverse the political economies and political systems in play. Together and over time, we have generated a planetary condition that reaches far beyond the specific sources of destruction and the specific forms of politico-economic organization within which they take place. It is a condition that hovers in spaces that range from the stratosphere to deep ocean gyres. It destroys the Arctic permafrost even though the local indigenous Eskimo people had nothing to do with that destruction; it was rather the polluting factories of the US and Russia, among so many others.

By way of conclusion: there is a profound disjuncture between the diverse local, national and planetary conditions briefly described in this entry and the dominant logics shaping governmental and experts' policies and responses. This disjuncture is partly enabled by the divergent systemics that mark this period. On the one hand, much of the visual order speaks the language of quality and luxury, signalling that we are doing fine. On the other hand,

the proliferation of systemic edges and expulsions renders the extreme negatives invisible, no matter their full materiality. Destroyed economies, livelihoods, bodies, land and water have become a generic condition for part, and only part of our epoch, dis-embedded from the geopolitical landscape of nation-states and mainstream international policies that caused it.

My point is that we need to go back to ground level, by which I mean a variety of analytic operations – to de-theorize, to exit some of our inherited categories, to ask what I do not see when I invoke the traditional concepts. The ground here is a condition that tells us there is something we have not engaged with, not seen. We do not need more replicating; it serves mostly to confirm established knowledge and to expand its grip. We need to explore and discover in order to re-theorize.

See also Extinction; Food; Survival; SS = Security/Surveillance; Exclusion Zone; Capitalocene and Chthulucene; Necropolitics; Rewilding.

Notes

1. For two diverse cases see Sassen 2017a; and, at the other end, Sassen 2015. And for the fairy-tale version, see Sassen and Koob-Sassen 2015.
2. See also for specific cases Sassen 2017b, 2017c.
3. See e.g. Sassen 2014, ch. 4.

Saskia Sassen

EXTENDED COGNITION

The extended cognition (EC) or 'extended mind' thesis claims that cognition extends beyond the organism into techno-social environment, where the latter plays an

active part in driving cognitive processes (Clark and Chalmers 1998). This standpoint is that of active externalism and resonates with theories of embodied (e.g. Wilson and Foglia 2016), embedded (Suchman 1987; Hutchins 1995), enactive (Varela, Thompson and Rosch 1991) and situated cognition (Smith 1999; Robbins and Aydede 2009). Such a view of cognition not only has implications for research in cognitive science, robotics and artificial intelligence but also challenges individualistic understanding of cognition as taking place exclusively in the brain or even brain-body. To an extent that this model blurs the boundaries between technical objects and human agents in the domain of cognition, the extended mind thesis also questions the human exceptionalism and anthropocentrism inherent in more traditional cognitive sciences.

The extended mind thesis was introduced by Andy Clark and David Chalmers in their article 'The Extended Mind' in 1998. In their essay they propose that reliance on environmental support in some cases produces 'epistemic actions': actions that alter the world so as to aid and augment cognition (Clark and Chalmers 1998). This leads them to propose that such actions should also deserve epistemic credit: 'if, as we confront some task, a part of the world functions as a process which, *were it done in the head*, we would have no hesitation in recognizing as part of the cognitive process, then that part of the world is . . . part of the cognitive process' (ibid.: 8). The latter is also what was coined as the 'parity principle', which helps define when cognition is extended. Such extended minds are, in fact, cognitive systems, where all elements play an active causal role, continuously influencing and responding to one another and thus coordinating to produce behaviour (Clark 1997).

Clark and Chalmers's essay constitutes the basis of what is called the 'first wave' of arguments for EC, mostly based on the above-mentioned parity principle (Menary 2010). The second wave of arguments is developed in closer orientation to empirical and enactive approaches (see, for instance, Sutton 2010; Menary 2007 and 2010; Wilson 2010; Wheeler 2010; Malafouris 2013). Second-wave EC thinkers highlight that external elements and processes can differ dramatically from internal ones (Sutton 2010), and this difference is, in fact, required in order for 'external' and 'internal' components of the cognitive process to be complementary (Rowlands 2010a) and integrated into the cognitive system (Menary 2010). Finally, a third wave of arguments is emerging as well, focussing on what Sutton calls 'a deterritorialized cognitive science' (Sutton 2010, 2013) that goes beyond the boundaries of biological organism and deals rather with cognitive assemblies in which none of the elements have analytical priority, as well as with questions of transformation that occurs due to processes of extension and coupling (Kirchhoff 2012).

One of the traditional lines of critique towards EC is based on the claim that EC performs a coupling-constitution fallacy: the fact that agents rely on certain external objects for cognitive purposes, thus being in effect cognitively coupled with the object, does not mean that the object in question constitutes a part of the agent's cognitive apparatus (see, for instance, Adams and Aizawa 2008, 2010). While this and similar critiques imply prioritizing clear boundaries of cognition and clear indication of cognitive agents, other critical voices suggest that EC does not go far enough in dethroning the biologically delineated human as the main agent of cognition. For instance, Di Paolo (2009) proposes that in order to do away with biological

chauvinism and human-centredness, an autopoietic enactivist account of cognition is needed that would position cognition as a relational phenomenon that emerges between autopoietic systems and their interactions with environment. In this way a non-species-specific definition of cognition, agency and mediation could be developed that does not completely deny the extended mind thesis. Kirchhoff (2012) also suggests that EC should be pushed towards a deterritorialized cognitive science that dissolves the individual and displaces agency, instead of marking it as an individual (human?) property. The question of agency was also taken up by theorists such as Wheeler, who asks what happens when technologies that are part of our cognitive apparatus start exhibiting agency themselves (see, for instance, Wheeler 2011). All in all, EC theory is important not only for cognitive science and its methods (Should the object of study be individual agents or cognitive systems? Should we consider consciousness as extended? See, for instance, Rowlands 2010a, 2010b on this question) but also opens up new directions in artificial intelligence and robotics research (via focus on interactive learning and reactive or behaviour-based robotics; see Brooks 2002 on the latter).

See also Artificial Intelligence; Execution; Plasticity; Neocybernetics; Robophilosophy.

Goda Klumbyté

EXTINCTION

Extinction is at once the most human and the most inhuman of concepts. The very possibility of this contrary tendency is the hallmark of our most fragile and most robust present. The twenty-first century is at one and the same time marked by a

sense of impending human extinction (both literally, with the biological species coming to an end, and figuratively, with all that passes itself off as human facing annihilation by way of technological, ecological and political catastrophe); *and* at the same time humanity has declared itself to be a geological force with the power and will to recognize and reverse the changes it has made to the Earth as a living system. In what follows I outline three articulations of the concept of extinction, all of which are inextricably intertwined with the problem of the human.

First, and most obviously, extinction announces itself today as the sixth great mass extinction. Humans are at once threatened by this mass extinction event at the same time as they contribute to the acceleration of this extinction, and have done so since the earliest days of human migration (Diamond 1989). The current era of intense anthropogenic climate change, along with the declaration of the Anthropocene, seems to have enabled a shift in degree that has ultimately generated a difference in kind. Extinction may have been as much a part of life as growth, decay, mutation and proliferation, but it may also be that extinction reaches a threshold and rate that generates a new dynamic between life and loss. 'Mass extinction' far exceeds the 'background rate' of the ebb and flow of life's creation and destruction but there are nevertheless different ways one can mark the threshold between extinction as part of the dynamics of life, and massive losses of species and biodiversity (Wang 2003).

Extinction is as natural and inevitable as emergence, but it may be that when extinction can be witnessed from within 'a' life that this aspect of existence opens a new way of problematizing the limits of thinking and what it might mean to mourn or save a form of life. Having emerged

from previous mass extinctions, humans are at once part of the ebb and flow of life and non-life on earth, but are nevertheless the first beings to witness, mourn and articulate extinction as an explicit event. Elizabeth Kolbert provides a wonderful genealogy of the sense and milieu of extinction, charting the emergence of the concept of species loss (prior to Darwin's theory of evolution), and then the increasing awareness of the fragility of many species from the carrier pigeon to Panama's golden frogs (Kolbert 2014). This 'simple' and primary sense of extinction nevertheless already harbours political tensions and contrary tendencies. To say that humans are the first species to witness and contribute to extinction is to define humans *as a species*, and to deploy species thinking. But who are these witnessing species-aware humans? The briefest glimpse of what has come to be known as post-apocalyptic culture – from Cormac McCarthy's *The Road* (2009) in literature and the *Mad Max* series in cinema, to the efflorescence in every aspect of cultural output including television, music and gaming – evidences that the experience of extinction requires a certain affective comportment towards the world. Kolbert's reflective journey is a model of mild-mannered culturally sensitive respect. Her book expresses none of the narcissistic panic that accompanies the majority of 'end of the world' narratives, which are predominantly 'end of the affluent world' stories in which 'man' either becomes exposed to his fragility and saves the day (*World War Z* (2013), *The Day the Earth Stood Still* (2008), *The Day After Tomorrow* (2004)); or, more recently, the end of man and life is figured in terms of species-bifurcation, with some humans commandeering and squandering the few remaining resources while enslaving the majority of barely-living humans (Lane-McKinley 2015). Yet, even if Kolbert's

subtle genealogy of the current experience of extinction does not fetishize a certain type of hyper-consuming, risk-exposed and globally predatory late-human existence, it does operate with a sense of the bounds of species.

If, prior to modernity, there were apocalyptic narratives – with day-to-day existence being a constant experience of exposure, fragility and contingency – the pre-modern sense of apocalypse was also pre-human. To feel that one was living in end times, that all might be brought to nought, that a flood or pestilence might annihilate 'everything' was quite different from the sense of there being a specific kind of life – human thinking life, a life of *reason* – that might one day cease to be. *Extinction* – as opposed to the sense that everything might end – relies upon a new sense of life that takes the form of distinct species (which, in turn, requires a modern, Western, tabulating comportment to the world). The thought of human extinction, in turn, entails the sense of 'us' as a species; while the preliminary mourning and panic that accompanies the thought of human extinction indicates a fetishized and supreme self-regard which is brought to the fore in the next understanding of human extinction that I explore below. For now, I would suggest that even the general notion of the 'sixth mass extinction', which 'we' are witnessing and perhaps feeling responsible for, is grounded in a panoramic view of life and humanity that is culturally and historically specific. What has come to call itself 'the human' both requires and problematizes species-thinking. Without the unifying and dividing logic of species it would be difficult to think of global humanity – even if humanity most often defines and regards itself as a species that has transcended its ground.

This brings me to my second, ultra-human, sense of extinction. The very

possibility of extinction, along with a milieu in which there is an awareness of possible catastrophe, intensifies the modern sense that reason is bound to life, and that this singular life that is bound to a species may become extinct. Nick Bostrom's work on existential risks and the future of humanity not only outlines all the scenarios in which human intelligence might be destroyed, and not only insists on the avoidance of that catastrophe at all costs; he also allows for the possibility that what is valuable in the human species may survive biological extinction (Bostrom 2002, 2013a). One may have parochial, sentimental and irrational attachments to life as we know it in its current human and fragile form, but a genuinely rational consideration of life and its values would yield two imperatives. Bostrom insists that upon reflection we should direct resources to averting existential catastrophe, and that the true task of the future is that of securing the full technological maturity of human intelligence. This may require some form other than human biological life. Here his thought intersects with other theorists whose intense investment in human intelligence is at once quite happy to contemplate a future in which intelligence survives without humans, while also assuming that nothing is more catastrophic than the loss of this definitive human capacity (Kurzweil 2005). While Bostrom and thinkers like Ray Kurzweil might appear to be extreme outliers in a world that is attached to humans as a species rather than the human intellect as a capacity that might outlive 'us,' I would nevertheless suggest that their thought captures a tendency of post-apocalyptic extinction culture. It is almost as though the axiom of the twenty-first century is 'I am threatened with non-being, therefore I must survive.' James Lovelock, for example, has argued that we have reached a point

where simply being more green will not suffice; only more technology will save us (Aitkenhead 2008). But who is this 'we' that has reached a tipping point and has declared 'game over'? And who is this 'we' that declares that only the technology that got 'us' into this mess will help us into the future? The threatened 'we' of technoscience finds nothing more alarming than the possible end or non-being of technoscience, even as it acknowledges that technoscience has been the motor of destruction. The Cartesian echo of 'I face extinction therefore I must continue to be' alerts us to the modernity and hyper-humanism of the logics of extinction. It is only with a radical separation of thinking as a substance, and not (as it was prior to Descartes) a potentiality of ensouled life, that the possibility of the erasure of thought becomes thinkable.

Once humans think of themselves as a life-form, and then as a life-form with the exceptional capacity of thinking or reason, it becomes possible that the potentiality for thinking could cease to be, *and* that such a non-being of thinking is what must be averted at all costs and without question. Nothing seems to justify our existence more – nothing seems to generate more of a feeling of the right to life – than the contemplation of human non-being, especially when that non-being is figured as the absence of rationality.

Yet it is just this sense of entitlement and right to life that might be fruitfully vanquished in an inhuman future. It has become a commonplace in discussing post-apocalyptic culture to say that it is easier to imagine the end of the world than it is to imagine the end of capitalism. The problem with this cute phrase is that the imagined 'end of the world' is an imagined end of affluent capitalism. The 'end of the world' is one where humans wander aimlessly, just surviving, exposed to the

contingency of a nature that is no longer so abundant with resources that everyone is suffering from obesity, hyper-consumption and stimulus-overload. (One might concur here with McKenzie Wark (2015a), who argues for a nature without ecology.) This post-apocalyptic landscape is media-deprived, all of the archive left in tatters, bereft of shopping, art galleries or leisure industries. It is a world that one might think of as dystopian and post-apocalyptic *if* what makes life worth living is reflective human reason and hyper-consumption grounded in a specific archive. This world

at the end of the world is perhaps, if one takes away the disdainful 'first-world' framing, what a great deal of beings have known and respectfully lived *as life*. If one thinks about extinction beyond species-fetishism one might think of other modes of existence (that might survive what 'we' can only imagine as the end of the world) as the beginning of new worlds.

See also Ahuman; Expulsions; Food; Survival; Necropolitics; Capitalocene and Chthulucene; Rewilding.

Claire Colebrook Trevor Paglen, *Trinity Cube*, 2015, irradiated glass from the Fukushima Exclusion Zone, Trinitite, 20 × 20 × 20 cm. COURTESY OF THE ARTIST AND DON'T FOLLOW THE WIND.

F

FEMINICITY

Feminicity is the expression that describes where feminist work has used digital algorithmic environments to generate active-points, which insert feminist ideas, designs, information and meanings into the mainstream commons. Feminicity is a speculative tool, creative of new signifiers of being and new data content with specific feminist-oriented goals. There is an explicit reference and critique of gendering institutions in actions of Feminicity. Active-points of Feminicity generate specifically feminist-oriented datafication, where the content injected into the system will demand resourcing from all areas of society and culture. Speculating on existing material ontologies and generating active-affects, Feminicity works to manipulate the algorithmic ideologies of capitalist nihilistic and narcissistic behaviours, opening new realities.

The kinds of relationships produced by information and communication technologies and their interactions with vernacular experiences and events enable dynamic cultural and political conditions and emergent behaviours. Individuals, collectives and cultures can be mobilized or fractured through such changes and the speeds of those changes. When the second-wave feminist movement plugged into the digital era of the 1990s, new feminist ethical modes were generated through this interaction between feminism and digital technologies (cf. Haraway 1991; Hayles

1999; Wajcman 2004). This connection of second-wave feminist and digital media highlighted the gender-bias of the notion of 'neutral' technologies, and the so-called 'net-neutrality' of the digital market. The cultures created from this connection between information technologies and feminism produced not just another language or series of standpoints (cf. Harding 1986, 2004; Hayles 2002; Plant 1997), rather emergent sets of feminist practices were given form, changing definitions of normative 'naturalized' racial, sexual and social relations (Braidotti 2013: 99), enabling a re-imagining of the material actions and consequences of information, and the epoch of Digital Feminicity began. Historically, changes in knowledge forms are politically aligned, according to the contexts through which they are produced, maintained and distributed. But in the global digital commons, the question arises as to what is the extent of ethically positive change to the capitalist 'normative' referential frameworks that actions of Feminicity achieve?

Active-points of Feminicity are found in the practices and activities from the sciences, humanities and creative arts that create, identify and analyse, through the emergent behaviours generated between feminisms and the digital spheres. These action-points use theoretical and physical forms to materialize their feminist agency. There are examples to be found in and across all disciplinary fields: the sciences, humanities and the arts. The art collective

VNS Matrix's *Cyberfeminist Manifesto for the 21st Century* (1991) included multimedia art works that function as active-points that comically berate and agitate the patriarchal algorithms of the new domains of technology in the 1990s. Sadie Plant's *Zeros and Ones: Digital Women and the New Technoculture* (1997) offers more utopic forms of Feminicity than VNS Matrix, and both of these active-points in their respective works celebrate the joining of the digital with the feminist as a positive reclamation of masculinist discourses of technology.

Donna Haraway's text, *A Cyborg Manifesto* (1985–1991), identifies the epistemological significance of the shift into bio-technological frameworks for understanding the different forms of political realities that is produced in the digital merger of machine and sentient subject. The system of governance of the Industrial Revolution over its machine-man changed through the historical juncture of the digital revolution. Significantly, Haraway describes this change in terms of the cyborgian personae as 'not subject to Foucault's biopolitics' but rather, it 'stimulates politics, a much more potent field of operations' (Haraway 1991: 163). Haraway uses the concept of this cyborg (a neologism produced through political considerations of the field of cybernetics) to express a 'disassembled and reassembled' self, which feminists must 'code' under the late capitalist system of an 'informatics of domination' (Haraway 1991: 163). Haraway's cyborg is a flexible active-point for Feminicity; stimulating in a functional way, and productive of new feminist forms for thinking and coding feminist operations, through the expansiveness of its configuration which works to arouse new political desires. As a speculative concept, Haraway's cyborg proposes a number of utopic as well as probable ideas for radical changes in think-

ing identity politics that defy racial or anatomically given positions generative of affirmative modes of understanding life in terms of different species, and their potential in terms of the experience of a range of biopolitical positions and the possibilities for new forms of collective communities.

Haraway's cyborg as an exemplar of Feminicity enabled countless other active-points where the notion of a digital gender, and/or digital feminism, to conceptualize, speculate upon and produce new forms. These are expressed under a range of names, including Technofeminism (Wajcman 2004), Cyberfeminism (Cornelia Sollfrank 1998) and Xenofeminism (Laboria Cuboniks collective 2015). Artist Juliana Huxtable's performance *There Are Certain Facts that Cannot Be Disputed* (2015) frames the research questions of many practitioners of the first decades of Feminicity, where visual symbols still govern racialized and gendered normative behaviours.

Within a functional digital environment, new tools for expression and articulation of feminist positions are enabled. While global digital markets currently come under different regulations and legislation (for example the DSM (Digital Single Market) model adopted by the European Union in 2016), common global informatics points enabled a relatively free distribution of active-points (the disseminated content of which may have consequences for the maker/user of the material). The YouTube digital broadcast channel, launched in 2005, for example, gave the feminist collective Pussy Riot the platform by which it could globally distribute 'A Punk Prayer' (2012), a potent active-point of Feminicity, that redirected the media commons attention to a range of breaches of human rights issues, made by normative patriarchal forms of religious and gender repressive systems. The Twitter social media platform (2006) enables a saturation of feminist content,

through simple use of a hashtag, restricted character limit and images, employed as action-tools. Whether as systemic confessional like #feministselfie, or as a situated evidence of feminist activism #FEMEN; #pussyriot, a parody of patriarchal values, such as #FeministsAreUgly, the hashtag of the post-Twitter digital commons works as a political and ethical vector of Feminicity; polarizing opinion, but algorithmically raising the issues to the top of the information pile. Frequently the hashtag records not so much a narrative of situated politics, but rather offers a feminist tactical intervention into constructed genders. Given the terms of the current capitalist market that treats people as living capital, the information that such active-points convey is often paradoxical, but nevertheless it contributes to the growth of self-organizing, affirmative feminist ideas and ontologies.

Active-points of Feminicity are thus not just carriers of ideas, they are creators and generators of innovation in fields that work for gender equality and the ethical treatment of differences. The object-oriented coding of gendered behaviours, consumption and non-sustainable practices in an informational economy provides the focus of intervention for feminist active-points. Through tactics of saturation, speculation, code additions (through APIs for example), redirections, mis-directions, insertion of errors, changes to capitalist normative behaviours, positive speculative content and biased personas, more feminist content is being circulated, and more anti-feminist content is removed through methods of under-resourcing. Positive images of people made through the invention and implementation of legislation that is pro gender diversity and zero tolerance of violence and discrimination against difference is the aim of ethical feminists. The forms of institutional subject constituted by its environments

that Foucault identifies are no longer the only ways of being, as actions of Feminicity demonstrate. Katherine Hayles refers to this change from the equational operation of something (as in the performative adherence to given institutional geometries of life) to the current state of the 'materialist informatics' of 'material, technological, economic, and social structures that make the information age possible' (Hayles 1993: 148).

Generating more ethically focused gender content in the world's global economy means creating new activities that require new kinds of resourcing to enable their realization. Actions of Feminicity can be differentiated by the terms, duration, speed and mediums of their agency of forms and concepts. Some function as speculative (in the utopic examples of applications and outcomes of technology; or Haraway's alternative world proposals). Some action-points can be discerned through policy (where governmental changes have enabled legislation), evidential (in the case of advocacy groups that work for human rights for all genders, education equality, enhanced curricula with ethically responsible knowledge), scientific (action-affects after new knowledge is applied and tested and which results in positive change), theoretical (new forms of expression and or revisionist feminist histories). Active-points can generate innovative tools, including ethical feminist-oriented codes, and new forms of feminist communication methods, countering destructive actions and redistributing capitalist ideologies, tackling issues of gender and racially biased inequalities and gender and ethnically based violent actions that dominate societies. Active-points of Feminicity provide creative and speculative alternatives for ethical models of living. In this they are useful as they provide analysis tools for a feminist data structure

of materialist informatics, as well as contributing to forming a future that is not governed by a masculinist hubris driven by violence and hatred, but which is instead productive of a positive and creative embrace of all life forms.

See also Algorithmic Studies; Earth; Naturecultures; Post Internet; Technicity; Gaga Feminism.

Felicity Colman

FEMINIST POSTHUMANITIES

Cognisant of shifting terrains in the contemporary humanities, feminist posthumanities engages with critical and creative pursuits that address changing relations between political animals of a more-than-human kind, bodies, technologies and environments, and it does so from interdisciplinary and post-conventional perspectives (Åsberg 2008; Åsberg and Braidotti 2017). Feminist posthumanities may describe post-conventional research that already thrives on the margins or outside the conventional scholarly comfort zones. Under this heading or others, it has become clear that nothing remains evident or given about the human of the humanities.

The human body may well today be regarded as a microbiotic multi-species ecology in and of itself. Only 10 per cent of the trillion cells that constitute it are of the human-animal variety, while a motley majority of other microscopic organisms dominate our bodies. Even our genes are less than fully human: the human genome, hailed in the 2000s as our chromosomal genetic make-up and the 'recipe' for humanity, surprised scientists with its display of evolutionary co-constitution of humanness with other species, counting majorities of viral, bacterial, fungi and other microbiotic

companions (Haraway 2008). If critical thought after the Holocaust forced us to question our own intra-species humanity, the human question has not exactly diminished in relationship to science, medicine, technology, the environment and other organisms. At the same time, human societies have impacted Earth's biosphere and climatic systems such that some scientists propose naming a new geological era, beginning with industrialization, mass deforestation or the US nuclear detonations (depending on what expert is asked), as the Anthropocene, the Age of Man. This Age of Man that we now inhabit follows upon the aeons of deep time of the Holocene. It seems we tried to make nature into our image, but with a less than pretty result.

However, it is beyond doubt today that we are as much in nature as nature is in us. It follows from this tenet that the classical objects of study for the humanities – culture, and, of course, the human – are anything but given or self-evident. Humans today are, after all, more obviously than ever entangled in co-constitutive relationships with nature and the environment, with science and technology, with vulnerable embodiment, and with other animals by which we live and die. Critical and creative forms of humanities take such make-or-break entanglements into account, and do not take the figure of Man as its taken-for-granted centrepiece. Rather, forms of posthumanities, or more-than-human humanities, take reciprocal and conditional relationships by which we become human with 'Earth others' (Plumwood 1993) as its starting point. Feminist research, long critiquing the centrality of the figure of Man for its gender chauvinism, stands as a case in point; a set of research approaches that focus on power relationships that shape words and worlds.

Feminist posthumanities stand as one possible response to the posthuman

challenges to the humanities today (Braidotti 2013), but they draw in effect on a set of meandering alter-genealogies in anti-colonial cyborg studies (Haraway 1991), science and literature studies, queer theory, cultural studies (Franklin, Lury and Stacey 2000), situated knowledge practices (Haraway 1991), advanced sex-gender theorizing, power-knowledge and sexual difference theory (Braidotti 1994). Some of these are, under different headings, quite long-standing scholarly conversations; some are more recent. For instance, some of the long-standing feminist theorizations of sex and gender trace theories of *denaturalization*, such as Donna Haraway's cyborg ontology, Judith Butler's dispelling of any heteronormative foundation of biological sex, Stacy Alaimo's post-natural eco-feminism or Myra Hird's insistence on all organisms' inherent, cellular transsexuality. But such feminist theorizing also traces the ontological, bio-affirmative or *renaturalizing* turn, exemplified by authors such as Elisabeth Grosz, Lynda Birke, Elisabeth Wilson, Vicki Kirby and Karen Barad.

In fact, feminist posthumanities is today but one response among many to the age-old feminist question of who gets to count as human within the authoritative annals of the humanities and sciences. Yet it is a multi-headed response defined by its open-endedness, by its inter-, trans- or post-disciplinarity, and by its insistence on the bio-curious creativity of feminist theory. Gender, like genus and generation (Hemmings 2011, van der Tuin 2015a), may well in this setting be regarded as an engine of discovery as much as a critical category of intersectional difference analysis.

Posthuman Humanities

The term posthuman has come to designate a very loosely related set of recent

attempts to reconceptualize the relationship between the rapidly changing field of technology and the conditions of human embodiment (Hayles 1997). However, popular and scholarly notions of the 'posthuman' often signify vastly different things. Troublesome posthumanisms in popular circulation often share a belief in modern progress, in technology as salvation from bodily vulnerabilities, even from death. Uncritically celebrating Enlightenment ideals of anthropocentric humanism, this figuration of posthumanism can even manifest as a form of superhumanism, or 'transhumanism'. This transhumanism works to transcend and overcome the body through mind (or belief in science) and thus complete the imagined mind-body split (as also seen in science fiction fantasies of digitally downloading minds or cryo-preserving bodies). Such unwholesome post-feminist and post-biological understandings of posthuman embodiment fail to consider the recalcitrant and connected nature of bodies and embodied selfhood as more than a bounded, cerebral affair. Thus, in my view, they are incompatible with the motifs for doing feminist posthumanities.

Feminist philosophers and scholars of science studies and cultural studies have instead deployed the notion of the posthuman in order to break or otherwise overcome the fixed, dyadic and hierarchical categories of nature and culture, or the human and the non-human, thereby enabling alternative analyses that explore the entanglements and mutual productions that result. For Karen Barad, 'posthumanism marks a refusal to take the distinction between "human" and "non-human" for granted, and to found analysis on this presumably fixed and inherent set of categories' (Barad 2007: 32). For Katherine N. Hayles, the posthuman signals both a problem and a possibility:

If my nightmare is a culture inhabited by posthumans who regard their bodies as fashion accessories rather than the ground of being, my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival.

1999: 5

From early work on the cyborg (Haraway 1991) to more recent work on agential realism (Barad 2003; 2007), the posthuman has proven to be productive for an ontological politics of feminist and critical theory, as exhibited by Rosi Braidotti (2013).

Posthumanities as Embedded and Embodied Knowledges of Worlds-in-the-making

Posthumanities, a slightly different yet related term, stands then as the operationalization of such more-than-human scholarship (Whatmore 2002, 2012; Wolfe 2010): posthumanities work recognizes the role of the non-human for the human of the humanities. The book series 'Posthumanities', inaugurated and edited by cultural and animal studies scholar Cary Wolfe, defines itself as situated at a crossroads. Instead of 'reproducing established forms and methods of disciplinary knowledge, posthumanists confront how changes in society and culture require that scholars rethink what they do – theoretically, methodologically, and ethically' (Minnesota University Press 2017). Similarly, Donna Haraway (2008), who has

no patience with the over-determined notion of 'the posthuman', nevertheless finds the term 'useful' for 'tracking scholarly conversations' on the changing relationships between the human and non-human, culture and nature, technology and the body, and Other and Self.

The prefix 'post-' here does not signal any kind of end, but rather the inclusion of the humanities in a perhaps counter-intuitive movement away from the conventional comfort zones of human-centred research at large. It questions and troubles human exceptionalism (Tsing 2011) and other normative forms of chauvinisms. As such, posthumanities, like the nomadic transversality of feminist analyses (Braidotti 1994), may well translate and mutate into several bodies of thought across disciplines, while benefiting from, and contributing to, the analytical approaches developed within the humanities. From situated knowledge (Haraway 1988), to embodied and embedded starting points, to the multivalent corporealities (Grosz 1994) that make or break the world, these approaches make for rich analyses.

Strange encounters are key to this endeavour, as is a willingness to expose oneself to alienation. Nothing remains natural or given, yet all is worldly and processual. Feminist posthumanities can contribute an oppositional consciousness – a double vision on renaturalization and denaturalization – as well as post-conventional community-building (with scientists, environmentalists and animal and body activists). It provides critical and creative re-toolings of the human sciences from their starting points in the embodied and embedded worldliness of knowledge. Respectful conversations across borders, processes of 'rooting and shifting' (Yuval-Davis 2012) are what might ensue at such crossroads. Feminist posthumanities is but one possible name for such encounters, as

they reject both extreme culturalism and naturalism, in the transdisciplinary borderlands of the humanities today.

See also Postdisciplinarity; Posthuman Critical Theory; Neo/New Materialism; Gaga Feminism.

Cecilia Åsberg

FOOD

Technological improvements in food science open one route to address the possibilities of 'posthuman' eating. The science fiction cliché of the meal in a pill offers the hope of nutrition without the bestial messiness of foraging on and then excreting great masses of stuff, and without equally bestial gustatory delights; Adam Roberts' 2011 novel *By Light Alone* imagines humans spliced with a photosynthetic gene, freeing eating from its reliance on the exploitations of land or labour: economic collapse follows, while oral eating becomes a pleasure, even a perversion, for the remaining wealthy elite; and laboratory-produced flesh – a real possibility in the next several decades – might allow for carnivorous meals liberated both of the cruelty of slaughter, whether industrialized or 'humane', and of the associated steakhouse fantasies of masculine mastery over life and death (Ferdman 2015).

All of this suggests, however, that a truly posthuman turn in food must await disruptive technological interventions into the practices of eating and food production. Meanwhile, the human remains, that species that habitually believes itself to be the one life meant properly to be just an end rather than means. A more thorough posthumanism should therefore concentrate not on the eating itself, not on trying to surmount our animal dependence on

other bodies, but rather on resisting cultural practices of human supremacy. The posthuman eater need not await some technological tomorrow, as that post-human possibility has always been here, wherever humans, particularly dominant humans, have recognized themselves as food too.

In a passage lauded by ecocritics for describing a 'transhuman ethic' (Schalow 2006: 112), Martin Heidegger's 1946 'Letter on "Humanism"' declares that 'Man is not the lord of beings. Man is the shepherd of being' (1998: 260). But to be a shepherd is to be singular and heroic among a crowd, the fortunate, often witless recipients of our protection; and to be a literal shepherd means not just protecting a flock, but living off wool and, at last, mutton. Heidegger's metaphor, even if it inspires charitable attention to suffering herbivores, has not gone far enough. 'Man is the universal parasite,' observes Michel Serres ([1980] 1982: 24); 'all the footprints point towards the lion's den' (ibid.: 26). They lead this way, however, only within the fantasy of human mastery, in which we are only the eaters, and never the meal.

By emending Heidegger's maxim to read 'man is the fodder of beings', we recognize that however much we believe ourselves to exist within the clearing we make for being, we are also material things, and therefore subject to the uses of others. The authentic (post)human condition must recognize our inescapable material presence amid other material things. Increasing attention to the human microbiome – the mites that live exclusively on humans, the intestinal bacteria necessarily for our digestion (Bennett 2010: 112; Yong 2015) – bears witness to a growing awareness that every individual human is a microcosmic homeland or pasture for swarms of other life, indifferent to our parochial illusion of solitude or self-mastery.

Some of the most thorough conceptualizations of the materiality of human bodies appear long before these modern microscopic insights, in the death poetry of medieval Christian Europe, which revelled in the decomposition, and hence the edibility, of human bodies. A work like the fifteenth-century 'Disputation between the Body and Worms', for example, pictures a crowd of worms insisting to a complaining corpse that she has always been food for others: bedbugs, lice, and now, in the grave, maggots. It is not accidental that this poem, preserved in a document produced by an unusually severe male monastery, makes its beleaguered corpse a once beautiful, wealthy woman. Its celibate male readers would be led to recognize their own edibility, while simultaneously delighting in the humiliation of a fleshy vanity that they disdained as particularly feminine. And they themselves imagined that they would be resurrected into perfected, unchanging bodies, freed of the necessity of eating or the humiliations of excretion. Left behind is the pullulating body of this woman, like so many other disdained bodies, treated as food.

This poem is evidence that only a few humans have tended to be granted the full protections of human mastery. The Christians of late medieval England told stories about the descent of Jews from pigs, one of the few domestic animals raised only for meat; crusade fictions imagined captured Muslim soldiers butchered and fed either to each other or to their captors; eighteenth-century accounts of maritime cannibalism attest that white sailors were rarely the first sacrificed to stave off their shipmates' starvation; and what often distinguishes the heroes of post-collapse fiction like *The Road* or *World War Z* from the swarms of eaters and eaten is their being, with few exceptions, well-armed, able-bodied white men.

Posthuman practices must counter the idea of the 'uneaten eater' by requiring a recognition of the shared immanence of at least our bodies and their enabling, uneven interdependencies. A posthuman ethics of food would replace the concept of the 'food pyramid' with a 'food chain' or, better yet, a food web. This would not aim to render us as ethically irrelevant as many of us tend to assume our food to be, but would rather dispel the interwoven illusions of innocent eating, material independence and personal transcendence. Patterns of consumption are never one-to-one (as with a chain), as anything that continually relies on the consumption of a host of others, and is subject in turn to other, uncountable appetites. Nor can eating, enacted as it is amid the continual flux of beings, ever be a closed loop. Eating is open-ended.

Several contemporary artistic practices centre on fostering this recognition. Jae Rhim Lee's *Infinity Burial Suit* is crocheted with a rhizomatic pattern infused with mushroom spores, that when combined with mineral and fungal reagents both helps the body decompose and captures the environmental toxins that we ingest while alive ('The Infinity Burial'). Elaine Tin Nyo is currently engaged in a 'Little Piggy' project: she is raising five piglets, whose lives will end in an abattoir, whereupon Tin Nyo will render them into sausage. She has paired this project with one she plans to realize decades from now, when she meets her own (natural) death, by having herself also transformed into sausage (Moy 2014). A still more challenging posthuman food practice, neither awaiting death nor relying on directly killing animals, is recorded in Alex Branch's 2011 video *Nothing Left to Take Away*. Branch stands on a parking lot hillock of snow, amid a swarm of seagulls, feeding them bread, until, empty handed, she collapses to let the gulls peck frantically

and angrily at the food that remains: this is her helmet, which Branch has fashioned from bread. Branch has not evened out the distinction between herself and the gulls: she is the artist, this is her work, and her gift to them is also a cultural practice for herself; she has not returned the world to a presumptive 'balance': after all, the gulls fight with one another, and bread is the paradigmatic food of settled agriculture and its inequities; and to shoot the film, she had first to accustom the gulls to her presence: this is therefore a practice of mutual domestication, which requires taking a body from one home and training it for another. This practice is one of negotiation, dependency, shared exposure and danger.

Food is the substance par excellence of nostalgic attachment to the maternal or even grand-maternal, the homeland, the 'pure', 'authentic' and 'hand-crafted'. In these forms, food functions as a materialized form of fantasies of innocence and belonging and the irresponsibility of being taken care of. Posthuman materialisms, in their frequent dedication to disrupting notions of ontological fixedness, sometimes forget that anything that exists, whatever its entanglements with others, still has or is had by that one thing that cannot be shared, its own end, whether we call this end a disruption, a dispersal or a death. A posthuman awareness of eating recognizes it as a practice of bodily and hence ontological porosity; it knows that eating is never innocent, always a death practice, always an unequal exchange between mortal bodies, always a negotiation between bodies more or less fitted for each other, and that being a companion – as with Branch and the gulls – can sometimes require offering up what one believes to be one's own body to another.

See also Animal; Art; Ecomaterialism; Ethereal Scent; Feminist Posthumanities;

Multispecies; Postmedieval; Transcorporeality; Urbanibalism.

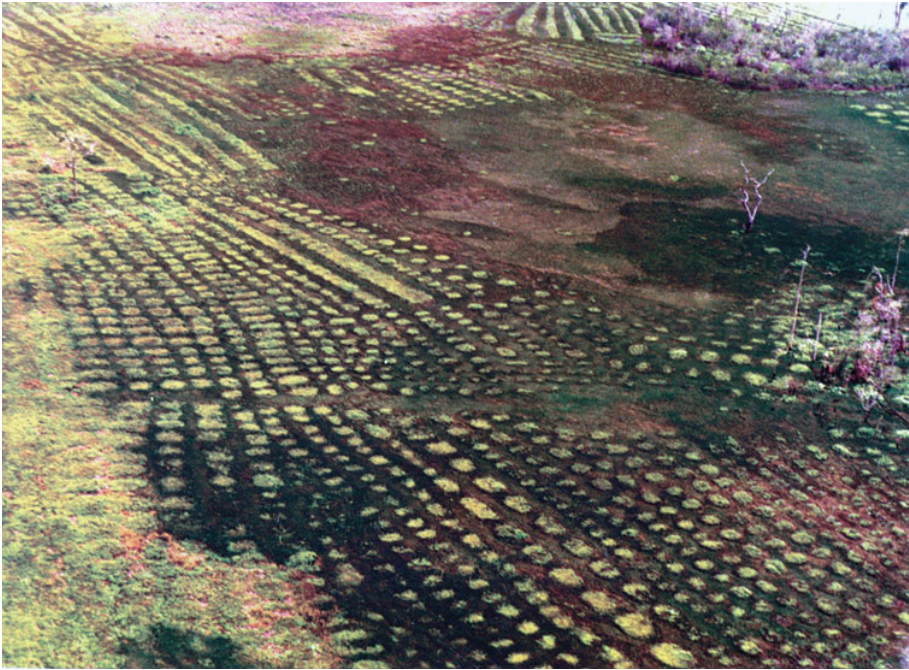
Karl Steel

FORESTS

Forests occupy a singular role in the history of Western thought, figuring as the territory – material and imagined; concrete, symbolic and metaphysical – that lies outside the borders of the social contract, the space of the civic and the realms of reason. Forests demarcate a threshold – as much environmental as political and legal, epistemic and ontological – against which civilization is defined, being considered both its primeval precondition and its antithesis or negation. In the Western imagination, the space of the social par excellence – and by extension of culture, politics, law and history – is the city, and the city stands to the forest in a relation of fundamental opposition.¹

The myth of the foundation of Rome tells that the city was erected in a clearing carved in a dense forest. The burning and cutting of trees was the first and decisive inscription of history in the landscape, the inaugural act in the construction of human institutions. At the margins of the city and its rural states, the undomesticated forest drew the borders of the *res publica*, setting the limits of Rome's jurisdiction beyond which land was *res nullius* or *terra nullius*, 'belonging to no one', 'nobody's land'. At the edges of empire, where the forest loomed beyond the horizon, there existed the stateless, lawless, unruly territory of barbarian tribes.

Within the social and spatial order of medieval feudalism and Christianity in Europe, with its networks of dispersed, walled city-enclaves, forests were considered



Anthropogenic sculpted landscapes of raised fields punctuate the flooded tropical savannas of the northern Amazon basin. Nearly invisible from the ground, these large clusters of cultivation (c. 1,000 years BP) were uncovered through the infra-red ‘photographic-archaeologies’ produced by archaeologist Stéphane Rostain in the 1980s.

as the ‘outside.’ Wooded lands configured a dark, wild zone beyond the city’s enclosure that was inhabited by all sorts of outcasts and outlaws: fugitives and persecuted, mad and lepers, the fallen and the beasts. In theological terms, forests were the realm of anarchy, shadows and the inhuman, the frontier space of the ordained social-religious world of the city. Modernity, whether in the humanist tradition of the Renaissance or in the Enlightened post-Cartesian manifestation, perpetuated this lineage of thought but at the same time introduced a radically different paradigm. As the human species took centre stage in the Western imagination and the place of mythology and theist philosophy was occupied

by reason, forests were seen as landscapes opposed to the human and the social by virtue of the scientific objectification of nature. In the seventeenth and eighteenth centuries, at a moment when deforestation reached vast extensions of the European continent, forests started to be considered under utilitarian perspectives, framed as a natural resource to be rationally domesticated and subjected by human knowledge and power. Whereas the geometric urban designs of planned towns represented the exemplary spatial manifestation of the exercise of reason – ‘those well-ordered towns that an engineer lays out on a vacant plane as it suits his fancy’, as Descartes wrote (*Discourse on Method*, Part I, 1637)

– forests represented the space of randomness, arbitrariness and irrationality.

During colonial modernity the image of the forest as a natural, pre-civilizational space was recast anew by the concept of ‘state of nature’ in political and moral philosophy. The battlefield of Hobbes’ war of all against all was a densely forested landscape, more precisely the tropical forests of the New World as they were imagined by early colonial accounts, where ‘savages ... have no government at all and live at this day in that brutish manner’ (*Leviathan* – Chapter XIII: ‘Of the Natural Condition of Mankind as Concerning Their Felicity and Misery’). Rousseau’s noble savage also dwelled in a primeval landscape covered by ‘immense woods’, but idyllic and peaceful, ‘laying himself down to sleep at the foot of the same tree that afforded him his meal’ (*Discourse on the Origin and Basis of Inequality Among Men*). By the nineteenth century, this imaginary was entangled with the orientalist/occidental geographies of colonialism and modern scientific theories of social evolution and racial inferiority. Through the hands of white explorers, colonial administrators, naturalists and ethnographers, forests – especially *tropical* forests – became the quintessential representation of the natural realm, the Earth’s remaining pristine environments where society was in its infancy and humans remained in a primitive, animal-like condition.

Amazonia, the world’s greatest tropical forest, became one of the most important symbolic and epistemic spaces through which the reasoning behind this image of nature and society, and the power structures it sustained, were forged and legitimized. In the tradition of Western imagination, the nature of Amazonia is as much luxurious as inhospitable, refractory to civilization and nearly unmodified by social designs. One of the central arguments supporting this view was the apparent inexistence of indigenous

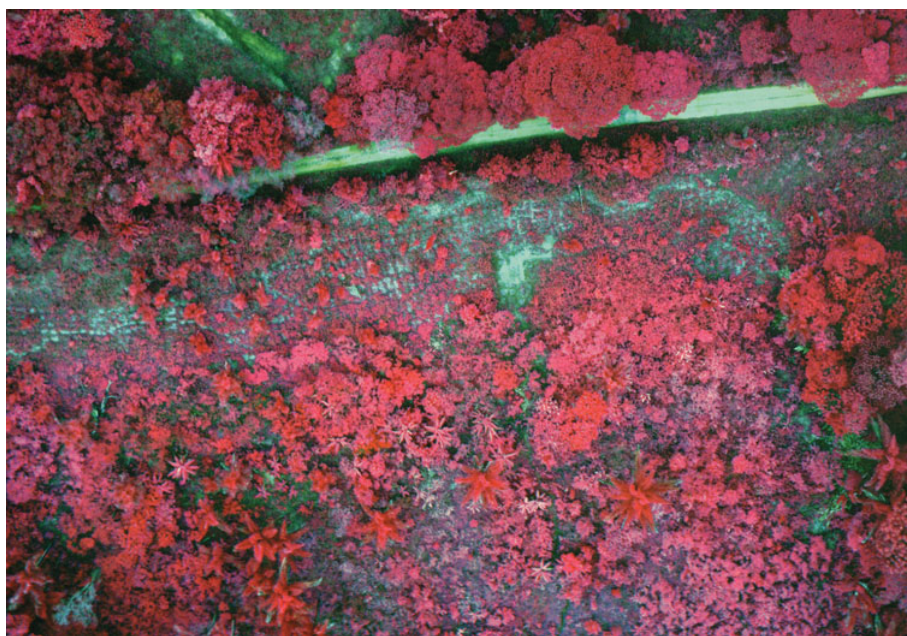
urban complexes in the forest landscape, both in the ancient past, as archaeological evidence, and in the modern present, as long-lasting architectural structures. Constrained by the insurmountable forces of the tropical forest environment, so the theory went, ‘primitive’ societies did not develop the technological means to alter the land in any meaningful way.

Recent archaeological findings are radically transforming this image of Amazonia and completely reconfiguring the ways by which both the nature and the history of the forest are interpreted. Archaeologists and ethnobotanists are revealing the existence of large and complex pre-Colombian civilizations spread throughout the Amazon basin which employed advanced landscape management techniques. The evidence tells us that not only the modes of inhabitation of native peoples leave a clear ‘architectural trace’ in the landscape, but also that they play a remarkable function in shaping the vegetative associations and species contents of the forest. The past and the present of the most biodiverse territory on Earth is as rich in nature as in culture: the forests of Amazonia are to a great extent an ‘urban heritage’ of indigenous societies.

This new archaeological, forensic image of Amazonia unsettles the colonial perspective of Western imagination, to whom the forest represented the antithesis of the space of civilization, a resource of radical alterity against which the city was defined. The radical other that the forest presents is not a completely natural landscape, the absolute negation to the culturally saturated civic-political space of the urban. It is an altogether different form of urbanity itself that escapes the spatial and epistemic geometries of colonial modern reason and imaginaries. Instead of seeing the forest as an environment lacking the city, it is the very concept of the city that has to be widened and transformed to



Forests 1. Copyright Stéphane Rostain



Forests 2. Copyright Stéphane Rostain

incorporate the constructed, political nature of the forest. From that perspective, the origins of the *polis* – the space of the political – is not located on the ontological cleavage between city and forest, nature and culture, but in the constitution of an expanded political arena across these borders. The city's relation figure-ground is subverted. Instead of the empty canvas upon which history was drawn, nature emerges in the foreground as the picture itself, the intentional creation of societies and not merely their support. The foundations of the city do not rest on the act of clearing the forest, but on the practice of its cultivation. Another image of the city is rendered visible, one that initially we might find hard to recognize because for too long we have been confined within the epistemic and imaginary walls of the Western city.

Many societies indigenous to Amazonia do not only recognize this urban nature of the forest, as for example by identifying areas of dense 'natural' forests as anthropogenic landscapes, or by attributing cultural values to elements such as streams and trees, and thus codifying the natural environment in an analogous form to the ways Western societies treat buildings and monuments. They also extend the boundaries of this forest-polis beyond the human. Forests and rivers are populated by what the Sarayaku people call *llaktas* – 'villages' and 'towns'. In contrast to Western cosmology, where the social is restricted to the domain of the human species, in Amerindian thought the space between humans and non-humans, peoples and nature, is from the outset a socialized space.

'What we call the environment is for them a society of societies, an interna-



Forests 3. Copyright Stéphen Rostain

tional arena, a cosmopoliteia,' philosopher Debora Danowski and anthropologist Eduardo Viveiros de Castro write (2014). This conception of the forest as a cosmopoliteia implies that every being that lives in the forest – trees, jaguars and peoples – are city-dwellers, that is, they are 'citizens' within an enlarged political space to whom rights should be attributed. The necessary reconfiguration of the social towards a more horizontal and less destructive relationality between humans and nature passes through the reconceptualization of the polis as forest, requiring a radical shift in perspective and an exercise in decolonization of thought and gaze. The nature of nature is social, and therefore political. In the context of the post-climate-change world order, this forest-polis calls for the constitution of an universalist, multi-species social contract beyond the human.

See also Geomythologies; Postglacial; General Ecology; Green/Environmental Humanities; Rewilding.

Note

1. The brief 'archaeology' of the role of forests in Western thought presented here is drawn from Robert Pogue Harrison, *Forests: The Shadow of Civilization* (Chicago: University of Chicago Press, 1992).

Paulo Tavares
Images by archaeologist
Stéphen Rostain

FOUR ELEMENTS

The ancient metaphysical diagram of the four basic roots or elements, earth–air–fire–water, is closely associated with the fragments of Empedocles, as well as the explications of Aristotle. A diagram is a

dynamic and productive device that leads thought to new places and may even assist in the construction of a new reality. The diagram's creativity is filtered by constraints. It works, it forces things together; but not without some lines to guide its unfurling. The diagram in addition does not project the idea that the elements are natural; they may be artificial or a mixture of both. The diagram pilots a forward-looking trajectory in the form of an experiment with the new fundamental elements of our time.

Diagramming the four elements utilizes the principal alignments of ancient thought: Anaximenes' AIR; Aristotle's EARTH; Heraclitus' FIRE; Thales' WATER, and the basic oppositions between hot/cold and wet/dry. In terms of contemporary elemental theory, I draw upon philosopher Reza Negarestani (2008), who offers an analysis of the geo-mythic foundation of the Middle East as a 'dust plateau' in the form of dust particles and fluxes and how they mix according to a revised version of the diagram. Negarestani's original redrawing of the diagram expresses a trajectory that is influenced by the combination of three elements with various kinds of questionable wetnesses. The ancient desire of the dry for the wet, to be rehydrated and settled, is to render dusty air, earth and fire, and to connect these with moisturizing alternatives to water; for example, oil.

New cosmic dynamics are also investigated through flammable waters, perverse wetnesses that permit lakes and rivers to burst into flames. The key example is that methane makes the tap water supply flammable as a likely result of leaks or gas migration from hydraulic fracturing. Such threats to groundwater integrity, exacerbated by fracking fluids, forge a burnable, explosive wetness that bubbles in the water and flows around it. According to the rules of direct transformation discovered by

Aristotle, water cannot be directly transformed into fire; the rule governing direct transformation requires adjacency around the triangle. As Fire and Water are not adjacent, but opposed, they lack a so-called common quality. Hence, an indirect transformation may take place by means of the introduction of a linking element, namely Air, which in this case is methane, an odourless and colourless gas, which is also combustible and commonly used as a fuel.

A number of NGOs have disseminated the phrase 'blood diamonds' within a growing complex of contested minerals. Profits from diamond mining in Africa, specifically Angola, Congo and Sierra Leone, have funded weapons, armies and civil wars. International certification regimes have been created to prevent blood diamonds from entering the global diamond market, and every legitimate diamond is said to be traceable to its place of origin. But this was precisely the problem that the supply of blood itself faced in the 1980s and early 1990s before the expansion of screening programmes in light of the devastating impact of HIV/AIDS on the haemophilic community. Recently new technologies for screening, with greater haemovigilance, have been introduced, and a move to targeting donors who are low-risk, voluntary and unpaid is under way. Blood can be tracked from donor to patient. Just like the movement of ethical diamonds through the supply chain. Not all such flows – blood or conflict minerals – enjoy this level of surveillance. Control over mines in some countries remains highly fluid, including the situation with coltan quarrying on the Congo/Rwanda border. Coltan is the short form for a mineral called Columbite–Tantalite, which contains niobium and tantalum used in capacitors for high-tech devices like mobile phones and electronic circuitry in general. The struggle for control of the mine on the Congo/Rwanda border between the

Congolese Army and a rebel militia of displaced Rwanda militiamen, as well as the interception of raw materials in nearby rebel-controlled villages, illustrates the shifting ground within and beyond borders.

The question that philosopher Peter Sloterdijk poses is whether and under which conditions a basic element like air can itself become 'the war theatre': a weapon and a battlefield (2009b). *Atmoterror* in the form of a 'dark meteorology' consisting of lethal clouds and deadly precipitation developed originally on the gas fronts of the First World War that necessitated a combination of environmental and design consciousness. To make the open air lethal is to make it unbreathable within a quasi-contained theatre, according to the balance between factors such as diffusion, wind prediction, air pressure and humidity. The ground campaign chemical attack gives way after the First World War to the aero-chemical war in Morocco (Rif War, 1922–7), and to the atom bombs dropped on Hiroshima and Nagasaki. As a condition of existence, the atmosphere supporting collective lifeworlds is erased by poisoning.

Before Anaximenes air was murky, foggy and dark (perhaps not fully the fog of war but a darker shade of mist) until it was distilled and clarified in a cosmogenic distillation-unification. The principles of rarefaction or thinning (fire) and condensation (wind–cloud–water–earth) informed Anaximenes' theory of air. Unable to dissipate the long-standing mist of war that lingers in it, air is again darkened by *atmoterror*, air war, gas attack – chlorine, phosgene, mustard gas – and the long-term lethality of radioactive particles emitted by nuclear weapons. The darker the skies the more intense the conflict. Even pollution – like the heavy smog that engulfs Beijing on many days – or the threat of airborne viruses like SARS can bring out the HEPA filtered breathing

masks, a reminder of the gas masks of the First World War.

Based on the analyses presented here it is possible to repopulate the diagram with new fundamental elements: EARTH: dust; WATER: blood; AIR: lethal fogs; FIRE: flammables. Wrapped around these elements is the planetary phylum, a great tellurian cable bunch with its own products: EARTH: electronics; WATER: liquidities like water bottled in plastic, which throws forward diagrammatic intensities in the explosion of plastic debris; AIR: gases (greenhouse); and FIRE: smouldering car tyres, slashed rain-forests and seasonal wildfires in the great northern forests. However, as we have seen, the new elements combine both in existing directly – blood mixed with dust in the extraction of conflict minerals and oil fields, or methane, a flammable unnaturally mingled with the water supply, and

which contributes to the greenhouse gas effect – and by means of especially communicative matters, like microscopic fragments of plastics that perfuse the oceans and get into the food chain, and constitute fine dusts that affect respiration, settling among the fogs, gases and lethal clouds. Today, condensed air is a toxic dust of frayed oil-based materials. The example of blood as a general liquid of exchange extends beyond the human to the mountain gorillas butchered for bushmeat to feed the armies and labourers engaged in ‘freelance’ mining operations. This is neither an environmental nor an aesthetics of the elements, but an unruly diagram of abominable combinations and post-natural forces and substances.

See also Anthropocene; Earth; Geomythologies; Terrestrial.

Gary Genosko

G

GAGA FEMINISM

My book *Gaga Feminism: Sex, Gender and the End of Normal* (Halberstam 2012) has made the claim that the 'existing conditions' under which the building blocks of human identity were imagined and cemented in the last century – what we call gender, sex, race and class – have changed so radically that new life can be glimpsed ahead. Our task is not to shape this new life into identifiable and comforting forms, not to 'know' this 'newness' in advance, but rather, as Nietzsche suggests, to impose upon the categorical chaos and crisis that surrounds us only 'as much regularity and form as our practical needs require' (Nietzsche 1968: 278). In new work, I build upon ideas from *Gaga Feminism* and begin to develop a theory of queer anarchism from a new companion project titled *The Wild*, in order to weave a story about emergent and posthuman forms of life through the glimpses we catch of it in popular culture and subcultural production.

The wild as a concept has lost its meaning in our age of post-civilization development, post-industrial production and post-identity being. As a word, *wild* comes from old or middle English and refers to undomesticated modes of life, disorderly behaviour, the lack of moral restraint, excess in all kinds of forms, the erratic, the untamed, the savage. When referring to nature, the wild tends to mean unaltered by human contact: in card games, a 'wild card' lacks an intrinsic value

but will change according to the game; wild also has meant barbaric, savage or that which the civilized opposes. It refers often to a so-called state of nature, whatever that may be, and has recently been used to refer to the practice of going off the grid or behaving in a chaotic or anarchic manner.

Wild, in a modern sense, has been used to signify that which lies outside of civilization or modernity. It has a racialized valence and a sense of anachronism. It is a tricky word to use but it is a concept that we cannot live without if we are to combat the conventional modes of rule that have synched social norms to economic practices and have created a world order where every form of disturbance is quickly folded back into quiet; every ripple is quickly smoothed over; every instance of eruption has been tamped down and turned into new evidence of the rightness of the status quo.

For my project, 'the wild' is not a place, person or practice; it is a potential in the sense that José E. Muñoz describes the queerness of potentiality: 'Queerness is essentially about the rejection of a here and now and an insistence on potentiality or concrete possibility for another world' (Muñoz 2009: 1). The wild is not what limns the present, what lies outside of the bounded here and now, it is something that we already conjure from within the here and now – we constantly call it into being. Wildness does not exist separately from our desire to break loose from a set of constraints or a determined understanding of what is appropriate, good and right.

My use of this word, a word laden with meaning, saturated with sense drawn from colonial and ecological contexts, represents an attempt to stretch our critical vocabularies in different directions – away, for example, from the used-up languages of difference, alterity, subversion and resistance and towards languages of unpredictability, breakdown, disorder and shifting forms of signification.

In *Gaga Feminism*, I track the action of ‘going gaga’ as something that Lady Gaga channels but that is not particular to her. Instead, I show how Lady Gaga’s global visibility hides a much longer history of wild and often punk female performances. The name Gaga, supposedly taken from the Queen song ‘Radio Ga Ga’, signifies the creative mayhem that has spread through our sex gender systems and Lady Gaga herself occupies several sites of radical ambivalence and ambiguity and embodies these shifts in the meaning of desire. For example, when rumours flew around the internet about Lady Gaga being inter-sexed, she refused to deny the rumours about her own genital ambiguity in a phobic way. Gaga has said instead in an interview with Barbara Walters: ‘I portray myself in a very androgynous way and I love androgyny.’¹ Like David Bowie, Lady Gaga cruises on her appeal to male and female fans, and like Grace Jones, she alters the meaning of feminine iconicity through refusing to operate within the rules of popular consumption that would freeze her through complex processes of fetishization.

The ambiguity that surrounds and even defines Lady Gaga – genital, musical, aesthetic – allows her to both question and revel in spectacular forms of femininity. It also signifies as a vivid example of posthuman modes of inhabiting the body. In a post-feminist age when young women both benefit from and simultaneously

deny leaps that have been engineered by feminism, we should explore carefully the new idioms of glamour and femininity as they appear within the performance-scape of stars like Lady Gaga. Like Poly Styrene, Grace Jones and Pauline Black before her, Lady Gaga creates alter egos, she syncs pop and punk sounds and she mixes dance stutters into sonic hiccups to create a spasmodic femininity that lurches and jerks into action. She also confuses the boundaries between internal and external, both highlighting the ways in which girls are forced to see themselves always as ‘image’ and contesting that image by revelling in a radical, Warholesque superficiality. Going gaga is not simply being Gaga, it is a journey to the edge of sense – Grace Jones goes gaga in her cover version of Joy Division’s ‘She’s Lost Control’ and Poly Styrene went gaga on ‘Oh Bondage Up Yours!’ While masculine versions of going gaga take on heroic proportions in rock history (guitar smashing, stripping on stage, crowd surfing), feminine ecstatic performance is read quickly as sexual excess, wardrobe malfunction or psychological breakdown. In Lady Gaga, however, feminine performative excess finds a new performance horizon and hovers between madness, mayhem and the dark side.

While many readers of *Gaga Feminism* read the book as a kind of homage to Lady Gaga herself, the figure of Lady Gaga was representative rather than authorial – in other words, her particular synchronization of performance, sensationalism, hyper and hypo femininities, affect, stylization and animatedness falls within the new and shifting boundaries of identity and embodiment within what we call posthumanism. I was not, therefore, trying to track who Lady Gaga was and what her performative legacy might be so much as account for the particular shape within which popularity and newness fuse.

Posthumanism names a configuration of flesh, matrix, drugs and pleasure, a matrix that has also been named the 'pharmacopornographic' by Paul Preciado (2013); it frames the various understandings of self, body and otherness that make up and undo identity in an era of fast and hot cultures, environmental ruin and the disintegration of the social. *Gaga Feminism* proposed that we have not paid close enough attention to the morphing of sex and gender protocols within the last two decades and it provides a quick account of these shifts and changes in relation to landmark shifts like the embrace of gay marriage, the new visibility of the transgender body and the move away from the medicalization of identity and towards its mediatization. Arguing that we are in a state of almost constant flux, *Gaga Feminism* argues for an intensification of confusion and chaos and the embrace of social, political and representational anarchy on the way to the next incarnation of the queer, the strange and the beautiful.

See also Feminist Posthumanities; Postdisciplinarity; Xenofeminism.

Note

1. See online interview for ABC News, 22 January 2010, <http://abcnews.go.com/Entertainment/video/lady-gaga-love-androgyny-9640579> [accessed 14 April 2017].

Jack Halberstam

GENERAL ECOLOGY*

Our age is characterized by the rise of a new historical semantics: the rise of ecology. There hardly seems to be an area that cannot be considered the object of an

ecology, hardly any area not open to an ecological reformulation (Hörl 2013a). This proliferation of the ecological is accompanied by a striking shift in the meaning of 'ecology'. The concept is increasingly denaturalized: whereas previously it was charged, politically and semantically, with nature, it now practically calls for an 'ecology without nature' (Morton 2010b) and begins to occupy even fields that are definitively unnatural (Fuller 2005; Goddard and Parikka 2011). In losing this dimension, the concept also sheds a constrictive set of immunopolitical connotations along with its ties to dogmas of proximity, immediacy, the unscathed, the proper, the house (Derrida 1998; Neyrat 2008), to dogmas, in short, that have haunted and reterritorialized the concept of ecology (due to its origin in the Greek *oikos* and as its problematic logocentric heritage) ever since its genesis in the nineteenth century. This historical-semantic reorientation begins to distance ecology from what Bataille called restricted economy (Bataille 1988) and to generalize it. Ecology as such becomes a central cipher of the great transformation in the politics of concepts and theory that marks our posthuman challenge: the general ecologization of thinking and of theory.

Yet what exactly is the conceptual core of this movement of ecologization? What set of problems do general ecologization and the emergence of a new ecological image of thought – for that is what we are dealing with – react to?

First of all, the generalization of ecology and the formation of the new ecological paradigm, which cut across all modes of existence and domains of being, refer to a twofold development in the politics of difference that is of particular significance in the current situation. They express a transvaluation of the relationship between technics and nature and, at the same time,

between technics and sense. They thereby take into account the great break in the history of rationality and sense implemented by our entry into the technological condition (Hörl 2015). Finally – and this is what the movement at issue here aims for – general ecologization is encoded in terms of power. It is exacted by the new apparatus of capture that is Environmenality (Foucault 2008; Massumi 2009), in which power is environmentalized by media technologies that are based on distribution infrastructures and begins to operate ecologically.¹ Yet at the same time, the generalization of ecology in its most radical forms, which fundamentally reconceptualize thinking and theory, also represents a critique of this new apparatus of capture.

While from the perspective of the history of concepts and discourses the concept of ecology has primarily and for the longest time designated the other side of technics and of mind, it has now begun to switch sides within the nature/technics divide. It undoes the sutures that have bound it to nature. And it is doing so, crucially, in parallel with or perhaps even as a result of a fundamental unsettling of this very difference, which, in the twentieth century, is no longer comprehended in the time-honoured Aristotelian way from the side of nature. The supplementation of nature by technics no longer seems to be inscribed in nature, and its guarantee of purposes no longer seems to be circumscribed and regulated by nature. In its entirety, the instrumental logic of means and purpose that technology was to embody, the long-lived teleological rationality that seemed to manifest the sense of technics, indeed, the entire western order of teleology – let's call it ontoteology – has been shaken to the core, unsettled precisely by the evolution of technics itself. The becoming-technological of technics under way in the total cyberneticization of

all modes of existence and domains of being in the twentieth century, the dawn of a new age of technicity marked on all levels, from the micro- to the macrolevel, by the emergence of machinic assemblages (Simondon 1989) in which technology becomes the previously unthinkable milieu of all being; they radically demonstrate that there are no pre-given purposes of any kind. Technology even turns out to be the absolute agent of this absence (Nancy 2003, 2013; Hörl 2013b). Nature, too, now begins to be subject to technics. What emerges is an essential technicity of nature, a technological or, more precisely, a cybernetic state of nature (Moscovici 1968). Geologists even observe the genesis of a technosphere in addition to the existing ones ranging from the litho- to the atmosphere (Haff 2014). In the entry into the technological condition, in which this great historical mutation is concentrated, the concept of ecology is pluralized and disseminated; it is defined and consolidated in the concept of generalized ecologies (Guattari 2008, 2013; Gibson 1986; Bateson 1972); it soon traverses all domains of existence under its spell; it finally transforms into technoecology. It becomes the guiding concept of the deterritorialization of the relationship between nature and technics that characterizes the present age.

Thereby technoecological rationality succeeds on instrumental rationality. A conception of relations as radically originary and constitutive of *relata* as such replaces a conception in which relationality was thought to manifest itself most purely in relations of means and purpose and of causes and effects, one in which relations were thought as derivative, secondary, sometimes even minor figures over against the entities that preceded them, a conception, in other words, in which the sense of relationality was schematized in a

classical instrumental way. This radical-relational onto-epistemological renewal under the auspices of a general ecology critical of all anthropocentrism – paradigmatically understood as machinic collaboration of human and nonhuman agents and forces, as great cooperation, primary entanglement, originary being-with, inevitable participation, hetero- and symbiogenesis, as sympoiesis of living and non-living entities and forces – constitutes the core of the fascination with non-modernity so central for understanding our posthuman situation (Braidotti 2013).

At the same time and intrinsically linked to this renewal there is a change in the inner economy of the difference between technics and sense. All the way to the twentieth century, the traditional politics of sense, culminating in Husserl's discussion of the total destruction of sense by mathematical-technological mobilization, was organized not just by the juxtaposition of sense and technics alone. The aspect of technics has always been subordinate to the aspect of sense and to its guardian, the sense-giving subject. Every shift of emphasis toward technics ultimately threatened a collapse of sense. Such an assessment, however, holds true only in the context of a very specific disposition in the history of sense, albeit one of fundamental significance for the dogmatic philosophical politics of sense: it manifests the culture of sense of meaning and representation, its specific technological-medial condition and its most important support, the alphabetized reading-writing-subject of the transcendental tradition. In contrast, we have for quite some time been living a shift in the culture of sense provoked by the entry into the technological condition, a shift from signifying sense to technoecological sense, in which the essential medi-ality and technicity of sense comes to the fore. This, however, transforms the concept

of sense as a whole: there is a technological shifting of the sense of sense itself. In line with the technological destruction of western ontoteleology, the mode of givenness of sense as such changes; there is no sense given or to be given, no sense sedimented or to be restituted. Against this background, the cult of sign and meaning, the primordially of human language, and the despotism of the signifier, which characterized the traditional logocentric culture of sense and were mostly borne by a non-technical, speaking subject that gave meaning, turn out to be pretechnological illusions. In the age of a cyberneticization, computerization and algorithmization characteristic of the technological condition, they are replaced by different, non-linguistic, asignifying semiotics (software and programming languages, algorithms, mathematical equations, diagrams, stock-market indices, etc.), which combine with affective forces to form a new machinocentric regime of sense, producing effects of subjectivation that are as much characteristic of the cybercapitalist constitution as they are potentially capable of undermining it (Guattari 1995, 2012; Lazzarato 2014).

Ultimately, however, this significant transvaluation in the history of sense and rationality, the crossroads at which general ecology appears, is not a mere event of technological evolution but the expression of a transformation in the history of power: the technological evolution that codetermines these transvaluations develops along a history of machines that can be deciphered as a history of control (Beniger 1986) and has led to the current reconfiguration of the apparatus of capture. What has developed from out of the process of cyberneticization since the late nineteenth century and especially since 1950, and finally from out of the breakthrough of computers emigrating into the environment, the widespread imple-

mentation of algorithmic and sensoric environments (Parisi 2009; Hansen 2013; Munster 2013; Easterling 2014; Gabrys 2014), is a radically distributed and distributing, one might say environmental culture of control. Interconnection with the environment as a new function of media and effects of Environmentalization thus determine twenty-first-century media (Hansen 2015). They lead to the comprehensive implementation of the cybernetic hypothesis of universal controllability and the regulatory ideal that comes with it, to the mesh of a new technology of power that has begun to operate ecologically or at least environmentalizes itself. In this process, even what used simply to be called 'environment' is made environmental thanks to mediatechnological infrastructures of control. Environmentality, which is implemented first and foremost by media technologies, is the contemporary form of governmentality.

This, precisely, is the flipside of the programmatic emergence of environmentality and its correlate, the primacy of relations in light of technoecological rationality. The radical environmental distribution of agency by environmental media technologies not only renders environmentality visible and prioritizes it like never before. In Environmentality as a form of governmentality, environmentality as a problem becomes manifest in the first place. Its guiding problem is the registration and control, the management and modulation of behaviour, affects, relations, intensities and forces by means of environmental (media) technologies. The contemporary apparatus of capture and the diagram of power can be grasped only in ecological registers. To a certain extent, even the emergence of relationality itself is inscribed in this historical development of control: this new form of power is based on the registration, capitalization and exploitation of rela-

tions of all kinds, on an economy and mathematics of relations (Rouvroy 2013; Zuboff 2015). The cybercapitalist organization of the web of life (Moore 2015), which articulates the cybernetic hypothesis with the capitalocene, is relational.

General ecology is the name of a new image of thought. While the developments in the history of rationality, sense and control that culminate in the turn towards Environmentality exact the general ecologization of thinking and theory, this ecologization at the same time critically works through this turn: it outlines (or at least has the potential to outline) an onto-epistemological counterknowledge of the ecological whose beginnings are clearly manifest today (Ingold 2000).

See also Algorithm; Capitalocene and Chthulucene; Computational Turn; Ecosophy; Technicity.

Notes

- * The article is translated from German by Nils F. Schott.
1. Note that the term 'Environmentality' with a capital 'E' refers to the contemporary mode of governmentality, as used by thinkers such as Michel Foucault and Brian Massumi. The term 'environmentality' with a small 'e', translating the German *Umweltlichkeit*, refers to a broader sense of the environmental and especially to the concept *Umweltlichkeit* as used by Heidegger in *Being and Time*.

Erich Hörl

GEO-HYDRO-SOLAR-BIO-TECHNO-POLITICS

One (Deleuzean) version of posthuman theory entails showing the production of

multiple actual (or 'differentiated') forms of human life from irreducibly differentiated 'multiplicities', that is, networks of natural, social, political and physiological processes. This analysis does not deny subjectivity, but embeds it in processes above, below and alongside the subject. Here we see 'bodies politic' that imbricate the social and the somatic: the reproduction of social systems requires producing certain types of 'somatic bodies politic' (those whose affective-cognitive patterns and triggers fit the functional needs of the system) while those social systems or 'civic bodies politic' are themselves bodily in the sense of directing material flows (Protevi 2009).

Using the ancient Athenian Empire as a case study of geo-hydro-solar-bio-techno-politics, we can look above the subject to the geopolitics of circuits of food qua captured solar energy, below to political physiology qua entrainment-provoked solidarity, and alongside to bio-technical assemblages such as the phalanx and the trireme (Protevi 2013). The choice of this case study is useful in disabusing us of the presentist notion that only now are we entering a posthuman age. The geo-hydro-solar-bio-techno multiplicity behind the morphogenesis of imbricated civic and somatic bodies politic in the ancient Mediterranean world includes geological factors such as ground slopes and surface friction; biological factors such as type and strength of local flora and fauna; and hydrological factors such as river currents, channels and wave strengths. In addition, it also includes social-technical factors such as the speed capacity of warfare assemblages: the phalanx as man-spear-shield assemblage; the chariot as horse-men (driver and fighter)-bow assemblage; and, the waterborne assemblages of rower-powered warships and sailing-power merchant ships.

It may seem odd at first, but from the geo-hydro-solar-bio-techno-politics perspective we can claim olive oil as a key factor in the genesis of Athenian democracy. Olive oil is a storage form of solar energy burned for light in lamps and burned for energy in human bodies. One of the tipping points in the democratization process in Athens occurs when Solon forbids debt slavery and debt bondage (Raaflaub, Ober and Wallace 2007: 59; Ste Croix 1981: 137, 282) as well as all agricultural exports except that of olive oil. This last provision stabilizes the middle class of small farmers who were threatened by aristocratic dominance by providing them with a ready cash crop (Milne 1945; Molina 1998). This stabilization of a mass olive oil export market also creates demand for work by urban artisans who produce jars for olive oil and manufactured goods for export (also arms for hoplites to forestall aristocratic reconquest). A growing urban population needs grain importation, however, and protecting the import routes needs a naval force. In turn, what we can call the 'military egalitarianism' thesis retains its force, and claims that a dependence on a naval force pushes the regime toward urban democracy, that is, to expanding the political base beyond that of the hoplites, for rowers are drawn from the ranks of urban masses unable to afford hoplite gear (Raaflaub et al. 2007: 119-36; Gabrielsen 2001).

Now democratic rowing in the Athenian navy (leaving aside the question of seaborne marine troops) was relatively low intensity, at least compared to the hand-to-hand fighting depicted in Homer, and the phalanx clashes of the classical age. (Actually, we should note that 'hand-to-hand' is a misnomer, for shield and sword/spear is itself quite a bit less intense than just one-on-one with hands.) Thus for

rowers there is less necessity for the high-intensity training needed for noble single combat. Phalanx training was intermediate between aristocratic single combat and naval rowing; it is less intense than single combat, because of teamwork; that is, emergence. In the phalanx, you stand by your comrades rather than surge ahead as did the Homeric heroes for whom staying in line would be cowardly.

The discrepancy between phalanx soldierly courage and Homeric warrior courage is an excellent example of the need to overcome essentialism: you will never come up with a set of necessary and sufficient conditions to define 'courage,' so it is much better to investigate the morphogenesis of warrior and soldierly bodies politic: how are the warrior and the soldier different actualizations of the virtual multiplicity linking political physiology and geo-hydro-solar-politics? The practice of marching and standing together is the key to the civic and somatic bodies politic expressed by the phalanx. As we will see in a moment, William McNeill's *Keeping Together in Time* allows us to account for this bonding in terms of collective resonating movement provoking the entrainment of asubjective physiological processes supporting emotional attachment (McNeill 1995: 117).

But before we go below the subjective level to entrainment and political physiology, we should note its complement in the supra-subjective materialist explanation of Athenian foreign policy by the noted Marxist historian, G. E. M. de Ste Croix. In *The Origins of the Peloponnesian War* (1972) and again in *Class Struggle in the Ancient Greek World* (1981), Ste Croix points out that the geo-political key to the transition from Athenian democracy at home to the 'Athenian Empire' after the Persian Wars is the threshold of human energy produc-

tion from grain ingestion. Ste Croix uses this to undercut ideological explanations of Athenian foreign policy: 'I have ... explained why Athens was driven by her unique situation, as an importer of corn on an altogether exceptional scale, toward a policy of "naval imperialism", in order to secure her supply routes' (1981: 293). The singularities in the Athenian actualization of the geo-hydro-bio-political multiplicity are what get us out of ideological condemnations of a supposed Athenian 'lust for power.' As Ste Croix points out, rower-powered warships had a much shorter range than sail-driven merchant ships, which are able to capture solar energy in form of wind power – itself generated from a multiplicity of temperature differentials of land mass/sea/water currents producing wind currents (1972: 47–9; see also Gomme 1933). So the Athenian democrats needed a network of friendly regimes whose ports could provide food and rest for the rowers of their triremes. That is, to use our terminology, to replenish the biological solar energy conversion units of the triremes qua 'man-driven torpedo[es]' (Gabrielsen 2001: 73). Bringing the geo-hydro-solar dimensions of the multiplicity together with biotechnical and more traditionally socio-political dimensions, a recent scholarly article puts it this way: 'the concept of *thalassokratia* [sea-power] implies intense naval activity, primarily in order to defend existing bases and to acquire new ones, and intense naval activity, in its turn, requires command over enormous material and financial resources' (Gabrielsen 2001: 74). Adopting this viewpoint allows us to understand the supra-subjective and anti-ideological materialism of a key passage from Ste Croix:

Athens' whole way of life was involved; and what is so often denounced, as if it

were sheer greed and a lust for domination on her part, by modern scholars whose antipathy to Athens is sharpened by promotion of democratic regimes in states under her control or influence, *was in reality an almost inevitable consequence of that way of life.*

1981: 293, emphasis added

But we should not be content with only going above the subjective; we should go below it as well. McNeill's reading of the political consequences of entrainment-provoked military solidarity takes us below the subject, complementing Ste Croix's supra-subjective geo-materialism. McNeill writes, 'the Athenian fleet developed muscular bonding among a larger proportion of the total population than ever fought in Sparta's phalanx' (McNeill 1995: 117). Furthermore, 'feelings aroused by moving together in unison undergirded the ideals of freedom and equality under the law ... The muscular basis of such sentiments also explains why the rights of free and equal citizens were limited to the militarily active segment of the population' (ibid.:118).

In this entry we have shown a version of posthumanism by going above, below and alongside the subject. Above to Ste Croix's supra-subjective geopolitics, below to McNeill's sub-subjective entrainment-provoked emotional solidarity, and alongside to Gabrielsen's adjunct-subjective bio-technical assemblage (the trireme as 'man-driven torpedo'). We have thus sketched the dimensions of a geo-hydro-solar-bio-techno-political multiplicity expressed in the naval democratic empire of ancient Athens.

See also Body Politic; Capitalocene and Chthulucene; Geopolitics; Medianatures; Necropolitics.

John Protevi

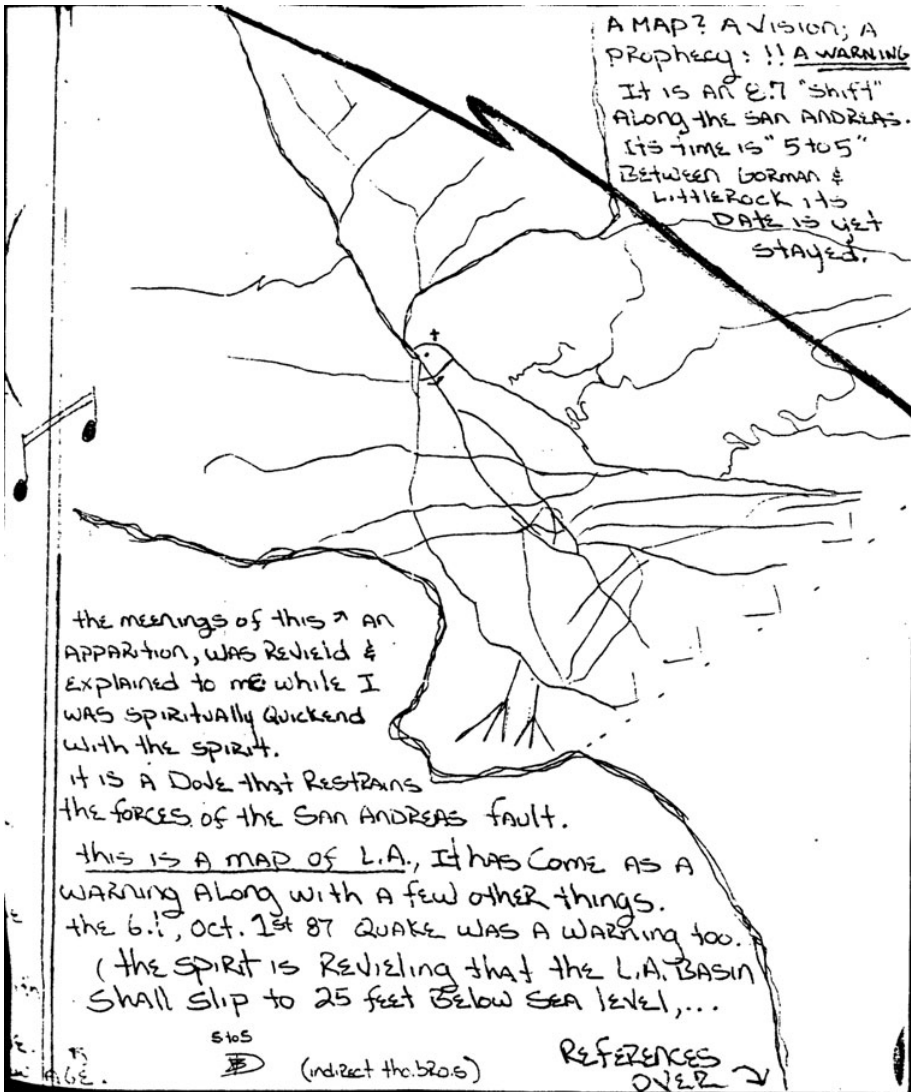
GEOMYTHOLOGIES

With the traditional methods of knowledge acquisition, the natural sciences on the one side and the humanities on the other, mankind has reached a limit. The indivisible concatenation of industrial metabolism, climate change, soil erosion and the extinction of species requires a new approach to the world that is governed by material interconnections from the accumulation of plastic islands in the ocean to the particularity of a speck of dust on its way from the Sahara to the Brazilian rainforest. A new sense of amazement at the wonder of Planet Earth is required: what can we do, how can we know and to what extent are the two connected? With what means, methods and senses can we encounter the world of our own creation?

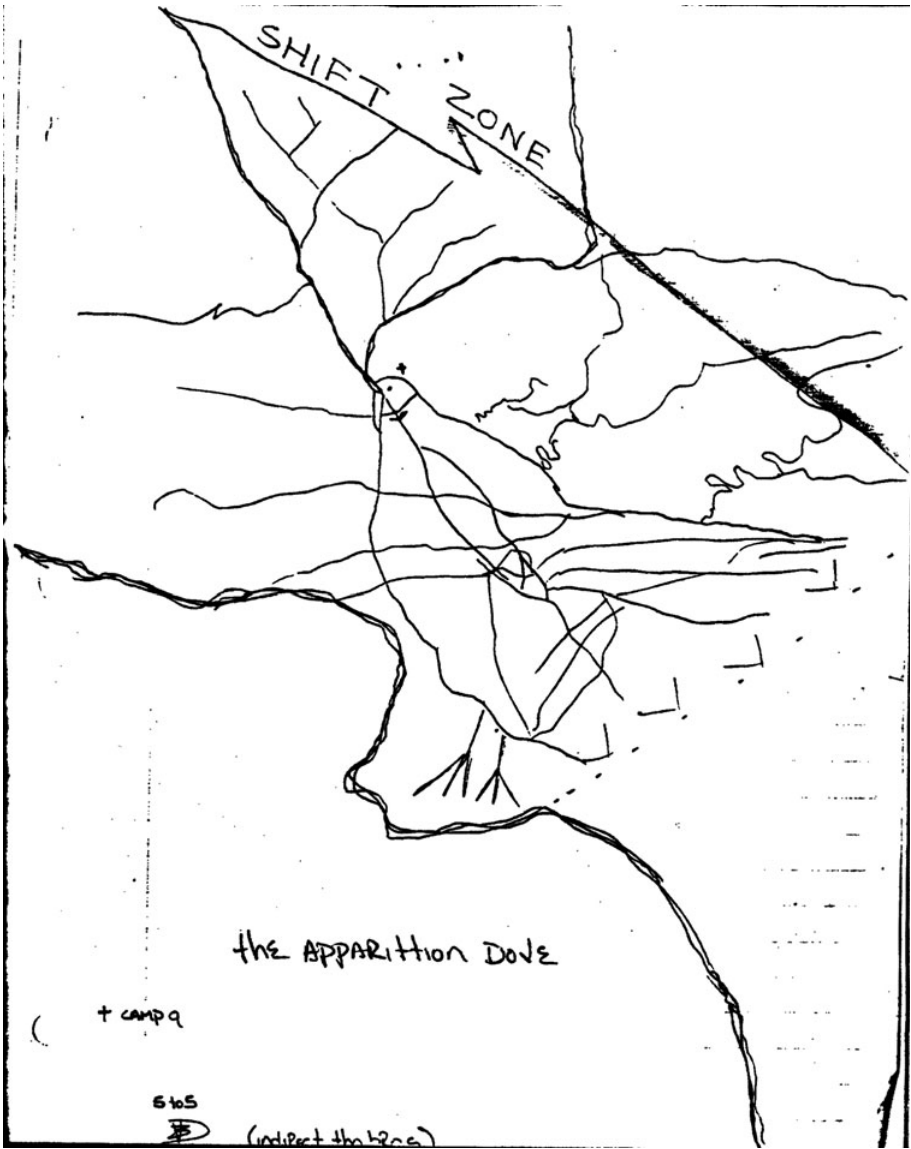
In their essay film *Medium Earth* (2013), The Otolith Group explore the earthquake-endangered geology of California as well as the infrastructural unconscious of planetary capitalism. Through pictures that appeal to the senses and the voice of a medium whose body is sensitive to seismic occurrences, the film listens to California's deserts, translates the writing of stones and decodes the calligraphy of the earth's crevices. *Who Does the Earth Think It Is?* (2014) consists of redacted and scanned selections from the unofficial collection of unsolicited earthquake predictions sent by members of the public to the United States Geological Survey Pasadena Field Office at California Institute of Technology, Pasadena, Southern California, between 1993 and 2007.

See also Anthropocene; Art; Capitalocene and Chthulucene; Earth; Forests.

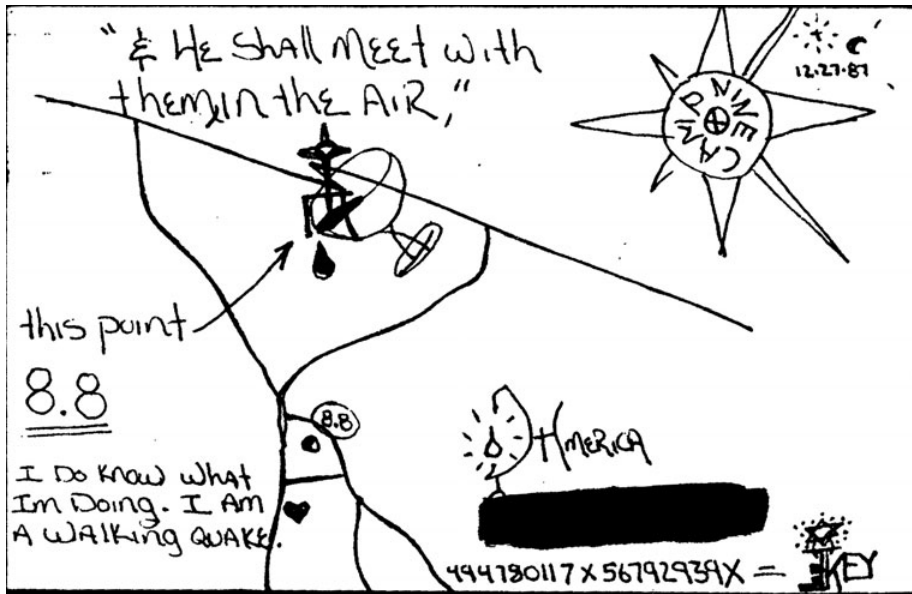
The Otolith Group



The Otolith Group, *Who Does the Earth Think It Is?* (detail), 2014. COURTESY OF THE ARTISTS.



The Otolith Group, *Who Does the Earth Think It Is?* (detail), 2014. COURTESY OF THE ARTISTS.



The Otolith Group, *Who Does the Earth Think It Is?* (detail), 2014. COURTESY OF THE ARTISTS.

GEOPOLITICS

An entry for geopolitics in a glossary devoted to posthuman thought is simultaneously paradoxical and self-evident: paradoxical in that the concepts that constitute ‘geo-’ and ‘politics’ are so firmly rooted in humanist traditions with human-centric *a priori* underpinning them that to consider them without the human risks being meaningless; self-evident in that the larger forces of environmental degradation and geological time coupled with polyscaler autonomous computing and sensing systems might have already removed the ‘geo-’ and politics from human agency.

The constants in thinking geopolitics remain the intimate correlations and occasionally determinate relationships between terrestrial space and power. Although a number of philosophers from Aristotle to

Kant and Hegel had a nascent and occasionally explicit geopolitics, its current usage (perhaps now outmoded) stems from trajectories that can be gleaned from early Modern colonialism to the Cold War. Kant’s intervention into this fray comes with his ‘Essay on Perpetual Peace’. This treatise contains an empirical problem, perhaps even an irresolvable paradox. Every human, Kant claims, has an equal right to a place on the earth’s surface because we are constrained and circumscribed by its spherical shape. If the earth contained infinite space, then such claims could not be made or even be an issue. But by the very act of asserting one’s natural right to this space, Kant also argues, one becomes an offence simply by being another’s neighbour. Kant’s essay on perpetual peace becomes instead an essay on perpetual agonism as the unintended result of striving for perpetual peace.

Derrida argues that Kant's natural law found in common possession of the earth's surface prohibits anyone from claiming a right to a specific spot while excluding others from so claiming, for no one has any more natural right to a place than any other. So there are limits to this law. The limits of a right to a place on the earth are the limits of spherical space, and the limits emerge as the host of institutional limits known as boundary, state, national, public or political space.

The current usage of geopolitics draws on a number of tele-technologies deployed in and through the Cold War into the contemporary moment for policing the earth and rendering the 'geo-/earth portion of geopolitics in specific ways that hold ramifications for thinking the political, especially as it pertains to the notion of agency. These same tele-technologies have led to the oft-invoked 'deterritorialization' of the earth in the most blatant reconceptualization of space, sovereignty and control. Equally these tele-technologies have further rendered the status of the human as political subject, and indeed nation as autonomous entity, in question. Much of how Western thought has interpreted tele-technological development – as McLuhan, Baudrillard, Virilio and others have argued – depends on the understanding of the self or subject as an agent enacting its will upon a world of objects (including other subjects). As a result, the means by which we can and do imagine extensions of that sensing and acting self invariably fold into and influence the interpretation of that self. Multi-sensory tele-technologies as they pertain to the implications for the enactment of agency relate fundamentally to the constitution and expression of the self and the many systems in which it is embedded, formulated, constructed, subsumed and articulated. Remote sensing and tele-technologies as

mobilized by the military – as well as by corporate and civic organizations – indeed have the potential to result in killing at a distance, which is clearly a matter of a subject controlling and manipulating objects. It is the self of mastery and control that often fuels various tele-technological drives, and which constitutes the shorthand version of the sovereign and political subject, or self. This self replicates on the micro-level larger formations such as community, state, globe and a host of other cordoned-off areas.

The self as philosophical and political concept is difficult to disentangle from the subject, sovereignty, identity and a host of other concepts and terms that relate to a specific stripe of metaphysics that Derrida terms 'logocentrism', and Heidegger before him calls 'onto-theology'. Much of critical theory from the 1970s to the present has been engaged with this figure: the self (though mostly as subject). Nancy, in his 1979 work *Ego Sum*, anticipates this return to the subject but as one that questions or moves beyond, perhaps out of structural necessity, the metaphysical subject such as one finds in Derrida's and Heidegger's critiques. As with the intellectual projects of Nietzsche, Benjamin, Adorno and Derrida – to name but a few of many – current conditions constitute a need to think geopolitics without a certain kind of self at the centre of it: a decentering that ironically results explicitly from the self's concerted technological attempts to remain at the centre.

These tele-technological attempts have figured the earth-as-globe, which is fully bounded, networked and observed in real time. These capacities and attributes are an inheritance of the Cold War, as are the remote sensing systems that led to real-time global surveillance. Obviously all of these have a military provenance. For example, the Limited Test Ban Treaty on

nuclear testing signed in 1963 and the attendant requirement to monitor adherence to it through remote sensing systems coincides with the emergence of the prefix 'geo-' becoming synonymous with the earth as globe, as strategically networked and completely surveilled entity. The prefix 'geo-' clearly conflates earth with ground and surface. The first issue of *The Journal of GeoElectronics* (in 1963) underscores the moment the 'geo-' becomes codified as primarily a techno-scientific engagement with the earth. That first issue included an introductory meditation on the changing understanding of the prefix 'geo-' in relation to tele-technological developments. The journal is now called *The Journal for Geoscience and Remote Sensing*.

Satellites play an integral role in many large-scale remote sensing systems and have helped craft a 'geo-' bereft of territory. They metonymically manifest many of the ways that modern techno-scientific culture in the post Second World War moment began to 'world' and shape the metaphysics of the imaginary in terms of what worlds could and should be. In the first few paragraphs of his essay, 'The Age of the World Picture', Heidegger (2002) argues that modernity's essence coalesces around a series of phenomena including science's most visible manifestation as machine technology, itself using specific forms of mathematics to realize its visibility and power. This situation aligns modern science with modern metaphysics. Further he argues that within the very late modernity of the middle part of the twentieth century, art moves into the world of aesthetics and thus becomes a means for simultaneously creating and articulating human experience. All of this culminates in human action being understood as culture, which then means that culture articulates the highest of human achievement and care, with care being converted

into 'the politics of culture'. Heidegger brings mathematics, science, machine technology, art, aesthetics, culture and metaphysics together in a penetrating view of the legacies of twentieth-century trajectories that further lead to an elision of human culture as a primary driving force of geopolitical conceptualization.

The cultural geopolitics of Heidegger's interpretation of modernity's generated metaphysics can be charted in the capacity for representation to equate with experience and the real, for the map to create the territory and the technological means for cartographic representation to become the tools for human 'worlding'. Peter Sloterdijk's expansive meditation on spheres and the metaphysical lineage of the globe as human goal and achievement argues post-Heidegger that 'at no time, however – not even in the age of space travel – could the enterprise of visualizing the earth deny its semi-metaphysical quality. Anyone who wished to attempt a portrait of the whole earth after the downfall of heaven stood, knowingly or not, in the tradition of ancient occidental metaphysical cosmography' (2014: 774).

Benjamin Bratton in *The Stack: Software and Sovereignty* (2016), contra Sloterdijk, 'develops a new model of political geography and systems design for the early era of planetary-scale computation' that steps beyond this occidental metaphysical cosmography. Bratton links infrastructure at many material and perceptual scales to examine multi-layered structures of software, hardware and network 'stacks' that operate independently and interdependently at modular levels. Using the logic of platforms, he outlines 'an alternative subdivision of political geographies at work now and in the future' that lead from the supposed 'eclipse of the nation-state to the ascendance of political theology as an existential transnationalism, from the

billowing depths of cloud computing and ubiquitous addressability to the logistical modernity of the endlessly itinerant object' operating in political institutional reformulation amidst massive wealth realignments and ecological collapse on a planetary scale (ibid.).

Bratton's argument can be furthered by examining any of the host of current polyscaler remote sensing systems, such as Hewlett-Packard's Central Nervous System for the Earth (CeNSE) or the NGO project called The Planetary Skin Institute. CeNSE uses 'Smart Dust',¹ a nano-sensing project described by its creators as 'autonomous sensing and communication in a cubic millimetre'. Hewlett-Packard intends to distribute a trillion of these micro-sensors from the bottom of the ocean and up into space. Smart Dust coupled with CeNSE was funded by DARPA (with HP partnering with Shell in its current formation) and thus has military and corporate applications designed for offensive battlefield use and profit-driven surveillance. The Planetary Skin Institute, according to its website, intends its 'platform to serve as a global public good' through automated, multi-user, Web 2.0, sensor-saturated global coverage of 'change events'. The language, the technologies, the touted benefits, the agencies allowed are the same for CeNSE and The Planetary Skin Institute – and, as previously noted, their antecedents date back to the Cold War, test ban treaties and experimental closed systems of automated sensing and firing in the Vietnam War. The only differences between these polyscaler, automated and autonomous remote sensing systems can be found in their stated intended use – differences and uses that can be altered with the flip of a switch. And *who* or *what* flips that switch – nation-state, international corporation, self-adjusting algorithm or automated response to futures invest-

ment and speculation for immediate profit-gains – sets the current posthuman agenda for thinking geopolitics.

In much the same way that the Cold War removed specific spatial formulations for political decision making in relation to fixed space by flattening the earth into an oxymoronic globe with no horizon, these new platforms outstrip national sovereignty and governance in a host of intended and unintended ways. DARPA's website slogan is 'Creating and Preventing Strategic Surprise'. However, the elimination of the event will have been determined by an indeterminate object that senses as a subject, communicates as a subject and yet does not and cannot enact its own will: it is merely a node in a network shuttling data. This might describe the position of populations and governments, known as subjects in politics and philosophy, just as easily as it does the smart dust chip.

See also Algorithmic Studies; Bodies Politic; Earth; Non-human Agency; War.

Note

1. See Smart Dust project website, <http://robotics.eecs.berkeley.edu/~pister/SmartDust/> [accessed 7 February 2017].

Ryan Bishop

GREEN/ENVIRONMENTAL HUMANITIES

Since the early 2000s, there has been strong scientific consensus on the need for an interdisciplinary field capable to address the complex societal relations to both natural and built environments (Braidotti et al. 2013; Dolphijn 2013). This timely 'call to arms' has coincided with the growing awareness of the impact of anthropogenic

activities on the global environment. In 2000, Nobel laureate Paul Crutzen and biologist Eugene Stoermer named the current geological epoch 'Anthropocene' (2000: 17) to emphasize the role of human-kind in geology and ecology. In their short article, Crutzen and Stoermer predict that, without any major catastrophe, humans will remain a major geological force for millennia, even millions of years, to come. Hence, they urge the scientific community '[t]o develop a world-wide accepted strategy leading to sustainability of ecosystems against human induced stresses' and call for 'intensive research efforts and wise application of the knowledge thus acquired in the noösphere' (ibid.: 18).¹

This framing of the notion of Anthropocene betrays, nonetheless, a faith in modernist theories of technology and progress that places the human outside of nature and thus reduces nature to a passive object of culture. According to Gisli Pálsson et al. (2013), the taken-for-granted unnaturalness of the human is itself part of the environmental problem. To deal with global environmental change, they state, it is necessary to start from a conception of the environmental as inextricably entangled with the social and thus return our attention to social theory and the humanities to effectively face the human and societal challenges posed by it. The appreciation of the environment and the human as 'naturecultures' (Haraway 2003) will inevitably produce a radical reshaping of the notion of environmental responsibility and foster an ecological – relational – approach to systemic change.

Over the last decades, the term 'environmental humanities' has been gaining ground to designate the interdisciplinary area capable to promote such a conceptual shift. According to feminist philosopher Rosi Braidotti et al. (2013), the first important and original contribution of the environmental

humanities to environmental issues is their ability to question the tenets of what is commonly understood as the human condition in the age of the Anthropocene. This can help develop a better understanding of human agency and human beings' interaction with the ecological communities they are part of. The environmental humanities bring questions of meaning, value, ethics, justice and the politics of knowledge production into environmental domains, thus articulating a notion of humanity that rejects modernist accounts of self-contained, rational, decision making subjects (Bird Rose et al. 2012). Rather, 'the environmental humanities position us as participants in lively ecologies of meaning and value, entangled within rich patterns of cultural and historical diversity that shape who we are and the ways in which we are able to "become with" others' (ibid.: 2). At the core of this approach is a focus on those 'new materialist' (Dolphijn and van der Tuin 2012), non-dualist philosophies/practices that propose to see the world as the result of the intra-active workings of more-than-human assemblages. In short, by operating in the nexus between modernist oppositions and dualisms, they promote a vision of the whole world as a 'naturalcultural contact zone' (Haraway 2008: 7) where the 'natural world' is not just the passive background or container for human activity and doings, but an active factor in its iterative materialization (Barad 2007). To paraphrase Australian philosopher Val Plumwood (2003), the environmental humanities are engaged in an operation aimed at resituating the human within nature, and non-humans within cultural and ethical domains.

Braidotti et al. (2013) mention a second important contribution of the environmental humanities: their ability to challenge the disciplinary separation between the human, social and natural sciences. Deborah Bird Rose and others, much on

the same line, state that ‘the emergence of the environmental humanities indicates a renewed emphasis on bringing various approaches to environmental scholarship into conversation with each other in numerous and diverse ways’ (2012: 1–2). In general, the approaches coalescing under the banner of the environmental humanities explicitly reject the assumed ‘non-scientificity’ of humanities work on the environment, a critique that is still too much enmeshed with narrow conceptualizations of ‘human agency, social and cultural formation, social change and the entangled relations between human and non-human worlds’ (ibid.: 2). This effort has produced the emergence of a wide range of novel interdisciplinary approaches to scholarship that ‘bridge’ the natural, human and social science and put them in renewed dialogue. Among these, it is worth mentioning Bio Art practices, which, as Dolphijn (2013) reminds us, are making a vital contribution in tackling important questions regarding the Anthropocene, the ecological crises and sustainability in general. Through these and other practices, the environmental humanities have proven capable of providing distinctive research tools, presenting precedents and complex narrative schemes that offer historical perspectives on social-environmental challenges that we face.

The non-dualist approach of the environmental humanities with respect to both the (non-)human and scholarship is finally responsible for a revitalization of ethics into a posthumanist space of care and responsibility. Moving away from a notion of ethics as human attribute and thus still too preoccupied with moral dilemmas, environmental humanities attend to the entanglement of human and non-human forms of life and invite a kind of accountability that transcends the humanist sphere of agency. Ethics, in a naturalcultural world, implies accountability for what comes to matter

(Haraway 1988) as well as the power differentials that are crucially part of worldly re-configurings (Barad 2007, 2012). In this respect, environmental humanities are particularly suited to address gender, racial and postcolonial dimensions, and stress the entangled nature of social and environmental justice (Nixon 2011; Chakrabarty 2009). As feminist philosopher Karen Barad states, in a naturalcultural world, questions of ethics and justice ‘are always already threaded through the very fabric of the world’ in such a way that ‘epistemology, ontology, and ethics are inseparable’ (in Dolphijn and van der Tuin 2012: 69).

To conclude, the environmental humanities appear to have picked up philosopher and activist Félix Guattari’s ([1989] 2000, [1992] 1995) call to use the current ecological crisis and sustainability issues as an ‘opportunity’ to redefine humanity as a whole, and work towards the development of an ecosophical perspective/logic.² In helping us to understand how individuals and societies respond to global environmental change, environmental humanities contribute to our understanding of factors likely to enhance the human capacity to transform paradigms in thinking and patterns of behaviour. Finally, the development of this interdisciplinary field³ shows the entanglement of the humanities and the sciences as well as a renewed ethico-political practice of relationality and mutual entailment as the basis for producing systemic change and working towards sustainable futures.

See also Algorithmic Studies; Bodies Politic; Earth; Non-human Agency; War.

Notes

1. Noösphere is a concept first introduced by French paleontologist Pierre Teilhard de Chardin in a 1922 essay titled ‘Hominization’ (in Teilhard de Chardin

1966) to indicate 'a human sphere, a sphere of reflection, of conscious invention, of conscious souls' (63). He conceived the noosphere as discontinuous and superior to the animal biosphere, and therefore capable of defining the next stage of terrestrial evolution through the transformation of the biosphere.

2. Ecosophy, for Félix Guattari ([1989] 2000, [1992] 1995), is a 'generalized ecology' that seeks to rethink human praxis in its relation to three ecologies: the environment, the social relations and subjectivity.
3. See, for instance, journals such as *Environmental Humanities* (<http://environmentalhumanities.org>) and *Resilience* (<http://www.resiliencejournal.org>).

**Tobijn de Graauw and
Elisa Fiore**

GULF LABOR

Gulf labour / high culture / hard labour / in a racialized ultra luxury global economy / with ultra low wages / black and brown bodies / South Asian migrant workers / sell land / pawn gold / incur debt / leave family / pursue a false dream / for better life / shackled by recruitment debt / passports confiscated / tied and beholden to a single employer / lose your employer, lose your visa / organize, you're imprisoned and deported / no human dignity / but workers strike / together / across national and ethnic identities / WhatsApp used / organized over tea / unions not involved / there are no leaders / labour camps / bachelor camps / surveillance / politics emerges from material conditions / do not board buses / shut-downs and slowdowns / and emergence of transnational solidarity / target Guggenheim New York / occupations / creative direct actions / boycotts / decolonial practice / on



Returned migrant workers from UAE, Telangana, India, January 2015. IMAGE BY MTL.

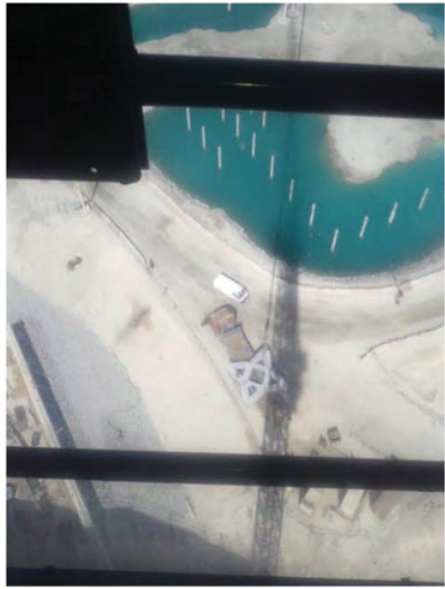
the ground research / worker publications / voice amplification / heart of empire / Demands, non-negotiable: Debt Jubilee / Living Wage / Worker Representation. In solidarity / GULF LABOR

High Culture

On Saadiyat Island in Abu Dhabi, meaning in Arabic 'Happiness Island', we see monuments to 'culture' woven into a monstrous assemblage of fossil fuels, financial power and imperial geopolitics. Saadiyat cultural district, which spans a total area of 2.43 square kilometres, includes an £85 million Louvre museum set to open in 2017, as well as a Guggenheim Abu Dhabi by Frank Gehry, the Sheikh Zayed National Museum by Foster + Partners, and a Performing Arts Centre by Zaha Hadid.

Ultra Luxury

The global cultural brands setting up in Abu Dhabi – Guggenheim, Louvre, British Museum, NYU – claim zero responsibility for exploitation and poor worker conditions. They insist that the problems of the workers should be addressed to the government, to the subcontractors, to the middlemen, to the 'sending country', but



Left: Site of death of a 28-year-old Pakistani worker on 8 June 2015, Louvre Abu Dhabi.
Right: Image from a crane installing the stars on the Louvre, Abu Dhabi, July 2015. IMAGES BY ANONYMOUS LOUVRE WORKERS.



Louvre Museum Abu Dhabi, March 2016. IMAGE BY ANONYMOUS LOUVRE WORKER.

never to the disinterested heights of art institutions themselves who possess a leverage they refuse to acknowledge.

Hard Labour

These monuments are built on the backs of migrant workers from Bangladesh, India, Pakistan, Nepal, Philippines, Sri Lanka and, most recently, Cameroon, Uganda and Nigeria, who migrated for a better future for themselves and their families. They are drawn to the Gulf by economic precarity in their home countries, and typically end up bonded to their work through debt under the kafala system, to work in construction.

Ultra Low Wages

The workers who have been building the Louvre and the infrastructure for the rest of

these cultural institutions are housed in remote, segregated and surveilled worker camps. They incur substantial debt to leave their home country to obtain construction work that pays very little. They have no right to worker representation or any form of collective bargaining. They organize strikes, slowdowns and the like when they are not paid for months or in response to poor living conditions or poor food. In retaliation, punishments levelled by employers are often harsh. They include indiscriminate imprisonment or deportation, or both.

Worker Resistance

From the May Day 2016 action in Saudi Arabia where workers set fire to seven buses belonging to one of the largest construction companies over unpaid wages, to the shutdown of a mall and a



G.U.L.F. projection action on the facade of the Guggenheim for May Day 2016 in collaboration with Illuminator in Hindi, Telugu, Punjabi and Arabic languages. IMAGE BY G.U.L.F.

highway in Dubai in March 2015, and to smaller everyday acts of resistance against abusive supervisors and managers, workers are at the forefront of struggles to better their conditions, focusing on wages and labour reforms that challenge the very terms of Gulf petro capitalism, which is itself embedded in flows of global capital and labour.

Action/Amplification

Gulf Labor is a chain of resistance across geographies amplifying the demands of the workers in the Gulf. Direct actions in the Gulf by the workers and in New York and Venice by Global Ultra Luxury Faction (G.U.L.F.) and Gulf Labor Coalition (GLC) target both global systems and

local conditions at once. G.U.L.F. and the GLC disrupt and refuse the role that art now plays in the normal functioning of a global system that propagates racism and inequality in its shadows. In the broader horizon of decolonization and climate justice, these small actions make visible that capitalism has always been hostile to human and non-human life, and that people fight where they are for a shared horizon of liberation and human dignity, excavating in the process a culture of deep solidarity and togetherness.

See also Art; Contemporary; the; Commons; the; Organization in Platform Capitalism.

MTL Collective (Nitasha Dhillon and Amin Husain)

H

HACKING HABITAT

Across the globe, more and more of our daily experiences are managed and surveilled by networking technologies, system protocols and algorithms, resulting in a 'remote control society', where ubiquitous, networked systems – from corporations to politics, from military to entertainment – influence and dominate our surroundings. The internal mechanisms of institutions have begun to lead their own life – services are automated, data is the new currency, and optimum efficiency has become the norm, as exemplified by everyone's proper adjustment to machines. Technological developments not only saturate our environments – social, natural and cultural – constituting

an integral part of our habitat, but also change the power structures that permeate these environments. To hack the habitat thus means to re-establish a conscious relationship with and through machines, to critically investigate how we are caught up in systems, and explore ways of resistance.

HACKING HABITAT was a large-scale international manifestation on the boundaries between art, technology and social change, and consisted of three components: a run-up with four Life Hack Marathons in 2015, an expanding Art Exhibition, and an Open Stage in 2016. Around eighty artists, hackers and designers presented their work, prepared interventions and provided workshops to reflect and act upon the often invisible but structural containment we find ourselves



James Beckett, Voodoo Justice for People of Finance, installation in HACKING HABITAT, 2016.
PHOTO: PETER COX.

in. Controlling technologies are simultaneously both sexy and frightening. Whereas the panopticon was once invented as a 'humane' model to control and discipline prisoners, now we wilfully accept mass surveillance and behaviour regulation in exchange for free internet and smart apps. The choice for a real prison for the final exhibition thus logically follows the initial concept, strengthening experiences of digital constraint, with the smartphone as our new panopticon.

Developing A-Whereness

As Stefania Milan notes (2016), hacking entails subversion or circumvention of the workings of an object or a mechanism. The concept first emerged at MIT around the 1960s, and was rooted in programming and computer science. Hacking meant exploiting the limits of what is possible, and implied a certain kind of ethics: decentralization, openness and sharing (Levy 1984). Today hacking constitutes survival through creative use, appropriation, resistance and subversion of digital technologies, social practices and institutions, including bodies and biology (Milan 2016: 29–30) as well as borders (Dijstelbloem 2016) and financial systems (Ridgway 2016).

Hacking habitat thus interweaves and exposes two narratives: that of a globally increasing technocracy and that of its self-organizing opposition. The narration is not about good or evil, but connects awareness of an invisible 'velvet dictatorship' with affirmative examples of human resilience. In symbiosis with intelligent machines, people are developing a new kind of sensitivity, a feeling of 'a-whereness' that makes the workings of high-tech control more tangible, thus opening the routes to low-life survival in the everyday life. Self-organizing initiatives and social networks are cropping up around the

world, managing to elude intrusive forms of regulation and coding. Citizens find each other in the battle.

Life Hacking

In the run-up to the projects' ultimate realization, human feedback was collected during four Life Hack Marathons. Life hacking is not a trick or luxurious commodity to manage time even more efficiently, but rather results from a 'maker mentality' (Walter-Herrmann and Büching 2013). Moreover, life hacking is based on the work of Michel de Certeau. In *The Practice of Everyday Life* (1984) he examines the difference between strategies that affirm the status quo of the powerful – governments, banks, multinationals, cultural hegemonies – and the flexible tactics of those who are subjected to power. According to him, the powerless have a different kind of power. With their indirect and errant trajectories they cleverly and skilfully bend the rules in order to survive while retaining their culture, identity and dignity. Life hacking is thus about searching for shared solidarity and (post)humaneness to discover playful forms of civil disobedience (Celikates and de Zeeuw 2016) to fight the power that has grown nomadic and immaterial.

Art and culture has a crucial role to play in the process of hacking habitat: as a channel of empowerment, self-organization, and control of 'social capital' and creativity for communities, allowing for local knowledge to become an inspirational force in a wider global context. Deliberately choosing a supporting role, artists can develop test models for new ecologies of belonging. Interventions by Aram Bartholl, Henrik van Leeuwen, Forensic Architecture, Melanie Bonajo, Circus Engelbregt, Kendall Geers, Lino Hellings, Buro Jansen & Janssen, Samson Kambalu, Van Lunteren/ Kastelein,



Susan Hiller, *Die Gedanken sind Frei*, 2013, installation in HACKING HABITAT, 2016. PHOTO: PETER COX.

!Mediengruppe Bitnik, Ansh Patel, Renée Ridway, Merlijn Twaalfhoven, Dries Verhoeven and the Centre for Political Beauty substantially and constructively break the rules. Going against the flow, they plant viruses mobilizing counter forces and taking over public spaces as new places for negotiation. The emerging frictions become tools for transformation.

See also Art; Digital Citizenship; Expulsions; Stateless State.

Ine Gevers

HYPERSEA

New Degrees of Freedom, Act 3: Water was an audio play and an installation as part of the event *The Posthuman Era Became a*

Girl at South London Gallery on 26 July 2014. The story was an ode to wetware next to the literally dry, silicon-based transhumanism discussion. It took place in an oceanic lounge setting consisting of sea sponge bag chairs, blue light and water popsicles. The spatial aspect was supposed to enhance the listeners' experience of being water, while depicting humans as water's avatars. Here, I was interested in both the universalist side of acknowledging ourselves as part of a larger, aqueous ecology as well as breaking the extropian illusion of getting rid of the wetware of the human state altogether by saying that, in fact, the more refined a technological process is the more it uses (virtual) water.

The work is part of *New Degrees of Freedom*, a performance series with an online component, as conceived together



Jenna Sutela with Johanna Lundberg: *New Degrees of Freedom, Act 3: Water*, 2014. Audio play, sea sponge bag chairs, blue light and water popsicles. PHOTOS: FELICITY HAMMOND.

with graphic designer Johanna Lundberg. The project has its premise on the idea that the body can no longer be emancipated online as the internet has proved to be not virtual enough. Instead, it explores different means to identity fluidity and autonomous zones in the offline world.

See also Blue Humanities; Forests; Postglacial; Vertigo Sea

Jenna Sutela

HYPERSOCIAL

The term 'hypersocial' appears at the end of Jean Baudrillard's pamphlet *In the Shadow of the Silent Majorities* and describes what he calls the 'hyperrealization of the social', that is the transformation of the social *from referent to model* (Baudrillard 1983: 85). In Baudrillard's anti-humanist, postmodern philosophy, the social does not designate a universal, but it is endowed only with an 'ephemeral existence', falling between pre-modern and postmodern societies, that is 'societies without the social' which function through 'networks of symbolic ties' and societies which are in the process of putting 'an end to the social beneath a simulation of the social' (ibid.: 67). In modern societies, the social expressed a 'dynamic abstraction' resting on the hypothesis of the existence of 'social relations'; it operated as a 'functional integration of remainders' (such as the 'excluded' who were taken in charge by the modern State); and functioned as 'scene of conflicts and historical contradictions' (83). The modern notion of the social thus implies a 'reality principle' produced by a 'centralized perspectival space' which enables effects of 'meaning and truth' (68). As such, then, for Baudrillard 'the social dies in the space of simulation', where there is 'no critical, speculative distance', but

'projection of models in the real' constituting an 'in-the-field, here-and-now, transfiguration of the real into the model' (83). Like the hyperreal, the hypersocial abolishes the social 'not by violent destruction, but by its assumption, elevation to the strength of the model' (84). The hypersocial, thus, indicates the transformation of the social from referent to model, which activates a strategy of '[d]eterrence of all real potentiality' operating 'by meticulous reduplication, by macroscopic hyperfidelity, by accelerated recycling, by saturation and obscenity, by abolition of the distance between the real and its representation' (85). One of the consequences of this new configuration for Baudrillard is that the hypersocial puts an end to the 'socialist illusion', that is the idea that there exists a "real" sociality, a hidden sociality', which can ground socialism as the 'optimal collective management of men and things' (80). While Marx dreamed of the re-absorption of the economic into a '(transfigured) social', for Baudrillard what we are witnessing is the re-absorption of the social 'into a (banalised) political economy: administration pure and simple' (81). For Baudrillard, hence, the hypersocial is the reverse of socialism, that is it is the culmination of the process by which the social first abolished the political and then with the hypersocial became reabsorbed into the economic (81).

Baudrillard's reference to the end of the social and the rise of the hypersocial haunts contemporary discussions of new forms of sociality instantiated by the transformation of the social into an 'information visualization' which operates as the model through which new type of media (social media) operate. This model is the 'social network' based in the mathematical abstraction of graph theory – a model which both duplicates and informs the social in new ways (Lovink 2012). The most evident sites of such reconfiguration are social media

platforms (such as Facebook, Twitter, Google+, Instagram, LinkedIn and the like) which can thus be seen, from the point of view of Baudrillard's hypersocial, as the means by which the modern social is absorbed into a new medium, the social network, which reconfigures the social as a process of circulation secured by network protocols (Foucault 2009; Terranova 2015). Contemporary critiques of the social of social media platforms echo Baudrillard when they argue that the social modelled by social networks is a 'social without society' which enacts new forms of control and forecloses the possibility of solidarity and identification with the collective while also severing all links with social reproduction such as theorized by feminist political economists (Dean 2013; Fortunati 2007). Such new configuration of the 'social' is argued to be functional to a 're-organization of neoliberal governmentality' and its technologies of algorithmic governance (Davies 2015; Morozov 2014). The new social or hypersocial enacted by social network models is thus said to enact a process of further dissolution of social bonds, which dissolves society into networks of isolated individuals (Turkle 2011; Berardi 2009). Most of these analyses do not follow Baudrillard's anti-humanist post-structuralism in as much as they evoke the modern social as space of conflict and contradiction, solidarity and collectivity, against the subsumption of the social into a model of 'optimal circulation' – Baudrillard's hypersocial as a space of deterrence.

Other evaluations of the 'hypersocial', however, conceive it as expressing the potential for renewed forms of socialism and/or communism which do not necessitate state planning or centralized control (Kelly 2009; Hardt and Negri 2009). On the one hand, liberal theorists argue for the radical novelty introduced by social production in the networked information

economy (such as Open Source software or Wikipedia) which challenge the hegemony of the market (Benkler 2006; Rifkin 2014). From this perspective the hypersocial is an 'augmented social' which affords the possibility of a transition to post-capitalist p2p commons-based societies (Bauwens 2014). On the other hand, Autonomist Marxists see social cooperation as the ontological source of value production (living labour) which become increasingly autonomous from capitalist organization by incorporating portions of fixed capital in a new configuration called 'biopolitical production' and/or 'cognitive capitalism' (Vercellone 2007). The hypersocial here bears the potential of a 'becoming autonomous of social cooperation' which is played out in the struggle to re-appropriate forms of platform cooperativism against the capitalist subsumption of the sharing economy (Scholz 2016). In this way, such enhanced social cooperation resurrects the dream of a socialist cybernetics which overcomes the limitations of centralized state planning and requires a transition towards an anthropogenetic socio-economic model founded in a new form of welfare called 'commonfare' (Dyer-Witheford 2013; Marazzi 2007; Vercellone 2015).

Against Baudrillard's reductionist notion of matter, his hypostatization of pre-modern societies as 'the real' and his metaphysics of reality and appearance, it is desirable to transform the notion of the hypersocial into a concept which names a singularity where the decline of the modern image of the social and the rise of a new image produced by means of informational and computational technologies of tele-communication enacts new configurations of power and resistance (Foucault 2001) or strategies of capture and lines of flight (Deleuze 1992b).

Contemporary engagements with the hypersocial thus raise a set of questions

which challenge the classical humanities and gesture towards the critical posthumanities. To start with, the hypersocial provokes us to produce new forms of critical knowledge which defy neo-positivist and shallow forms of social analysis and quantification without returning to the modern, humanist social of classical sociology (Braidotti 2013). Such critical knowledges might include: critical genealogies of social software as biopolitical dispositifs of power/knowledge and in general new approaches to the study of automation, computation and algorithms (Rieder 2012b; Kaldrack and Röhle 2014; Parisi 2013b); non-anthropocentric philosophies of the social or ‘cosmic sociologies’ which see matter and life (organic and nonorganic) as constituted by affective

energy-flows and forces of association/dissociation (Tarde 2012); affirmative critiques and transfigurations of political economy and neo-classical economics which formulate new theories of labour and value/s (Lazzarato 2002; Latour and Lépinay 2009); affirmative contestations of the politics of Big Data (Blackman 2015); and cartographies which specify the new nature of processes of subjectivation (including racialization and sexualization) in social network ontologies (Nakamura and Chow-White 2011; Sharma 2013; Terranova 2016).

See also Networked Affect; Youth; Algorithm; Computational Turn.

Tiziana Terranova

INFORMATIC OPACITY

As early as the 1970s, Caribbean philosopher and poet Édouard Glissant theorized opacity as an anti-imperial modality of relation and existence. His evocative demand that ‘we clamor for the right to opacity for everyone’ refuses a logic of total transparency and rationality, disrupting the transformation of subjects into categorizable objects of Western knowledge (Glissant 1997: 194). Opacity, Glissant tells us, concerns ‘that which protects the Diverse’, that is, the minoritarian (ibid.: 62). Although his writings often evade an engagement with technology – or are overtly technophobic – newfound urgencies arise to consider Glissant’s philosophy of opacity within the context of technics in the early twenty-first century. Whether innovations in Big Data, secret data sweeps of governmental surveillance or the growing popularity of the Quantified Self, the world’s people are increasingly reduced to aggregates of parsable data. Alexander R. Galloway and Eugene Thacker have described this era as one of ‘universal standards of identification’ (Galloway and Thacker 2007: 131). Technologies such as biometrics, GPS, RFID, data-mining algorithms, collaborative filters, DNA and genomics become operational through global protocols that aim to solve ‘today’s crises of locatability and identification’, for governments, militaries, corporations, and individuals alike (ibid.). These identification technologies gain ascendance in a time of neoliberalism,

Empire and control, which subsumes identity and difference into its logic of governance. As such, we bear witness to the continued erasure of embodiment and the coterminous proliferation of what Critical Art Ensemble labels the ‘data body’ (Critical Art Ensemble 1998). Donna Haraway once articulated this problematic as ‘the informatics of domination’, the coming communications networks of control that translate ‘the world into a problem of coding’ (Haraway 1991: 161, 164); a biometric template to police national borders, an instant credit check to determine economic viability, a gene to determine sexual orientation. Amongst teeming transnational flows of information, Haraway is careful to remind us that ‘People are nowhere near so fluid, being both material and opaque’ (ibid.: 153). This eradication of opaque excess by informatic standardization Glissant might call transparency. As an Enlightenment principle of universalism, transparency, for Glissant, claims to make a person fully intelligible and interpretable, and thus is a barbarism, as it destroys the opacity of another.

Opacity is a paradigmatic concept to pit against the universal standards of informatic identification. According to Glissant, opacity persists as ontology – it is the world in relation. Therefore, struggles for opacity are not oriented towards gaining opacity, as we are always already opaque; rather, it is that power violates opacity, which must be resisted as a commitment to anti-imperial politics. This is precisely

how opacity makes an ethical demand, as an appeal to prevent its denigration. Importantly, this does not imply that opacity is a stasis or sameness that must be preserved; alternately, it is the world without standard or norm – materiality in durational flux, which is the very aesthetics of the Other, for Glissant. At once ontological, ethical and aesthetic, Glissant continues to explain opacity as a politics: ‘if an opacity is the basis for a Legitimacy, this would be the sign of its having entered into a political dimension ... [Opacity] would be the real foundation of Relation, in freedom’ (Glissant 1997: 194). A politics of opacity, then, establishes itself in contra-distinction to state-based forms of legal recognition, which necessitate the elimination of ambiguity to obtain the rights of a free citizen. Unified as a philosophical concept, opacity provides a consistency for minoritarian forces that are burdened by the norms of the day but can never be extinguished by them.

Informatic opacity starts with the premise that struggles for opacity occupy multiple perceptual and interpretive strata, notably because being opaque to a person is not the same as being opaque to a machine. Consider a drone: while a drone operator might not be able to locate a person with their own embodied senses, the thermal imaging system of the drone can achieve this via heat detection. Today, acts against global surveillance exhibit an immense investment in informatic opacity, from protest masks and cell phone signal jammers to online encryption. Although Glissant does not define opacity as tactical, such political techniques suggest that informatic opacity is a practice of anti-standardization at the global, technical scale. As a kind of ontological tactics, it is of and for the minoritarian, who are the most violently impacted by informatic identification standards: transgender

persons are subjected to terrorist inspection when their bodies are misread by airport scanners and people of colour are profiled by biometric technologies. Crucially, this reveals a crux of informatic opacity: it is both liberating and oppressive. As informatic identification is linked more and more to governance, mobility and freedom, becoming informatically opaque can have excruciating political consequences, such as the loss of basic human rights. In spite of this, informatic opacity makes a more utopian gesture to exist without identification. Yet, in doing so, it does not ask us to return to Glissant’s technophobia, but instead it offers an infinitely more challenging and utopic proposition: to live with technologies that express the joy of opacity, not its destruction.

See also Algorithmic Studies; Metadata Society; Hypersocial; Leaks and Stings.

Zach Blas

IN-HUMAN, THE

Donna Haraway radicalized the poststructuralist thesis of the human as a construction by way of bringing it to its constitutive dyad of the organic and the technological, or of body and language. The dyad is affirmed in its radical irreconcilability without the desire or the tendency to resolve into a synthesis or a hierarchical subsumption. As the result of the radical affirmation of the dyad an unnameable remainder occurs which keeps inviting us to understand it and tame it through meaning – the inhuman.

The inhuman is an idea very close to Laruelle’s concept of the ‘human-in-human’ or what I will term here as the ‘non-human’. It is non-human insofar as it is non-humanist, and, more radically, insofar

as it makes no sense in the philosophical or theological terms. It precedes its meaning. Yet again, it also prompts it. It necessitates and engenders the auto-referential process of 'making sense out of it.' The pre-lingual self which is the 'real' under the 'first name of the lived' (Laruelle) or the human-in-human nesting at the heart of all subjectivity necessitates its self-estrangement and linguistic mediation as its means. The figure of the 'Stranger' is thus born. The Stranger (also a term borrowed from Laruelle's non-analytical vocabulary) is the posture of the lived that is proto-linguistic, and it refers to the primitive self-estrangement prefiguring subjectivity (Laruelle 1995: 78). Subjectivity is the philosophical Self. It is of the 'World' which, according to non-philosophy or the non-standard philosophy, is synonymous to 'Philosophy' (Laruelle 1989: 53, 58, 61). The real, albeit indifferent to the processes of 'making sense' or thought, necessitates those very processes, brings about their trajectories.

The thought therefore acts unilaterally: it correlates with the effects of the real whereas the real, inasmuch as it is a singularity, remains radically indifferent to it and different from it. For example, the trauma prompts its own transcendence through neurosis but the latter acts unilaterally with respect to it. The trauma itself remains outside the field of 'what makes sense' as the symptom precedes the neurotic response. The real manifests itself as the Lacanian symptom or as trauma which comes about as the *tuché* vis-à-vis the automaton (Aristotle). It produces a structure of occurrences governed by internal laws, a 'syntax' of a sort (Kolozova 2014: 63).

Transcendence is necessary. Nonetheless, it can be carried out philosophically or non-philosophically. The latter refers to operations (of thought) with philosophical material which succumb to dictat of the real rather than to a cosmology of thought

or a doctrine. Regardless of the posture of thought (be it philosophical or non-philosophical, or scientific), there will always be a remainder of the unruly and senseless real at the heart of what seems to be a 'meaningful reality', one domesticated through a subjectivity. *That which escapes sense, the trail of the monstrous real is the inhuman at the heart of the human. It is neither natural nor technological, it precedes the distinction – it is non-human or inhuman.*

A cyborg, an animal or the dark-out-there which can never be reduced to a meaning or truth, that which escapes philosophy or transformation into 'what makes sense' is inhuman or monstrous. Humanity is a theologico-philosophical creation and it is always naturalized. The same goes for the nature: thanks to philosophy, it has always been humanized. Therefore, as long as the technological component of the radical dyad called the Cyborg (Haraway) can be humanized, it is neither monstrous nor inhuman. If it can be rationally grasped, if it can be rationalized or make sense according to the anthropocentric reason, it can be and will unavoidably be humanized. Moreover, it will be naturalized. The inhuman is that which escapes rationalization, that which has no meaning or reason for existence. It is just out there – senseless, brute existence, matter regardless of whether organic or artificially produced. The technological prosthesis and the biological body are both alien to the subjectivity we believe exhausts our 'true self'. They are both equally inhuman as is the primitive configuration of subjectivity – or the protosubjectivity – we called above 'the Stranger'.

Contemporary capitalism is enabled by the absolute rule of pure speculation over the physical or the material (regardless of whether organic or synthetically produced), materialized as surplus value, i.e. as the fetish called 'money'. Wage labour,

estranged fruits of labour and alienation from the species-being take place as the result of the exploitation of the inhuman on the part of the self-sufficient automated speculation. In the Capitalocene, the inhuman constitutes the global concentration camp for the female, the animal, the black and the body that labours for wage or is exploited for the production of a commodity.

See also Animal; Ahuman; Anthropocene; Capitalocene and Chthulucene; In/Human.

Katerina Kolozova

IN/HUMAN

Unlike the condition of the posthuman, which mainly implies an irreversible evolutionary transition to the geological time of the Anthropocene, the concept of the inhuman presupposes alterhuman agencies and presences parallel to human existence. The posthuman condition posits man as an obsolete phenomenon of deep history and geological time, whereas the condition of the inhuman enables one to determine the limits of the human mind within both human and posthuman agencies.

As a matter of fact, the birth of Renaissance humanism was not so much about the narcissistic adherence of humankind to itself, but rather about the secularized mind that had to remain without once guaranteed non-human complements to life: mythology, faith, mysticism, religion, God, eternal life. It was actually due to the secularized claim to be merely human that it became possible to actually experience the uncanny burden of remaining human in an inhuman environment: all those spheres of the non-humanness that had hitherto patronized humanity – cosmos,

nature, universe – were disenchanting and rationalized. In this case the mind that claimed its new sovereign rationality not only asserted its limits, but realized its groundlessness, doom to death and extinction; whereas earlier all inhuman components cooperated with humanity as the mystic cosmic ‘home’. In other words, it was with humanism that the dimension of the agency of the inhuman manifested itself as utterly alien.

In German idealism, nevertheless, these alien, inhuman components were not treated as ungraspable for the human mind. On the contrary, even for Kant the human mind remained a tool for extending oneself to such uncomfortable, alienated otherness. Kant’s notion of the sublime or the thing-in-itself implied the incapacity of human cognition to exceed human consciousness. However, this ‘beyond’ was imagined as the human mind’s regulative idea about the broader inhuman mind.

Even more so in Hegel; for him the inhuman (absolute) mind exists; yet human thinking is able to develop to the *niveau*, where it reaches this universal inhuman mind without ceasing to be human. As Evald Ilyenkov states in his ‘Cosmology of Mind’, it was Hegel who tried to solve the problem of the over (in)human mind: human thought was considered capable to cognize according to the laws of absolute mind (Ilyenkov 1991). According to such logic, the fact that the human mind can infer the existence of a broader cognitive capacity and a mind supreme to it only confirms that this inference of the inhuman belongs to the human mind per se and there is nothing that excels over it or exceeds it. Despite having limitations the human mind remains the only agency of the quest for the absolute. If it were not so, one would have to allege the necessity of supernatural spirits, gods,

divine realities, etc. Hence, the syndrome of the alien disconnected and uncorrelated with human subjectivity inevitably returns back to theology or some sort of techno-panteism.

Ray Brassier provides a completely converse treatment of the dialectic of the humanness and inhumanness of mind. According to him the transcendental subject and thought can only be non-anthropological, alien, extraterrestrial and inhuman (Brassier 2001). An excellent example of such a stance in art was Karlheinz Stockhausen. He believed that his music was incomprehensible to the human ear and hence completely inhuman, since the human species is ascending to a new cognitive turn, presupposing enhanced intelligence and perception; this would split humankind evolutionally into those with higher sapient cognitive skills and those with the lower sentient and reproductive needs.

Speculative realist, accelerationist and object-oriented theories go even further in this direction. For them inhumanist universalism in the history of thought is only a false projection of a finite human mind. The history of humanity, its material culture and the history of human thought can be no more than a tiny episode in the life of the universe, and thought can only serve to mythologize what a really autonomous inhuman knowledge might be. Intelligence has the attributes of the human mind, but its procedures of cognition and intellect should be externalized and nominalized beyond the domain of the human brain and mind.

In other words the contemporary debate about inhuman agencies rejects its philosophical background to posit the issue of the inhuman not so much as one of mind, but rather as an autonomous inhuman intelligence, even though it might occur in a nominally human body or

society. It is obvious, too, that various manifestations of machinic intelligences, computational sciences and, more broadly, the infrastructure of cognitive capital exceed the capacities of human mind and human life. Contemporary conditions of economy, military technology and media are operated by such artificial abstractions and non-human agencies. Therefore, it is important in this connection to prove that experiments with neurophysiology demonstrate that the human brain itself contains elements of artificial non-human intelligence and computation. An important argument in the apology for algorithmic and cybernetic intelligence is that computation is not at all an automaton of information and calculation, but includes in itself gaps, traumas, paradoxes and incomputable conditions (Parisi 2013a). Thereby the debate on the inhuman does not claim any expiration of the human. What it insists on is that technological excellence, contemporary cognitive production and the capacities of the human mind in its non-correlational autonomy are much more similar to artificial intelligence than to what the human mind appeared to be in history or philosophy.

Such treatment of the inhuman is not preoccupied with the dialectical intersection of the human and the inhuman, i.e. by the inquiry into the extent the individual human mind can extend itself towards something cognitively supreme. Along with excellence of the mind, exceeding the human condition, theories of autonomous intelligence rather insist on the overall reconsideration of the mind as an inhuman capacity (Pasquinelli 2015a). They search within the mind, human as it is, for a neural function that would be alien, non-human and would have no cognitive continuity with the dimension of mind inscribed into human experience, consciousness, history, etc. Such functions of intelligence might

possess an alien inhuman autonomy which leads to the assertion that within thinking, science, technology, the economy and societal infrastructure there has always existed a considerable component of alien intelligence, and what had always been important in philosophy, mind or thought had rather been characteristic for the artificial non-human intelligences, than a thought as a transcendental, philosophical and critical operation (Negarestani 2015).

Such abstract, autonomous intelligence needs no consciousness. In other words the point is not that something that used to be human should transform into something more radical and developed, but that s/he should re-assess itself as the inhuman with all its background – past, present and future. Referring to Alan Turing, Negarestani claims that there is nothing in the human that could not be abstracted and computationally realized (ibid.). Moreover, what is considered to be ‘a human mind’ is a function open for future reconstitution, which means that the modes of realization of mind can be superseded by certain functions of intelligence that might have changed the type of human intelligence altogether. Not only is a human able to become other in the long run of evolution, but it is able to regard its human-ness as other than a human. Being a human it nevertheless is able to terminate to see itself as human.

According to Negarestani, ‘Turing’s thesis on the computational functional realizability of the human mind ... suggests there is no essentialist limit to the reconstructability of the human or what human significance consists in’ (ibid.: 152).

What is valuable in this inference is that it directs the agenda of the human towards the indefinite future, opening up versatile developmental and emancipatory potentialities. On the other hand, such futuristically opened potentialities imply that:

1. Mind can only be defined as intelligence realized via machinic, algorithmic parameters, i.e. it is inhuman by definition.
2. Which leads to the second assertion, namely, that emancipation is mainly an inhuman potentiality.

Thus, the inhuman is not merely some alien intelligence parallel to the human one; rather, human intelligence itself must be reconsidered as alien and alternative to its own previous historically biased implications. However, what is taken for granted here is that the development and expansion of mind can only occur due to overcoming the mind’s human condition. Hence machinic and algorithmic intelligence becomes a new irreversible mode of mind’s capacity; but as well, the transformation of thought into algorithmically grounded intelligences marks the inevitable obsolescence of what critical thought used to be in the long run of history. So that the inhuman artificial intelligence is considered as a function ‘augmented’ and supreme with regard to thought and mind.

But what if mind is not just a cognitive category, whose autonomous function is intelligence? What if intelligence is only a small part of the mind’s capacity? In this case, the augmentation of intelligence would not presuppose subsuming human mind, nor would it imply confining mind to neural functions. The issue of the human is about sapience to the extent that sapience as mind is not about just intelligence and its excellence. Is not therefore the notion of augmented intelligence closer to Hegel’s Understanding, intellect (*Verstand*) than reason (*Vernunft*)? It is exactly intellect (*Verstand*) that deals with formalization, systematizing, abstracting; whereas reason overcomes abstraction to achieve the concreteness of the notion. Intellect and Understanding are nominal and abstract; reason is concrete and general.

The dimension of the general is not so much about the scale of intelligence or knowledge, exceeding the limited human mind; rather, it is about human mind being assembled out of social relations and the diachronicity of labour, i.e. it is general due to broadly non-self being of humans in social context.

Human mind, along with cognition, is therefore not merely a gnoseological function. Knowledge emerges along with suffering from non-understanding, with the awareness of mortality, just as cognition is not worthwhile without the ethically biased deed.

See also AI (Artificial Intelligence); Computational Turn; In-Human; Monster/The Unhuman; Non-human Agency; Violence.

Keti Chukhrov

INSURGENT POSTHUMANISM

Can we think of a posthumanism that is explicitly political and is coexistent with social movements? Such insurgent posthumanism would not only redraw the theoretical contours of posthumanism itself but also question the fixation of many social movements on the state and political power in order to uncover traverse histories of non-humanist struggles within them. One can trace these struggles back to the exodus of labourers from indentured, forced work and slavery. The singularities that composed the escaping, wandering mob were far from the humanist individual emerging in Europe and spreading across the world through colonial expansion; they were much closer to the non-humanist pleb crossing the countryside and the high seas from the mid-fourteenth and fifteenth centuries and, later, to the

disorderly mobs populating the streets of the cities in the eighteenth and nineteenth centuries (Papadopoulos, Stephenson and Tsianos 2008).

Many of these scattered insurgent movements of people did not enter the nascent capitalist humanist regime of labour but created non-proprietary and non-enclosed worlds through 'commoning' (Linebaugh 2008) matter and the material world, the land and soil, plants and animals. The reassembling of the state as a secular, liberal and humanist institution and the establishment of capitalist relations of employment was a response to these non-humanist struggles. There was no historical necessity for this reorganization of the state other than the insurgency of these non-humanist movements that force pre-capitalist and proto-capitalist social organization to collapse (Moulier Boutang 1998).

The experimentation with novel embodied practices and alternative ways of being remain at the core of these movements. For example, in the 1960s and 1970s we can see the resurfacing of such non-humanist politics which can be now called posthumanist: they attempt to depart from and challenge the by-then long-established domination of humanist politics. Rather than a direct confrontation with state power and established politics many of these feminist, environmental, antiracist, sexual, countercultural movements put forward alternative ways of everyday life that challenge power by their very own presence. Instead of the fixation on the fidelity to an event to come that will overcome current political power the mundane politics of these movements gravitate around the joy of putting together a whole cosmos around everyday radical material practices (Bakhtin 1984). With Anzaldúa (1987) – and I am thinking here also of Frantz Fanon, Edouard Glissant, Jose

Martí, Oswald de Andrade and many others – we see how radical change passes through the posthumanist transformation of the materiality and socio-ecological relationality of the body (Braidotti 2002).

As these posthumanist movements of the 1960s and after were gradually absorbed into the emerging neoliberal transnational governance they came to be called New Social Movements (NSMs). And, indeed, those which weren't already 'social' became social in the way we commonly use the adjective today: they turned primarily to questions of identity, representation and rights, political governance and the accountability of the state. With this change insurgent posthumanist politics declined again, only to reappear in the wave of social mobilizations that erupted at the beginning of the twenty-first century and in particular during the 2008 to 2013 cycle of social unrest.

What if social movements action today is not just targeting existing political power but is also experimenting with worlds and the materiality of life? Many current movements engage directly with technoscience and material/ecological experimentation; they immerse into the human–non-human continuum and change society by engaging with both the human and the non-human world (Haraway 1997). Social movements start to become more than social, movements of matter and the social simultaneously, movements that change power by creating alternative forms of life that cannot be neglected by instituted politics.

Traditionally this power to create conditions that cannot be neglected or bypassed has always involved the question of violence. Against the purported tight articulation of violence and transformation (primarily as protest violence against the state), dominant liberal humanist thinking asserts that violence starts where

politics stops. Is it possible to escape the dichotomy that opposes the violence of protest to the oppression of the state? Is it possible to commit to the fundamental possibility of non-violence, and simultaneously promote justice and create alternative ways of existence?

For more than social movements the question of justice is a question of temporality: justice is now, justice is against deferral; the space of deferral is the space of destructive violence. A posthuman reading of Benjamin's *Critique of Violence* (1996) would see justice worlded through the re-appropriation of matter and the immediate making of alternative forms of life. Paradoxically this is the end of any form of violence, social or individual. The more justice is concrete and material, the more non-violent and collective it is. This is postanthropocentric history: it is not made through the eternal dialectical struggle between constituent and constituted power; rather, history is made with and outside of the history of society, it is made when justice is restored materially – a posthuman justice, the co-construction of just forms of life with other species and things.

The central question facing more than social movements is how this commitment to justice can address the radical asymmetries which pervade our human and non-human worlds. Symmetry is not enough to reverse the modern purification of humans and non-humans (Latour 1993) and to stop imposing our 'we' – humans – on 'them' – non-humans. We have never been modern not because the modern purification is impossible but because we have never been 'we' and they – the non-humans – have never been 'they'. The constitution of modernity is based on a set of universalisms that have their provenance in colonial expansionism and the spread of the colonial matrix (Quijano 2007).

The aim is to politicize posthumanism and simultaneously to posthumanize politics by decolonizing both of them (Mignolo and Escobar 2010). More than social movements encounter the question whether there is a 'one-world world' (Law 2015) or a pluriverse of worlds (de la Cadena 2015) as a practical problem: they engage in a continuous materialism, that is they start from what exists to create other worlds that escape existing ones. Zapatista's matrix of a 'world where many worlds fit' is neither an epistemological issue nor a plea for changing our worldview to acknowledge the existence of multiple worlds; it is a guidance for practice and an invitation to a movement. Neither the making of one single ontology nor the making of multiple ontologies, but grounded making: from alter-globalization to alter-ontologies. From epistemology to ontology to movement. If there are 'plural ways of being in the world' (Chakrabarty 2000) then more than social movements give birth to plural ways of making the world; they give birth to indigenous ontologies (Blaser 2012). These ontologies can only come into being as they disconnect from the Western temporal register that relegates indigenous worlds to the past and set up autonomous indigenous ontologies – be it inside or outside the Western space.

Autonomy here is, of course, not meant as the modernist humanist value of individual independence but as political autonomy which requires material interconnectedness and intensive ontological alliances. And these are always more than human (Puig de la Bellacasa 2017), they always involve experimentation. The experimental politics (Papadopoulos 2017) of more than social movements is about invention – not the individual achievement of experimental science but distributed invention power: dispersed experimentation in the continuum of technoscience

and everyday life, the proliferation of distributed 'cooperation without consensus' (Star 1993), the topological stacking of materials and processes, ecological transversality between different social and material registers, complex traffic between instituted and community technoscience, the 'involution' (Hustak and Myers 2013) of human, animal and inorganic actors, the centrality of craft, the continuous folding of the commons and the private and public spheres into each other, the creation of generous infrastructures and infrastructural imagination, the cultivation of material literacy, the proliferation of 'experimental labour' (Kortright 2013), community technoscience and indigenous knowledge practices.

Distributed invention power characterizes the transition from the information age (note: big data is only a sign of peak digitization) to the time of composition. Experimental politics is about the composition of the digital and the material, wet and dry, matter and code; it is about forming material alliances through the association, mutualism and articulation between not directly connected forms of life. Endosymbiosis instead of endocolonization. Cooperation instead of toxicity. Warm compost instead of acidity. Commensality instead of contamination. 'Material spirituality' (Puig de la Bellacasa 2014) instead of instrumentality. Ultimately experimental politics revolve around care as an 'ethopoietical practice', the simultaneous production of ethos and ontology (Puig de la Bellacasa 2017). More than social movements fork worlds into alternative ontologies: one always relies on what existed before and then you split, redirect. Innovation happens rarely through sudden novelty and more through hacking, stretching, knitting, crafting, weaving, tweaking, mending, recombining existing processes or substances. What is at stake in the

posthuman experimental politics of more than social movements is not just social relations but the ontological constitution of life, the creation of commensal worlds. More than social movements are world movers.

See also Critical Posthumanism; Commons, the; Geo-Hydro-Solar-Bio-Techno-Politics; Political Affect; Posthuman Critical Theory.

Dimitris Papadopoulos

INTEREST/INTERESSE

The focus of this contribution is a sketch of the conceptual contours of a relational philosophy that comes to the fore by combining a variety of twentieth-century philosophical perspectives. Relational philosophy reaches beyond metaphysics and subject philosophical perspectives, affirming Nietzschean revaluation of all values, instantiating an affirmative nihilism. In that sense it is a posthuman perspective. In thematizing an affect ontological perspective, acknowledging the constituting power of the in-betweenness of mediatization (see *Radical Mediocrity*) it also reaches beyond modern man- and male-centred individualism in a transhuman way. Therefore the core concept of a philosophy of relations is the notion of *interesse*: being interested, literally being (*esse*) in-between (*inter*) as the core of a relational perspective. Psychologically being interested indicates an attitude of openness without anticipation emphasizing the quality of interacting over the instrumentalization of the communication for external goals. Philosophically *interesse* connotes the ontological primacy of the in-between, i.e. of relations. In aesthetics the relational turn is claimed by Nicolas Bourriaud. The concept of a ‘relational

aesthetics’ underpins the events in Palais de Tokyo in Paris. In *Relational Aesthetics* Bourriaud defines this museal event as ‘a set of artistic practices which take as their theoretical and practical point of departure the whole of human relations and their social context, rather than an independent and private space’ (2002: xv). While Bourriaud in the 1990s was transforming the space of the museum into an interactive relational rhizome, to figure a certain visibility in these relations, the Canadian–Mexican artist Rafael Lozano-Hemmer intervenes in public space with his dynamic interactive installations, calling his work ‘relational architecture’.

The concept of *interesse* is the philosophical counterpart of this ‘relational turn’ in art and design. As a philosophical notion it is introduced into modern discourse by Martin Heidegger. In *Being and Time* (1927) he states that ‘Dasein is the being of this “between”’. But he warns his readers not to make the mistake of understanding this constitutive in-between (*Zwischen*) ‘as the result of the *convenientia* of two objectively present things’ (DATE: 124). The in-between precedes any position. In *What is called Thinking?* (1954) in-between is rephrased as ‘Interesse’: ‘being with and between the things, being in between and enduring this’. However, ‘nowadays “Interesse” deals with what is interesting. Something that enables someone to be indifferent the next moment, something that is followed by something else that is as indifferent as what preceded it’ (122). I coined this in another lemma: radical mediocrity. So Heidegger makes a distinction between an inauthentic, ephemeral condition of the interesting as shallow entertainment and a fundamental being-in-between (*Zwischensein*) as the ‘cement’ (*Kit*) of relationality or Being-with (*Mit-sein*). In a relational philosophical context *interesse* goes beyond shared interests and excludes indifference.

Interesse is the affirmative counterpart of an uncritical radical mediocrity.

The concept is adopted and adapted by one of Heidegger's former students: Hannah Arendt. In her American publications the German notion *Interesse* is translated as 'interest', giving the concept a specific economic and political twist. In *The Human Condition* (1958) Arendt takes Heidegger's distinction one step further, politicizing Heidegger's ontological notion of language as the House of Being:

These interests constitute, in the word's most literal significance, something which inter-est, which lies between people and therefore can relate and bind them together. Most action and speech is concerned with this in-between, which varies with each group of people, so that most words and deeds are about some worldly objective reality in addition to being a disclosure of the acting and speaking agent.

Arendt 1998: 182

In *Eurotaoism* (1989) Peter Sloterdijk addresses this shift from Heidegger's male-dominated negation of life – 'Being-toward-Death' – to Arendt's female-oriented, open attitude of 'natality': a coming-into-world (*zur-Welt-kommen*) that includes both bi-unity and creativity. (205) In his *Spheres* trilogy Sloterdijk concludes in *Spheres III: Foams* that an uncritical *interesse* asks for 'the combination of "de-interesting and re-interesting" in a nondual type of morals' (2004: n. 332).

In emphasizing the supplementary tension between 'de-interesting and re-interesting' Sloterdijk refers to the rhizomatic philosophy of Deleuze and Guattari. At the end of the preface to *A Thousand Plateaus* on the rhizome the French philosophers circumscribe the ontological mode of this in-between: 'The middle is by no means an average ... Between things does

not designate a localizable relation going from one thing to the other and back again, but a perpendicular direction, a transversal movement that sweeps one and the other away, a stream without beginning or end that undermines its banks and picks up speed in the middle' (1980: 25). 'Inter' is a heritage of French philosophers of difference. Over the last decades of the twentieth century the emphasis in their work gradually shifted from difference to the in-between or 'inter'. This transition is already methodologically explored in Derrida's *Of Grammatology* (1967): 'Immediacy is derived'; 'that all begins through the intermediary is what indeed is "inconceivable"' (1976: 157). In *Margins of Philosophy* (1972) *différance* is presented as an 'interval':

neither simply active nor simply passive, announcing or rather recalling something like the middle voice saying an operation that is not an operation, an operation that cannot be conceived either as passion or as the action of a subject on an object, or on the basis of the categories of agent or patient neither on the basis of nor moving toward any of these *terms*.

1972: 9

Derrida's crucial notions resonate in (con) texts of Jean-François Lyotard, Michel Foucault, Luce Irigaray, Gilles Deleuze and Félix Guattari. All of these notions are instrumental to draw the contours of a philosophy of relations.

The initial focus of philosophies of difference is an ontological primacy of several modalities of difference developed in the course of the 1960s and 1970s: difference (Derrida), the Differend (Lyotard), sexual difference (Irigaray), the Other (Foucault), desiring machines and the schizo (Deleuze/Guattari). This is the backbone of a relational philosophy for the twenty-first century. But this is already refigured in an earlier critique on the

autonomous subject in the works of those whom Paul Ricoeur labels as the 'masters of suspicion': Karl Marx, Friedrich Nietzsche and Sigmund Freud. These are the canonical thinkers that drove the autonomous subject, residing in the centre of Immanuel Kant's philosophical universe, out of the centre of philosophical thought. In Marx's, Nietzsche's and Freud's critique the subject turns out to be the result of respectively politico-economical forces and power relations, of rivalling vital forces and of libidinal energies. From a metaphysical point of view it addresses nothing, nothing. In preceding the subject Labour, Life and Libido are instances of the nihilism Nietzsche diagnosed. In a more sociological phrasing self-consciousness is embedded as a node in networks nowadays. In the final analysis these infrastructural forces have and are no metaphysical foundation.

Next to these inspirations three other 'negative' inspirations have to be taken into account when it comes to a transition from difference-based subject critique to a philosophy of relations: Georg Wilhelm Friedrich Hegel, the founding father of modern dialectics, Ferdinand de Saussure, the founding father of structuralism, and the founding father of a philosophy of death, Martin Heidegger. All the above-mentioned philosophers of difference one way or the other had to get even with Hegel's dialectics, incorporated and surpassed De Saussure's structuralism in their discursive deconstruction, genealogy or rhizomatics and had to re-adjust Heideggerian thought on a Nietzschean-inspired philosophy of life. As Heinz Kimmerle systematically described, the deconstruction of the Hegelian system by French philosophers led to the liberation of the relational foundation of Hegelian dialectics. In *Entwurf einer Philosophie des Wir: Schule des alternativen Denkens*

(1983) Kimmerle systematically sketches the transition of Hegelian dialectics to a philosophy of difference. Hegel's system is beheaded, i.e. the differing of sublation is radicalized. The entwinement of differences that is liberated beyond dialectical opposition and negation is literally radicalized (Latin: *radix* = root) in the rhizomatics of Deleuze and Guattari.

Relation is the core characteristic of De Saussure's structuralist semiology. Meaning is no longer established by referring to a state of affairs in the world, nor is signification the result of an intentional self-consciousness. Language is mapped as an immanent system of signs in which signification results from the grafting of concepts onto graphemes or phonemes, i.e. onto writing or sounds. Only the positive relations between principally arbitrary linguistic elements produce meaning. In relating to, differing from and negating each other signs immanently produce meaning. This deconstruction of the subject is deepened by French thinkers who combine structuralism with other human science disciplines. Jacques Lacan combined linguistic structuralism with Freudian psychoanalysis, Louis Althusser grafted structuralism onto Marxism, and Roland Barthes elaborated the notion of sign, applying it to all cultural expressions, transforming De Saussure's semiology into a general semiotics.

In line with the aforementioned philosophers, over the past twenty years a philosophy of relations has been articulated from different perspectives into different directions by – among others – Bruno Latour, Isabelle Stengers and recently Bernard Stiegler. But the most radical and systematic approach is given by Jean-Luc Nancy. His work bears witness to a relational ontology that reevaluates Nietzschean nihilism in rethinking the unconceivable 'inter' of Derrida with notion as

being-in-common, being-with, being-in-between. In *Being Singular Plural* (1996) Nancy overrules Heidegger's statement on Interesse:

Everything, then, passes *between us*. This 'between', as its name implies, has neither a consistency nor continuity of its own. It does not lead from one to the other . . . It is neither connected nor unconnected . . . It is that which is at the heart of a connection, the *interlacing* of strands whose extremities remain separate even at the very centre of the knot.

Fully in accord with a philosophy of difference 'the law of touching is separation' (Nancy 1996: 5). The 'inter' is not a cement, it does not create a 'mi-lieu'. Relation is a tensional 'partage', a sharing and dividing, the core of which is 'no thing'.

See also Ecologies of Architecture; Intermediality; Posthuman Museum Practices; Radical Mediocrity.

Henk Oosterling

INTERMEDIALITY

Intermediality is a field of research traversing three domains: arts, politics and philosophy. The research is focused on the interplay between art disciplines (art), the impact of this interplay on individual and collective consciousness (politics) and the way this experience mobilizes new concepts that enrich the current discourse (philosophy). It is neither art theory nor philosophy of art. It differs from multimedia in which different media are used to illustrate and enhance each other within one production. Yet it is interdisciplinary, but reaches beyond art by involving other disciplines of research such as philosophy, while connecting with public debates on

societal issues. Intermediality research addresses the question: what specific experience is triggered when artistic media interact in order to transform our discursive perception, taking into account political issues and philosophical perspectives?

In literature, images have always been used to illustrate texts. Titles of paintings in a museum setting also connect text and image. After being read these might change the perception of the painting. Conceptual artist Joseph Kosuth, with his *One and Three Chairs* (1965), is known as the founding father of conceptual art. Here he experiments with multimedia in showing a photo of a chair, a dictionary gloss on 'chair' and a real chair within one piece of work. The installation art of Bruce Nauman or Robert Smithson's land art involves a bodily awareness in its three-dimensional environment. Its audiences are affected in a subtle and complex way. The performance art of Ulay and Abramovic experiments with its audiences even more directly, transforming them into a constituent part of the work of art. The cinematographic work of film director Peter Greenaway crosses every boundary in using all kinds of media. He mixes film, fashion, theatre, dance, visual arts, architecture, minimal music, literature and the internet, describing his films as 'cinema of ideas'. In *Intermedialität: Das System Peter Greenaway* Yvonne Spielmann qualifies Greenaway's oeuvre as 'an aesthetic form of intermediality . . . on a comparative level Greenaway gathers images in which the difference between medium and form is mediated' (1998: 262). Dutch theatre company (ZT) Hollandia has changed the theatrical landscape between 1985 and 2000 with their innovative location theatre, in which political issues are addressed theatrically and acoustically by combining nearly all disciplines, performing in abandoned warehouses, underneath city

bridges and in factories. So ingredients of intermediality research are the productive intercourse of multimedial artisticity, interdisciplinary creativity and self-reflective conceptuality.

Intermediality developed itself into a serious academic field of research during the 1990s and has since produced a vast body of knowledge. The first debate and analyses appeared in Germany. Most of the research was done from a reception-aesthetic hermeneutical perspective. French post-structuralism, deconstructivism and philosophy of difference provided new approaches. Yet the notion 'intermedia' has its roots in early modern art. Samuel Coleridge coined the notion of 'intermedium' in 1812 to describe a literary process in which the function of symbol and allegory are compared (Coleridge, in Raysor 1936: 33). The term was reintroduced by the Fluxus artist Dick Higgins: intermedia. In a 1965 article he qualifies the experience of artworks that make use of two or more artistic media as intermedial. In *Horizons: The Poetics and Theory of the Intermedia* (1984) he elaborates on the specific meaning and analytical value of this notion. It is indicative that a member of the Fluxus movement proposed this notion. In the 1960s Fluxus was an international network of artists, composers and designers who blended different artistic media and disciplines in their art practices. The movement was inspired by John Cage and Marcel Duchamp. Their crossbreeding of performance, noise music, visual art, architecture and design but also literature – *Fluxus* was the title of a magazine – had an explicitly anti-art and anti-commercial sensibility. Given this background it is possible to rewrite the history of twentieth-century avant-garde art from an intermedial point of view.

After Higgins's first sketch of intermedia it would take another ten years before it

became a topic of international discourse on art practices. In the first half of the 1990s some books on intermediality were published in Germany. Most of these texts dealt with the crossovers between literature and theatre, but also cinema and visual arts. Franz-Josef Albersmeier paid attention to hybrid genres such as *ciné-roman*, *ciné-poème* and *ciné-drama*. In his critique on 'medial one-way traffic', emphasizing the productive interactions between these genres, he hermeneutically analyses crossovers that in the final analysis converge and complete each other (Albersmeier 1992: 81). In *Literatur intermedial* (1995) Peter Zima also aims at convergence and complementarity as a 'symbiosis' of words, images and sounds. By introducing TV Jürgen Müller adds a new element. He refers to Higgins in *Intermedialität: Formen moderner kultureller Kommunikation* (1996), concluding that an artistic medium is never pure but always already connected to other media. Conceptualization, cooperation and communication are the Habermasian keywords for Müller. Artistic statements are understood and experienced within the context of a life-world that integrates the different experiences: 'Intermediality does not mean an adding of different medial concepts nor a situating-in-between-media of separate works, but an integration of aesthetic concepts of separate media in a new medial context' (1996: 89).

In spite of Müller's dismissal of the in-betweenness, the tensional aspect of the 'inter' and its reception-aesthetical impact come to the fore in one of the contributions to Zima's book. Hubertus von Amelunxen elaborates the experience of the 'inter', adapting categories from Barthes' *Camera Lucida* (1980). The emphasis is no longer on production, but on an ambiguous reception, i.e. the working of the work and its experiential effects. In Peter Wagner's *Icons*

– *Texts – Iconotexts: Essays on Ekphrasis and Intermediality* (1996) intermediality is positioned as a neglected but important subdivision of intertextuality. Applying Kristeva's notion of intertextuality he stresses the porosity of an interactive texture of images, words, movements and sounds. Analysing the interactions between images and texts in so-called 'iconotexts', he specifically emphasizes the differential tension that insist within one and between different media, resisting an unambiguous reception of the work of art. In his appreciation of this deferral, in the final instance Wagner favours Derrida's 'différance' over Kristeva's textuality.

Crucial notions of French philosophers of difference gradually enter the discourse on intermediality. Wagner remarks that structuralist and poststructuralist theoreticians – from Bakhtin, Barthes and Kristeva to Foucault, Lacan and Derrida – have published a series of studies that should have shaken the foundations of a number of disciplines and put into question cherished beliefs as the 'mutual illumination of the arts' (1996: 2). In *Luis Buñuel: Film – Literatur – Intermedialität* (Link-Heer and Roloff 1994) the idea of integration and symbiosis is left behind. Buñuel's films widens the in-between spaces between image and text and 'makes visible the invisible and the eerie, the "other" space between the discourses, that Foucault qualified as heterotopy' (1994: 4). For capturing this heterotopic in-between, conceptual reflection alone does not suffice. Buñuel's artistic reflections on the 'inter' of the media transgress discursive thinking in affecting its audiences with a specific method. Referring to Lyotard's *The Differend. Phrases in Dispute* from 1983 and applying its core concept to Buñuel's cinema, Vittoria Borsò claims that intermediality is focused on 'a differend between media instead of a dialogue' (160).

In references to Deleuze's books on cinema, Volker Roloff deconstructs conceptuality as the locus of reflectivity by stressing the relation between thinking, images and bodies. Gradually the hermeneutic approach is deconstructed by emphasizing tensional differences and the affective impact of intermedial works of art. Rephrased in a perspective that Gilles Deleuze and Félix Guattari developed in *What is Philosophy?* (1991) the primary emphasis in intermedial research is on a multi-faceted reflection involving sensations (art), affects (micropolitics) and concepts (philosophy).

For an understanding of the in-between, a more systematic implementation of a philosophy of difference is instructive. In criticizing dialectics, hermeneutics and structuralism, these philosophers have implicitly forged a vocabulary that is more apt at understanding the 'inter'. Their critique on the rational subject and the deconstruction of oppositional thinking finds a counterpart in the artistic research on intermediality. Eventually this raises the question as to the specific quality of the 'inter' of intermediality. Philosophically this concerns the 'sensational', non-discursive quality of the being (*esse*) of this in-between (*inter*), i.e. of inter-*esse*.

See also Art; Interest/Interesse; Meta-modernism; Radical Mediocrity.

Henk Oosterling

INVARIANCE

The main inclination that this article will try to develop concerns a danger that Michel Serres has stated as follows: not to confuse invariance and identity (Serres 1992). Jacques Monod, to whom Serres refers with this statement, has pointed out

the source of this likely confusion with regard to what he calls the ‘quantic revolution’:¹ ‘The principle of identity does not belong, as a postulate, in classical physics. There it is employed only as a logical device, nothing requiring that it be taken to correspond to a substantial reality’ (Monod 1972). After the quantic revolution, however, the principle of identity ceases to be a merely logical device; in quantum physics, one of its

root assumptions is the *absolute* identity of two atoms found in the same quantum state.² Whence also the absolute, non-perfectible representational value quantum theory assigns to atomic and molecular symmetries. And so today it seems that the principle of identity can no longer be confined to the status simply of a rule of logical derivation: it must be accepted as expressing, at least on the quantic scale, a substantial reality.

Monod 1972: 101

But isn’t the notion of identity, at least in its philosophical scope, always already entangled with notions of substance? And hasn’t it been one of the most valuable achievements of twentieth-century philosophical discourse to argue that talk of identity, at least with regard to cultural issues, is unnecessary? That its substantiality is always already discursively constituted? And that we can learn from science that to speak of identity means evoking a logical abstraction, at odds with any realist position? I would suggest that the issue had better be addressed in terms of a notion of materiality that must be forged in a situated manner. This notion of materiality is obliged to take into account a very large number of factors, to a degree of complexity about which we can only learn from ‘real’ bodies of all kinds. This includes organic and/or chemical bodies, with regard to their environmental niches (in

‘culture’ as well as in ‘nature’) and the evolutionary interplay among such niches (in the earth and environmental sciences as well as in history and politics). This is situated materiality rather than completely drawn from ideally constructed typologies, morphologies or ideologies. Must it not be regarded as an ethical obligation to commit ourselves to a derivative, differential and functional view on sexuation (ontologies: genderedness, queerness, nomadicity, ‘bodies-that-matter’) rather than a structural or homeostatic, symmetry-based and equational view rooted in identity (metaphysics: principles, laws, axioms, elements, atoms; cf especially Haraway 2012)? Hasn’t this been the great emancipation of the last few decades? It certainly has. And it is at the core of the confusion of which Serres warns us, between invariance and identity. In such a confusion, this term, *invariance*, would cast a shadow against whatever brightness about the future may be evoked by the painfully wrought emphasis on difference over identity and the ethical practices of counterbalancing normativity and standardization through the appraisal of singularity in its own rights. But Serres’ warning of confusion not only points to the fragility of how we value the emancipatory worth of such critique; it also entails coming to terms with a notion of substantial and absolute identity.³

A blue alga, an infusorian, an octopus, and a human being – what had they in common? With the discovery of the cell and the advent of cellular theory a new unity could be seen under this diversity. But it was some time before advances in biochemistry, mainly during the second quarter of this century, revealed the profound and strict oneness, on the microscopic level, of the whole of the living world.

Monod 1972: 102

This oneness is the subject of Serres' ciphered atomism (Serres 2000 [1977]), of the entropic cataract of atoms falling, as particles of regularity in declination – clinamen, an angularity – through the void, conjugating into local turbulence, where and by which 'atoms meet' (ibid.: 6); his notion of the atom is the minimal condition to explain how turbulence forms, 'appearing stochastically in laminar flow' (ibid.), the substance of chance, the cataract. His notion of the atom encrypts the magnitude of a substantial notion of chance as the universal principle (*Zufall*), in which pockets of negentropy capture local and temporary order: 'Systems of conservation for chance, systems which orientate and control themselves, packed to their limits with negentropy. Enzyme catalysis, a capacity for discriminatory selection' (Serres 1992: 63). Can ontogenetic life (specious life forms) be compatible with the second law of thermodynamics (the drift towards maximum entropy, the disintegration of all forms of organization into its atomization where each particle of formality is of equal probability), apparently compatible only with phylogenetic life (the common origin of all individuals), he asks? And Serres maintains yes, it can: 'the conceptual pair information–entropy reduces to a level of the objective, calculable, positive, the old metaphysical twin notions of chance and necessity' (ibid.: 62). Because the role of information as a currency in the economic calculations of the thermodynamic balance sheets (information is not gratuitous, every observation has its price, cf. *Negentropy*, and *Maxwell's Demon*), we find afforded by the pair information–entropy a *physical theory of heritage*.

The question that can be foregrounded by a discussion of the term 'invariance' concerns how substantial identity, absolute because governed by chance, might possibly be distinguished in quantitative

terms. What Michel Serres and Jacques Monod, building on the information theory in the tradition of Oswald Wiener, Léo Szilard and Léon Brillouin, suggest (cf. *Negentropy*) is that such identity can be quantized as binding amounts of information capable of preserving a certain structure across variable transformations. Monod's invariance can be understood as an 'invariance content' (quantized speciality) that is 'equal to the amount of information which, transmitted from one generation to the next, assures the preservation of the specific structural standard' (Monod 1972: 13). Invariance is reserved for a quantity that establishes a niveau of information or negentropy (Serres 1992: 57) (bound information). What is hence established, from invariant content, is what Monod calls 'teleonomic information.' Teleonomy refers to probabilistic calculations on the combinatorial total of transfers that can apply, in conformity with the laws of conservation, to an invariant amount of information (Monod 1972: 14). It is Monod's great achievement to have distinguished (1) an *operable definition of chance* as the *unknown* (due to the imperfect experiment, while not knowing all the initial conditions, the cost of observations), chance at work in logical/formal terms in stochastic statistics; and (2) an *essential definition of chance*, by attributing chance a substantial and absolute identity.⁴ We can easily associate the operable chance with entropy as an operational measure in thermodynamics, and essential chance with the principle assumption that the amount total of energy in the universe be finite and invariant. The latter cannot be counted; it can only be coded and like the identity of all life forms in terms of DNA, it can be deciphered through translating between manners of coding.

There is a universal nature (substantial identity) that pertains to all things, and

this universal nature is what Jacques Monod suggests to address in terms of an object's 'strangeness'.⁵ One confuses invariance with identity whenever one reads Monod's use of 'strange' in his discussion of 'strange objects' as an adjective. Serres elaborates: 'strange does not qualify a substantive', rather 'strange' operates as a quantifier, not as a qualifier. The molecular theory of the genetic code is 'a physical theory of heritage' that complements the Darwinian evolutionary view. A physical theory of inheritance is a basis that quantifies substantives in terms of different niveaus of negentropy (as amounts of chance, that can be deciphered from the mutually implicative relation between invariant and teleonomic information). With his notion of the *strange object*, Monod suggests a notion of the object that neither contradicts the principles of physics (second law of thermodynamics, one universality) nor those of Darwinian biology (natural selection in evolution, pluralist universality of natural kinds). Hence ontogenetic and phylogenetic life are both compatible with thermodynamics. But the central assumption thereby is that invariance genetically, chemically and physically precedes teleonomy: 'the *Genomenon* is the secret code of the *Phaenomenon*', as Serres puts it (1992: 59). The 'strange object' is one which neither presupposes a distinction between natural and artificial, things endowed with a purpose (project) and things natural (without purpose), nor one between animate and inert. It is crucial for understanding Monod's primacy of code to emphasize that what is all-too-often short-circuited as 'the code of life', to Monod is a relation between code and its secret (life) that is one of mutual *independence*, one regarding the phenomenon of life (not life itself) and one entirely chance-bound in the substantial definition of the term:

between the occurrences that can provoke or permit an error in the *replication* of the genetic message and its functional consequences there is also a complete independence. The functional effect depends upon the structure, upon the actual role of the modified protein, upon the interactions it ensures, upon the reactions it catalyzes – all things which have nothing to do with the mutational event itself nor with its immediate or remote causes, regardless of the nature, whether deterministic or not, of those causes.

Monod 1972: 114

In order to illustrate this postulated independence between the code itself and its articulated manifestations, Monod discusses the coincidence of genuinely heterogenous sequences via the example of a worker fixing a roof, letting go of his tool accidentally, and a passer-by who is in no way related to the worker on the roof but who is hit by the falling tool and killed thereby. If one were to assume that there be a larger logics that homogenizes these two heterogenous series, one would indeed have to assume that the passer-by was fatefully predicated to die like this from the very beginning of his existence; against the assumption of such fatalism, Monod stresses his two definitions of chance as (1) operable and (2) substantial. While the genetic text itself is a closed and finite system (with its residual alphabet of amino acids and nucleotides), the source of the biosphere's incredible variety results from errors in the transcription of the code's sequences. For this transcription process it is crucial that one always has to consider *pairs* of nucleotides (literally *that which is with a nucleus*); one cannot do with singularized and original ones. These pairs – and this is the essential role invariant amounts of information need to play, counterbalancing the structural teleonomy of bound information – must be deciphered in a double sense.

This is how Serres can say: ‘nature is hidden twice. First, under the cypher. Then under a dexterity, a modesty, a subtlety, which prevents our reading the cypher even from an open book. Nature hides under a hidden cypher. Experimentation, intervention, consist in making it appear’ (Serres 2000: 140).⁶

See also Equation; Negentropy; Maxwell’s Demon.

Notes

1. Algebra, which used to be regarded in the seventeenth and eighteenth centuries as the *theory of equations*, had transformed by the early twentieth century into what was now called *Quantics*, the theory of ‘algebraic forms’ also called ‘residual forms’. These are forms that ‘define’ by *conserving something indefinite throughout transformations*, while it is by the transformations themselves that they regulate their formality, their morphisms (not the nature of any sort of content, as in the hylemorphic tradition). With the seminal work of Emmy Noether and others on reformulating the Laws of Thermodynamics as *Laws of Conservation*, Quantics turned into a *general theory of invariances*. See Kosmann-Schwarzback (2011) and Levy-Leblond and Balibar (1990).
2. The author here refers his reader to V. Weisskopf (1969: 28).
3. We might say, invariance applies ‘only’ to the quantum domain; but what might appear at first like a hygienic ‘restriction’ of the upheavals that announce themselves to one domain in particular is in fact its total expansion. Not only particle physics, but also all of chemistry and molecular biology, as well as the mathematical quantity of information (through its operationalization in terms of entropy and negentropy) *involves* the ‘indefinite scalarity’ of the ‘quantic

- revolution’. Any notion of a situatively, differentially forgeable, embodied materiality today, hence, will find itself affected by it. Karen Barad (2007) has made a strong case pointing in this direction.
4. This is his commitment to Léon Brillouin’s emphasis on the substantiality of code in information theory, which led him to distinguish negative and positive information alongside the distinction between negative and positive entropy. See his seminal book (Brillouin 1956). Serres discusses this commitment at length in his article ‘Leben, Information und der zweiter Hauptsatz der Thermodynamik’ (Serres 1992).
5. See the introductory chapter in Monod’s *Chance and Necessity*, entitled ‘Strange Objects’ (1972: 3–22).
6. Serres further developed this idea of a ciphered atomism in his more recent book *L’Incandescent* (2003).

Vera Bühlmann

‘IT’

Will find a way

Goes on

Not as we know it . . .

Where does anything begin? In the middle perhaps? Not with ‘you’ or ‘I’ but somewhere in-between? A bookish narrator, searching for the exact location of a celebrated Roman battle (the Battle of Munda, 45 BCE), takes a vacation from the library to wander in the mountains of Andalusia in southern Spain not far from where Europe confronts Africa across the Strait of Gibraltar and the Alboran Sea. He comes across a bandit asleep in the sun beside a spring that runs down following a gorge from the peaks of the Sierra de

Cabra. A scholar and an outlaw; this time they both live to walk away, and so there's a story to tell. They will meet one more time to walk away again and then, for the last time, in a prison cell as the bandit, Don José, awaits execution. His lover, Carmen, the devil girl, the wild gypsy, the story's turbulent *raison d'être*, lies dead by his hand. Sentence has been passed and waits only to be carried out. Everything is decided. It remains only to recount what has already happened. To discover the might-have-beens, the paths not taken, it is necessary to work backwards. What lies upstream of the facts? What is there before the branching and bifurcating of ways, before the decisions that produce this world rather than that, this story rather than that? Might literature know something about this that science can't?

Begs to differ

Never ends

The 'inter' of interlocution

Vibrations and flows

Absent, worthless, ridiculous . . .

The Third Man

Racketeering amid the rubble

The excluded third

Outside the conversation

Outside communication

Outside belonging

Or just outside . . . ?

The philosopher Michel Serres summarizes the plot of Prosper Mérimée's novella

Carmen (1845) to illustrate the importance of what he calls the third person (Serres 1997: 57–62). Serres's third person designates whoever or whatever is excluded from the community of interlocutors, of 'I' or 'we' and 'you.' Linguists have often emphasized the importance of such pronominal 'shifters' in orienting and enabling human communication (Silverstein 1979). Serres' concern, however, extends beyond the human. The third person, for Serres, partakes simultaneously of exclusivity and inclusivity. It can encompass not only specific excluded others – the 'hidden people' implied in any two-way exchange – but also externality in general – the world as such in the impersonality of its taking place – it rains, it hails, it snows, it thunders. More expansively still, it is also the third person that gives and articulates Being, as rendered in the French expression for being there – *il y a* (Serres 1997: 46).

Serres of course attaches great importance to such third spaces, the spaces of transition and transformation, of aberration and incalculability, the middle where everything commences. Such are the spaces of the parasite, of the ineradicable noise that accompanies and enables meaningful communication, of the departures and castings off that inaugurate new projects and entities, and of the tortuous and elusive 'northwest passage' between the institutionally divergent knowledge-cultures of the sciences and humanities. Serres describes himself too as occupying such a tertiary zone, that of the 'instructed third' (*Le Tiers Instruit* being the original, French title of *The Troubadour of Knowledge*): a left-hander taught to use the right, 'completed' as he puts it, a self-described descendent of Gascon peasants, turned sailor, turned mathematician, turned philosopher – passing always through the middle, the undecideable. The third person and third space are at once between and

antecedent to the oppositional differentiation of subject and object or self and other, effecting an opening to the universe in all its turbulent generativity.

The space of externality in general

Excluded but all-inclusive

All the others – objectivity

Necessity – *il faut*

From nothing to everything

and back again

Art and literature have sometimes been described as quintessentially humanistic pursuits but perhaps they are no less marked by a constitutive *inhumanity*. Deleuze once wrote that literature's closest affinities lay not with the first two persons of I/you interlocution but with the impersonality of the third person: 'it is not the first two persons that function as the condition of literary enunciation; literature begins only when a third person is born in us that strips away the power to say "I" (Deleuze 1997d: 3).¹ The third person articulates the space not only of missing or absent people, the 'people to come' to whom, according to Deleuze, art and literature address themselves but also that of what Deleuze elsewhere refers to as 'a life' (Deleuze 2001). 'A life' describes a condition of pure immanence, of the kind that Spinoza, another of Deleuze's interlocutors, took to obtain between divine 'substance', the infinity of 'attributes' into which it determines itself and the 'modes' through which it is actualized (Spinoza 1992). It is composed of virtualities, events and singularities and thus possessed of a distinctiveness that cannot be reduced to a determinate identity (Deleuze 2001). As such 'a life' precedes its individuation in

the guise of a subject or an organism. Indeed, as Claire Colebrook has suggested, it assigns no necessary privilege to the organic, but can be thought of rather as an impersonal force of difference and becoming that extends beyond biological evolution to encompass the geologic and planetary prehistory that Deuze and Guattari's 'geophilosophy' would seek to evoke (Colebrook 2010; Deleuze and Guattari 1994).

The Brazilian writer Clarice Lispector (like Deleuze an avid reader of Spinoza) calls it the '*it*' – an inhuman life of matter forming the impersonal substrate of experience and subjectivity without being directly accessible to either, or indeed to language, demanding that words be used as 'bait . . . fishing for whatever is not word'. Various characterized as 'living and soft' and 'hard like a pebble' the '*it*' is to be approached circuitously via a succession of mythic, animal, vegetable and mineral metamorphoses, a multiplication of analogues and personae conveying its shifting and elusive being – insects, birds, frogs, tigers, black panthers, witches, Diana the huntress, pestilential swamps, caverns filled with stalactites and fossils. Sometimes, however, one catches a more direct glimpse – for example, watching the birth of an animal:

To be born: I've watched a cat give birth. The kitten emerges wrapped in a sack of fluid and all huddled inside. The mother licks the sack of fluid so many times that it finally breaks and there a kitten almost free, only attached by its umbilical cord. Then the mother-creator-cat breaks that cord with her teeth and another fact appears in the world. That process is *it*.

Lispector 2010: 28

'It' – not the animal thus born into the world, but the *process* of its birthing.

Is 'It' another term for the Unconscious, then? Perhaps. Or perhaps not. Freud's exposition of the Unconscious draws interchangeably on the German third-person-singular neuter – *Es* – and on the Latin *Id*. For Deleuze, Lispector and Serres, however, the third person seems to reference something more expansive than the psychic economy of libidinal repression and paternal law that would become part of the orthodoxy of a later Freudianism. Jean-Luc Nancy acknowledges as much when he writes that what is at stake, ultimately, in Freud's concept of the *Id* is 'what links us together ... not only us humans but the totality of beings – the animal within us, and even the vegetable, the mineral' (Nancy 2012: 91).

Bats, rats, crabs, cockroaches, wild horses ...

Carnivorous plants

Legendary animals

Elemental creatures

Mythical sex

Soft oyster placenta

Hard pebble

God is *it*?

We might ask then whether intimations of such an inhuman, asubjectival life are symptomatic of a contemporary crisis of humanism, fuelled by, amongst other things, global capitalism, rapid technological change and fears of impending ecological catastrophe? Or are art and literature in the present simply articulating what many humans in many other times and places have always known? The early twentieth-century Danish anthropologist Knud Rasmussen, traveling in Arctic

Canada in the 1920s, found that his Inuit hosts used the name 'Sila' to refer to a power (usually, but not always male-identified) associated, variously, with the air, the wind, the weather, the physical environment in general or the animating 'breath' of the natural world. Sila (otherwise referred to as or the 'indweller in the wind') was identified both as the defender of traditional observances and punisher of taboo violations and as the patron and guardian of shamans and shamanic initiations. Rasmussen learned that Inuit shamans did not derive their power from their retinue of helping spirits (who could take a variety of human-like or animal forms) but from a more elusive and diffuse power that could never be definitively personified. It was a shaman – or *angakoq* – by the name of Najagneq from Nunivak island who described Sila to Rasmussen in the following terms:

A great spirit, supporting the world and the weather and all life on earth, a spirit so mighty that his utterance to mankind is not through common words, but by storm and snow and rain and the fury of the sea; all the forces of nature that men fear ... When all is well, Sila sends no message to mankind, but withdraws into his own endless nothingness, apart. So he remains as long as men do not abuse life, but act with reverence toward their daily food ... No one has seen Sila, his place of being is a mystery, in that he is at once among us and unspeakably far away.

Rasmussen 1999: 385–6

What lies hidden between 'you' and 'It'?

Remote and up close

The last substratum

The impersonal

Inside

Outside

Everything . . .

It is . . .

See also Animacies; Animism; Anonymity

Note

1. Deleuze comments: 'Literature here seems to refute the linguistic conception, which finds in shifters, and notably in the first two persons, the very condition of enunciation' (1997: 185).

Stuart McLean

J

JOY, ETHICS OF

Posthuman critical theory produces an ethics of joy or affirmation. A joyful ethics rests on an enlarged sense of a vital interconnection with a multitude of (human and non-human) others by removing the obstacle of self-centred individualism and anthropocentrism on the one hand and the barriers of negativity on the other. It assumes a new-materialist philosophy that rejects dualistic oppositions and posits all subjects as differential modulations of a common matter. This political vision rejects the dialectics that pitches self-versus-other. It is critical of the importance granted to negativity in the dialectical scheme, where difference is traditionally defined as 'different from' a dominant norm, which is hence interpreted as 'less than'. A joyful ethics frees difference from pejoration and replaces it with positivity.

Consequently the politics flowing from affirmative ethics does not postulate subjectivity along the binary oppositional axes that separate humans from non-humans, culture from nature, 'us' from 'them.' On the contrary, posthuman subjectivity is nomadic, distributed, relational and process-oriented. This process ontology, inspired by feminist theory (Lloyd 1994) and contemporary re-readings of Spinoza in French philosophy (Deleuze 1988b, 1992b), asserts a trustful relationship with the world and allows for greater interaction between humans and non-humans. An affirmative stance

proposes an ethical coding that distinguishes power relations that are empowering – affirmative or active – from those that are entrapping – disempowering or reactive. The former enhance *potentia* (the positive face of power), whereas the latter play into *potestas* (the restrictive face of power). Politically, it is associated with an ontological form of pacifism that is especially relevant for ecological justice, environmental activism and posthuman ethics.

The ethics of joy requires the following conditions. First, given that power is a complex strategic situation that humans constantly inhabit, but with different degrees of entrapment and empowerment, it is best posited as a continuum. This implies that terms like active and reactive, negative and positive, are not to be understood as dialectical opposites, but rather as negotiable and reversible points of encounter with others.

Second, 'affirmative/positive' and 'reactive/negative' affects are not to be taken as emotional states in a psychological frame that assumes the liberal individual as point of reference. Within a posthuman framework affects are rather to be understood as transversal, non-human forces that need to be assessed in terms of their impact on subjects and on the world. The ethical behaviour is what can activate and increase relational capacities (*potentia*) and the unethical is what restricts or hampers them. This assumes that the ethical subject desires and is driven to the

affirmation of a positive essence (*conatus*) that yearns for the expression of its freedom and force. In other words, humans – like all living entities – are drawn to perpetuate and structurally gravitate around positivity.

Third, the notion of the negative refers less to a normative value than to the effect of arrest and blockage that often comes as a result of a hurt, a shock, an act of moral, epistemic or emotional violence, or by intense tedium. Negative passions destroy the self's capacity to act as they harm the self's ability to inter-relate to others – both human and non-human – and thus decrease one's relationship to the world. On a larger spectrum, negative affects diminish the capacity to express the high levels of interdependence, the vital reliance on others, that constitute the key to an affirmative or joyful ethics.

Fourth, joyful ethics redefines the persistence of destructive or negative relations. Mindful that not all relations are *a priori* positive, it makes the ethical distinction between, for instance, affirmative encounters and aggressive disempowerment. The ethics of joy does not deny the reality of pain, trauma and violence, but rather proposes a different way of dealing with them. It warns against the pious harmonization of conflicts and offers an alternative structure of dealing with difference, which is not oppositional in a dialectical mode but still allows for antagonism. Joyful ethics consists in being able to tell the difference, but to recognize it positively, so as to enact the transmutation of a negative relation into an affirmative mode.

The ethics of joy does not equate acquiescence with the conditions of the present: endurance is not resignation and immanence is not the mystical acceptance that all that lives is holy. What is required instead is an active practice of collective

transformation of negative relations and passions into affirmative ones: a political praxis. Cooperation means active labouring towards an adequate understanding of conditions, which is not the same as endorsing them. The aim of producing an adequate cartography of the present conditions is to identify points of resistance.

What is positive in the ethics of affirmation is the belief that negative relations and passions can be transformed through an engagement in collective practices of change. This implies a dynamic view of passions and affects, even those that freeze us in pain, horror or mourning. The ethical subject is the one with the force to grasp the freedom to depersonalize the event and transform its negative charge. This is in keeping with the method of defamiliarization that is central to posthuman thought (see *critical posthuman theory* in this volume). Affirmative ethics puts the motion back into *e*-motion and the active back into activism.

Consequently, the ethics of joy is about transcending the force of the negative by acknowledging negative emotions like pain, anger, greed and fear. It is about a process of becoming: becoming-ethical. This is a far cry from applying moral rules and protocols as a form of self-protection. *Endurance* is the Spinozist term for this process, which has both a spatial and a temporal aspect. The spatial aspect has to do with the body as an enfolded, affective field of actualization of passions or forces. Endurance combines vulnerability with resilience. It stresses the struggle to sustain the pain without being annihilated by it. It thus opens the temporal dimension; the duration in time. Joyful or affirmative ethics is based on a collective praxis of enduring – surviving and lasting – by constructing positivity. This means to undo existing conditions so as to actualize alternatives. Every event contains within

it the potential for being overcome and overtaken: its negative charge can always be transposed (Glissant 1997).

The ethics of joy is thus at heart a process of becoming. Because such a becoming is not contained in present conditions, and cannot emerge from them, it has to be brought about creatively by a qualitative leap of collective praxis and ethical imagination. To accomplish an ethics of joy, 'we' need to compose a community and produce a qualitative leap that breaks productively with the present. The first step consists in reaching an adequate cartography of the conditions of bondage. The ethics of joy proposes an alternative way of extracting knowledge from pain, that starts with and is conveyed by the quest for an adequate understanding of power. The analysis of power as a complex and multi-layered situation subjects are caught in is consequently the beginning of ethical wisdom.

The second step consists in mobilizing a subject's ontological desire – the vital *potentia* of the subject – by reframing it in disruptive directions capable of resisting codes and powers. The ethics of joy is engendered by the collective construction of ethical subjects who actively desire otherwise and thus break with the *doxa*, the acquiescent application of established norm and values, by de-territorializing them and introducing alternative ethical flows. An ethics of joy shows that the motor of political change is an affirmative force, not merely dialectical opposition.

The third step is to create a laboratory of the new. To live out the shared capacity to affect and to be affected, posthuman subjects need to disengage the process of subject formation from negativity by attaching it to affirmative and relational vision of the self. The ethics of joy is a pragmatic engagement with the present in order to collectively construct conditions

that transform and empower the capacity to act ethically and produce social horizons of hope and sustainable futures (Braidotti 2006a).

A fourth step to achieve an ethics of joy is to acknowledge life as a generative force of becoming. This means that life, *zoe*, is a personal and non-anthropocentric. What is affirmed in the ethics of joy is precisely the power of *zoe*/life itself – its very *potentia*. Life is a dynamic force that unfolds through vital flows of connections and becoming. An ethics of joy taps into that flow. The Kantian imperative not to do unto others what you would not want done to you gets thus enlarged. In affirmative ethics the harm you do to others is immediately reflected in the harm you do to yourself; what's more, life itself gets diminished in terms of loss of *potentia*, the capacity to relate, and to explore one's freedom.

A fifth step for an ethics of joy entails sustaining processes of subject-formation that do not comply with the dominant norms. For posthuman theory, the subject is fully immersed in and immanent to a network of non-human relations: animal, vegetable, viral, technological. This process-oriented vision of the subject expresses a grounded form of accountability, based on renewed claim to community and belonging to 'a collaborative morality' (Lloyd 1996: 74). When applied to environmental issues, the ethics of joy thus involves continuous negotiations with both dominant norms and values and the politics of affirmative and sustainable alternatives. It entails a new way of combining ethical values with the well-being of an enlarged sense of community. It expresses multiple ecologies of belonging that acknowledge the collective nature and outward-bound direction of the nomadic self. The post-human era needs to create ethical subjects through a collective practice activated

around the shared desire to actualize new potentials. An ethics of joy then means that 'we' are becoming posthuman ethical subjects in our evolving capacities for cooperating in the composition of affirmative relations.

See also Posthuman Critical Theory; Posthuman Ethics; Process Ontologies; Neo/New Materialism; Mattering; Non-human Agency.

Rosi Braidotti

K

KIN

This entry outlines a multispecies account of kin in Donna Haraway's work in general and more specifically in the book *Staying With The Trouble: Making Kin in the Chthulucene* (2016). Donna Haraway proposes kinship as a non-genealogical mode of relation that is based on responsibility and becoming-with, extending beyond Anthropos and humanist accounts of relationality. I will start by briefly sketching out the context of kinship studies and the way it has been challenged by feminist perspectives, and will then discuss Haraway's work against this background.

Kin structures were primarily the research object of anthropology, a discipline that was founded, according to Franklin and Ragoné (1998), amongst the obsession with kinship, procreation and succession. Classical anthropology not only researched kinship mainly in the so-called 'primitive' societies,¹ in order to answer the question of how they functioned without a clear regulatory apparatus of the state, but also defined it primarily as genealogical and inheritance-based phenomenon (Carsten 2008). Kinship was moreover naturalized in that it was seen as a product of nature – a stance that in the mid-twentieth century started being heavily criticized by the so-called 'culturalist' school of kinship research (ibid.). Scholars such as David Schneider (1968, 1984) argued that kinship is primarily based on shared meanings and symbols, and criticized western scholars for assum-

ing that kinship structures are constructed first and foremost on the grounds of sexual reproductive relations.

The 1970s and 1980s also witnessed the emergence of what can be called 'feminist anthropology', and with it a greater focus on de-naturalization of the notion of kin through the critique of its basic premises: gender, reproduction and power hierarchies.² A strong push towards the interrogation of the nature–culture divide as it relates to kin-making also came from the works of scholars such as Sarah Franklin (1997, 2001, 2013), Marilyn Strathern (1992a, 1992b), Henrietta Moore (1986, 1988, 1994) and Janet Carsten (2004). These scholars argue that with the advancement of bio- and reproductive technologies, as well as with new family formations gaining visibility (examples may include LGBTQ families or, more recently, three-parent families formed via IVF that combines a donor mitochondria with DNA of two other parents³) the core questions of kinship – what constitutes a biological tie and what is the significance of such ties in kin-making – are constantly re-defined, not least by technological mediation. These contemporary developments re-invigorated the field of kinship studies and gave an impetus to not only challenge the inherent anthropocentrism and humanism of the field but also inquire into cross-species and post-human kinship relations.⁴

Much of the above-mentioned scholarship owes to Donna Haraway's creative re-imaginings of kinship through the

construction of her own queer/hybrid/anti-Oedipal and post-patriarchal family of material-semiotic figurations (Haraway 2004). Starting with the figure of the cyborg in the 1980s, she later proclaimed her kinship to OncoMouse,TM that is to say a genetically modified mouse that carries a gene which increases its susceptibility to cancer. Haraway also bonds with Plutonium-239 – a fissile isotope created in nuclear reactors and used for the production of nuclear weapons. This social bond is not postulated along the classical line of social contract theory, based on the patriarchal exchange of women in heterosexual marriage and family structure, but rather by sharing with these post-natural critters a sense of agency and material intimate interconnections through complex shared histories (Haraway 1997). Haraway has written two pioneering books on companion species (2003, 2008), in which she highlights significant otherness as a productive relation that further blurs the human/non-human, organic/technological, nature/culture binaries by showing how different species co-constitute each other through mutual connections.

Haraway's work on kin-making (or 'kinning') is indebted to feminist science and technology studies, feminist takes on biology, science fiction, scientific fabulation and indigenous scholarship (Haraway 2016). Staying true to her politics of careful and responsible worlding, Haraway aims to re-claim kin and kinship as non-genealogical technology of becoming-with and rendering each other capable, detached from notions of inheritance and ancestry. For Haraway kinning is a matter of making persons – not necessarily individuals or humans – that are capable of living and dying well with each other in a 'thick presence'. In other words, she highlights the practice of relationality that goes beyond Anthropos, that is focused on staying in

proximity to strangeness, thus opening up space for partial recuperation and 'getting on together' (ibid).

Such kinships, Haraway argues, are made not autopoietically but sym-chthonically and sym-poietically, without transcendental belief or (potentially equally transcendental) cynicism or indifference. Kinships are not without trauma (think of the painful histories of domestication, colonization, imperialism, slavery and other forms of exploitation), nor are they completely open – they include some and exclude others, and thus must be formed with attention to complex historical ties and situatedness, resisting temptation to generalize too easily either in the direction of common humanity or multispecies collectives.

Haraway's stance, perhaps most clearly reflected in the slogan 'make kin, not babies!'; should be read not as against-life, but rather as a non-natalist, anti-capitalist, anti-anthropocentric ethical call for sustainable forms of living. Drawing on indigenous thought that proposes non-monogamous, interspecies kinships as a mode of claiming *each other* (see, for instance, TallBear 2011, 2013, 2016), Haraway urges the invention of new ways of proliferating other-than-natal kin, while simultaneously fighting the colonialist, racist, xenophobic and misogynist state policies of population control. As she herself writes, resistance to Anthropos and Capital calls for kinnovators that acknowledge that 'babies should be rare, nurtured and precious; and kin should be abundant, unexpected, enduring, and precious' (ibid.).

See also Anthropocene and Chthulucene; Animism; Feminist Posthumanities; Naturecultures; Symbiogenesis.

Notes

1. The study of modern Western kinships (essentially monogamous families) was

- at the time undertaken by sociology and focused on economic and instrumental aspects, since families were seen as relegated to the domestic, private sphere and of little political significance (Carsten 2008).
2. See, for instance, Collier and Yanagisako 1987, Gailey 1987, Ginsburg 1989, Martin 1987, Rapp 1982, Rubin 1975, Ortner and Whitehead 1981, Strathern 1988, Weiner 1976.
 3. Such modified in vitro fertilization (IVF) method has recently been approved in the UK: see James Gallagher, 'UK approves three-person babies', *BBC News*, 24 February, <http://www.bbc.com/news/health-31594856> [accessed 29 November 2016].
 4. See Edwards and Salazar 2009; Kroløkke et al. 2015; Riggs and Peel 2016.

Goda Klumbyté

LAMPEDUSA

Lampedusa is a borderzone – geologically Africa, politically Europe. Part of Italy since its unification, the island has since the early 2000s become a hot spot – a switch point and holding bay for migrants attempting the deadly crossing of the Mediterranean from North Africa to Europe. This passage has a long history. Before the formation of the European Union, the movement of people across the Mediterranean followed seasonal labour patterns. Only in the wake of the Schengen accords was this motion rendered ‘illegal’. Contrary to the rhetoric of emergency, which attributes the route’s lethality to random influxes of migrants, the danger of crossing was augmented at this point. A series of stark administrative measures tangled the human passage from Africa to Lampedusa with the border between life and death.

The headlines and events are well known: the stand-off following the rescue of thirty-seven migrants by the *Cap Anamur* in 2004; the forced return of African migrants from Lampedusa to Libya under a secret agreement reached by the Italian government; the efforts of the EU and UNHCR to involve ‘third countries’ in asylum practices; the destruction by fire of an overcrowded holding centre in 2009; the arrival of 48,000 migrants on Lampedusa following the Arab revolutions of 2011; the involvement of the European border agency Frontex in the surveillance

of the sea between Lampedusa and North Africa; the drowning of 300 people off Lampedusa in October 2013; and the death of 700 migrants in a shipwreck off the Libyan coast in April 2015. The litany can go on. But Lampedusa is not an atrocity exhibition. Getting behind the ‘border spectacle’ played out on this fated island requires an analysis of the forces and stakes at play in the global policing of human mobility and the remaking of territory implicit in such control.

Lampedusa is an iconic site within a wider geography of border control that has taken shape at least since the appearance of the ‘boat people’ in the wake of the Vietnam War in the mid-1970s. This is an elusive and mobile geography, which is in no way limited to the ‘open wounds’ (*heridas abiertas*) in which, as Gloria Anzaldúa writes, ‘the *Third World* grates against the first and bleeds’ (Anzaldúa 1987: 3). Sure, such sites as the US–Mexican border or the northern border of Australia are hot and relatively stable spots for any attempt to map this geography. But the global multiplication of migratory and escape routes has been matched both by multifarious attempts to externalize the control of these borders and by a proliferation of limits and holding zones around and within national and regional spaces outside of the ‘Global North’. The ‘Rohingya refugee crisis’ of May and June 2015, which involved Thailand, Malaysia, Indonesia and the Philippines, is just a recent reminder of this.

The geography of border control is at the same time a geography of violence and abjection where the 'human' is continuously tested, worked upon and reframed. Death is often anonymous at the border, particularly but not only in maritime borderscapes. Even when names are assigned to bodies, the prevailing image is one of an indistinct mass of corpses, well beyond the threshold of individuality. The awareness of this underlies one of the most powerful works produced on Lampedusa, the short film *Asmat – Nomi* by Dagmawi Yimer (2014), where the victims of the shipwreck of 3 October 2013 are mentioned by their names, one by one.

Border and mobility control have become privileged sites for humanitarian intervention, be it for established international institutions like UNHCR or NGOs and other heterogeneous actors. The intertwining of humanitarian logics with concerns regarding 'security' and economic valorization of the 'human capital' of people on the move is a defining characteristic of many emerging border and migration regimes. In this assemblage of governmental rationalities, which is not adequately grasped by a focus on 'exception', national states continue to be important actors while being continuously compelled to negotiate their sovereign power with international legal orders and global players like the International Organization for Migration. 'Biopolitics' (understood as an attempt to stop, selectively filter and channel people on the move) appears here as structurally articulated with the 'necropolitics' of shipwrecks, drowning and asphyxiation in trucks. Gender, class and race, 'skills', culture and religion are continuously at stake in this articulation of biopolitics and necropolitics, which crosses the figure of the human, producing new hierarchies and new boundaries within it.

Borderzones like the one surrounding Lampedusa set the conditions for the operations of multifarious actors, who take the illegalization of border crossing as a chance for business. 'Traffickers' and 'smugglers' are often presented as responsible for the inhuman treatment of migrants and refugees as well as for their death. Images of 'slave trade' and 'indenture' are invoked with regard to their operations. What is usually not mentioned is that the spaces and conditions in which these actors operate are not created by them but by political decisions and the working of specific border and migration regimens. And, equally importantly, the parallel with the transport of bonded labour erases a crucial difference – that is, the fact that migrants and refugees, in most cases, *want* to cross borders and are not compelled to do so. While there is a persistent reality of 'forced migration' which deserves critical investigation, this is true for instance for people crossing the Mediterranean Sea, as apparent in the so-called 'migration crisis' of summer 2015.

Besides being spaces of control and selection, violence, death and abjection, borderzones are also sites of resistance where a kind of elementary search for freedom clashes with a control machine predicated upon the imperatives of security, economic valorization and humanitarian management of mobility. The geography of border control is often challenged and tested by the power and dynamics of mass migration. In the European 'crisis' of the summer of 2015, the relevance of Lampedusa within this geography was itself challenged and displaced by the opening up of new migratory routes (most notably through the Greek islands and the 'Western Balkans'). We have been confronted with a multiplication of sites, which rapidly became iconic for the conflicts and tensions related with migration – from the

Greek island of Kos to the wall built by the Hungarian government at the border with Serbia, to name just two of them.

Already, after the arrival of thousands of Tunisian migrants from Tunisia after the end of the Ben Ali regime in 2011, their further movement throughout Europe was connected with a kind of 'travel' of the name Lampedusa to very centres of the European space. A 'collective of Tunisians from Lampedusa in Paris' squatted in a public building, while 'Lampedusa in Hamburg' and 'Lampedusa in Berlin' became the names of important campaigns and migrants' struggles in Germany. This was a powerful anticipation of what happened in the summer of 2015, when the tensions and conflicts that the border regime (and its 'spectacle') should purportedly 'contain' and manage at the margins of the European space penetrated into its very centre, through the stubbornness of migrants, the commitment of their activist supporters and a significant movement of solidarity within the 'public opinion' of several European countries.

'Leave this Europe where they are never done talking of Man, yet murder men everywhere they find them.' These famous words taken from the last pages of *The Wretched of the Earth* by Frantz Fanon (2001: 251) have displacing and uncanny resonances when read against the background of these events. What we are confronted with are masses of dispossessed people, profoundly heterogeneous in their composition, heading towards Europe and at the same time challenging it to account for its imperial past, implication in the wars at its borders and for the massacre of the human which is structurally related to the everyday working of its border and migration regime. These movements and struggles of migration have a deep political nature insofar as they challenge the internal limits, borders and hierarchies which structure the European

space, while at the same time pointing to the need to reorganize the relations of Europe with its multiple 'outsides'. There is a slogan that was often heard in Lampedusa in the past years and that resonated across Europe in the summer of 2015: *we are humans*. It is a slogan that has a long history in anti-colonial and anti-racist struggles, for instance in African-American movements in the USA. If we pit it against what we called, echoing Fanon, the massacre of the human connected to the working of border and migration regimes we begin to get a sense of the radical stakes that connect the tensions surrounding mobility in our global present with the mutations of the human.

These tensions and mutations are clearly not amenable to easy resolution. They are subject to radical alterations in space and time, and variable connections between the geological and political. That the claim *to be human* emerges as a rallying cry among the most vulnerable of mobile subjects tells us something about critical idioms that trouble the distinction between the human and non-human. Whether these idioms celebrate technological prosthesis, explore the environmental consequences of human exceptionalism, or assert the independence of objects from human thought and perception, they must at the very least reckon with the poignancy of this *all too human* politics. At stake is an urgent need to rethink our understanding of borders, both epistemological and geographical, and the role they play in violent and discriminatory expulsions and practices of differential inclusion. Lampedusa is the very icon of this responsibility.

See also Camp; Anonymity; Expulsions; In-Human.

**Sandro Mezzadra and
Brett Neilson**

LEAKS AND STINGS

Leaks and stings offer us a way of rethinking circulation in a posthuman condition. Leaks emanate from both material and information infrastructures, bypassing 'normal' or authorized channels of circulation. Media leaks refer to unanticipated or deliberate disclosures of privileged information by a range of actors: rivals, activists claiming public interest, transnational groups committed to transparency, network manipulation. Data leaks may emerge from software platforms, either by 'malfunction' or through hacker attacks. 'The leak', say Mathew Fuller and Andrew Goffey, 'is the emission liberated from its proper place by an act of omission, or neglect of right containment' (2012: 100).

Stings used be a privilege of the state, where police gathered evidence to record but actually not provoke criminal acts. In parallel police entrapment records staged encounters with hidden media devices, whereby the target is induced to commit an incriminating act. In the contemporary media landscape, this police technology has been deployed by activists, journalists and private individuals, who use hidden media devices to entrap individuals or hack into mobile phones of celebrities as in the recent cases in the UK. The 'private' media sting significantly transformed the older police technology: it initiated new fields of circulation, and opened larger questions of the public interest and sovereignty, as systems of secrecy, censorship and control face new challenges. As techniques of disrupting authorized circulation both leaks and stings offer us ways of thinking about infrastructure and circulation.

As physical forms that govern the engines of circulation, infrastructures typically bring together populations, commodities, money and practices of making and unmaking. Infrastructures, says the anthro-

pologist Brian Larkin, 'shape the nature of a network, the speed and direction of its movement, its temporalities, and its vulnerability to breakdown' (2013: 328) Igor Kopytoff (1986) has spoken of the many 'lives' of commodities as they move in and out of circulation. Media objects like audio and video also take on multiple lives as they move in diverse time-space configurations. In events linked to stings and leaks, a premium is placed on the moment of liveness: the burst of affective energy when the information is released in the public domain, designed to multiply the political effects of the act. This is often not the end of the story, as media moves to other environments and platforms. Leaks and stings are part of a generative movement, where practices, objects and people attach themselves to changing assemblages. This assemblage is a dynamic media ecology, which is not a stable arrangement of technologies and environments, but rather is productive, resulting in new interventions or 'space-times' (Deleuze 1990: 176). Once the initial event has taken place we see a constant redistribution of forces and new platforms and spaces emerge: political scandal, activist mobilization or a judicial event like a court case.

This 'loop' shapes much of contemporary media circulation, wherein media objects move in and out of infrastructures, attach themselves to new platforms of political-aesthetic action, and are drawn to or depart from the spectacular time of media events. This drive marks the turbulent, dynamic ecology of stings/leaks, with changing combinations of protagonists, technologies and spaces: television newsrooms, online platforms, police stations, government offices, courts, enquiry commissions, demonstrations and activist forums.

Michael Warner (2002) points to the 'fruitful perversity' of all acts of modern publicity. Once initiated, these acts

abandon intended audiences and face the risk of dispersal, misuse and escape.

The older forms of governmentality privileged particular (legal) sites of media exhibition and consumption through regulatory systems. Today new forms of unauthorized publicity have actively destabilized this regime and fed into new loops of circulation. Media has become the infrastructural condition of life rather than (just) enclosed in distinct, regulated sites like film and television. What we see is a new condition of affect driven media modernity in most parts of the world today (Berlant 2011). Thus stings and leaks offer a window into the re-arrangements of sovereignty in the posthuman condition: equally they are also co-conspirators in the 'post-public sphere public' (Berlant 2011: 223). Evacuated from the mythic of stranger sociability, the new circulatory loop spans public-private, consumption/politics, and surveillance/counter-surveillance.

Michael Warner has pointed out that when public discourses move away from set audiences, it also 'puts at risk the concrete world that constitutes its condition of possibility' (2002: 109). Leaks and stings reflect this tension between acts of publicity and their possibility, as user-driven infrastructures mobilize police technologies, disrupting engines of circulation. Equally, these disruptions of infrastructure may generate a 'poetics'. These may range from sensorial-political strategies of NGOs, anti-government movements (Maclagan 2012) and transparency groups, as well as individual acts by newly media enabled populations in the non-Western world.

See also Anonymity; Contemporary, the; Informatic Opacity.

Ravi Sundaram

LITERATURE OF LIBERATION

Liberation, like love, is never abstract. It refers to relationships of mastery and subjugation; it refers to political mastery, to class and gender mastery, to human forms of abuse. But there is more. For Peter Singer, for example, it is a concept that involves all sentient beings. In a famous book titled *Animal Liberation* (1975), he strongly attacked 'speciesism,' a way of discriminating against non-human animals – killing them, exploiting them, treating them as if they were mere objects, and simply ignoring their capacity to *feel*, whether pleasure or pain. Drawing attention to the suppressed suffering of non-human beings, Singer solicited their acknowledgment as our partners in the moral world. Other important thinkers, like for example Val Plumwood (1993, 2002), took a step further and spoke against the 'hyperseparation' practices of 'the logic of Othering' (2002: 117) that subjugate not only humans and sentient animals, but whatever is not a hegemonic subject. The kind of liberation Plumwood envisioned was therefore a liberation from the ontological and moral systems of mastery that frame our social as well as ecological relationships. All dominated subjects – enslaved people and enslaved natures alike – are enclosed, for Plumwood, into a regime of 'moral and cultural blindness' (2002: 118) through which 'the Other's independent agency and value is downgraded and denied' (2002: 105). This radicalized 'hyperseparation,' however, creates in the dominant subjects the illusion of their 'disembeddedness,' thus blocking their own survival. These issues also belongs to the tradition of postcolonial studies, which has in recent times congealed with ecocriticism in the analysis of how the rhetoric of 'developmentalism' and globalization affects exploited humans,

animals and lands (Huggan and Tiffin 2010; DeLoughrey and Handley 2011).

It is clear that the only way to grant independence to oppressed people and beings – the only way to liberate them – is to give them a voice, and to *see* their stories. But there is another, even more ontologically radical form of liberation. This is the liberation of *things* from their silence, the consideration of non-humans as ‘full-fledged actors’ (Latour 1999: 174) in a ‘political ecology’ which involves all material beings, and which has been articulated by authors such as Bruno Latour, Jane Bennett, Karen Barad, Bill Brown, Ian Bogost, William Connolly, Roberto Esposito and Philippe Descola. Liberating things from their silence is not merely an exercise of human creativity, but an essential act of ecological imagination. Resonating with this discourse, literary imagination can be a way to overcome the boundaries of subjectivity, and to emancipate storytelling from the standpoint of the individual ego. This idea is effectively expressed by Italo Calvino in the final lines of his *Six Memos for the Next Millennium*:

Think what it would be to have a work conceived from outside the *self*, a work that would let us escape the limited perspective of the individual ego, not only to enter into selves like our own, but to give speech to that which has no language, to the bird perching on the edge of the gutter, to the tree in spring and the tree in the fall, to stone, to cement, to plastic . . . Was this not perhaps what Ovid was aiming at, when he wrote about the continuity of forms? And what Lucretius was aiming at when he identified himself with that nature common to each and every thing?

2009 [1988]: 124

Like Calvino, authors and thinkers such as Ovid, Lucretius, Spinoza, Darwin, Goethe, Blake, Mary Wollstonecraft, Kafka, Jorge

Luis Borges and many others demonstrate how the human is not the apical element of an ordered creation, but rather an expression of the world’s morphological irony. In their own fields and styles, they provide creative tools that liberate us from the obsessions of anthropocentrism, pulling the human back into the wider horizon of being. More in general, the authors and genres entering this lineage of imagination – from Lucretius to Philip K. Dick and Margaret Atwood, from magical realism to science fiction, from toxic autobiographies to cli-fi – have something in common: they help readers (and critics) to build narratives about the world that are therapeutic against the isolation of the human self. In this dimension of intersecting players and presences, recognizing ‘impersonal stories’ – stories of land, of things, of hybridity, of processes – is in fact as important for a healthy relationship to our world as recognizing personal stories, stories of people. These impersonal stories embody and express many of the dynamics that influence our life: like the trans-corporeal exchanges of substances and the trans-locality of environmental processes show, now more than ever, *the impersonal is political*. This is even truer if we consider that, as posthumanist thinkers insist, the impersonal agency of a vast array of ‘others’ is also crucial to our very existence. In a profound sense, materially as well as discursively, it is the non-human that makes us human (Haraway 2008; Braidotti 2013; Marchesini 2002).

By creating new vocabularies apt to show, interpret and represent the world in its multiplicity of players and stories, literature has a power to act as a privileged means of liberation and of emancipation for both the human and for its ‘other’, especially if considered in the framework of a an ecology of culture (Zapf 2016). The emergence of these cultural tools is decisive,

because only if we have names for things do we really *see* things. Whether on exploited humans, animals or other natures, oppression is far more ferocious when it is unspoken, unacknowledged, *unsocialized*. The obvious reason for it is that it is more difficult to see (and recognize) things and beings that have no name, than things and beings whose existence is amplified through words. Seeing Napoleon's ghost on horseback is much easier than seeing a dying ecosystem, if you are not able to read its signs, meanings and stories. Helping us to connect words with the world, literary narratives are potential means of liberation. Literary imagination accepts in fact 'the challenge of rendering visible occluded, sprawling webs of interconnectedness' (Nixon 2011: 45). As Rob Nixon has written: 'In a world permeated by insidious, yet unseen or imperceptible violence, imaginative writing can help make the unapparent appear, making it accessible and tangible by humanizing drawn-out threats inaccessible to the immediate senses' (2011: 15).

Literature, as Calvino also said, 'is necessary to politics above all when it gives a voice to whatever is without a voice' (1986: 98). This can mean endless things. Literature can give a voice to the voiceless, the dispossessed, the disempowered; and it can give a voice to those who cannot speak, but can nonetheless feel pleasure or pain; literature can give a voice to natural beings, elements, phenomena, processes; it can give voice to the 'storied matter' of the world. Stimulating the imagination of new dis-anthropocentric ontologies (Cohen 2015b), literature can create bridges – both ethical and cognitive – toward *others*, thus opening our eyes and ears in front of the many worlds that, with us and notwithstanding us, inhabit our world. A literature of liberation is therefore a literature that contributes to creating a posthuman imagination, namely a way of seeing

the relationship between 'us' and 'them' in terms of permeability, of exchange and co-presence. If we want to live *realistically* we cannot pretend that our dimension of existence is separated from theirs. What this literature helps us understand is that there is no 'ours' and 'theirs': all these things, all these living and non-living beings share with us a common terrain of existence, and enter into a relationship with our life and with the life of the world.

Considered in its recent developments, literary criticism – and ecocriticism in particular – displays a constant trajectory: from issues related to human subjectivity (for example experience of or encounters with landscapes, places or non-human others) the focus has shifted to processes, collectives and entanglements (for example, global warming, species extinction, trans-corporeal fluxes of toxins). In other words, literary studies too have been important players in moving the humanities' move *beyond* the human, thus paving the way to the posthuman Humanities (Braidotti 2013). The function of critical approaches and practices such as posthumanism, material feminisms, ecomaterialism and material ecocriticism is crucial to this challenge. Not only do they favour post-anthropocentric narratives, thus redeeming the stories of the impersonal but, in so doing, they also allow us to see *more* of the part we humans play in this vast intersectional scenery. In other words, by freeing the 'impersonal' from its structural silence, these critical methodologies enable ways to redress human oppression, thus becoming part of a wide and articulated project of *liberation literacy*.

See also Animacies; (Material) Ecocriticism; Ecomaterialism; Non-human Agency; Storied Matter; Ontological Turn; Posthuman Literature and Criticism.

Serenella Iovino

LOCALITY / NON-SEPARABILITY

The posthuman turn has transformed and re-envisioned nomadic subjectivity through the radical re-articulation of the notion of location neither as a universal ground nor as a reification of difference, but as a spatio-temporal specificity that materially co-produces the subject (Braidotti 2006b: 199). This shift has become particularly relevant for research on territories, mobility and geo-political relations as the constellations of revolutionary social movements spreading across time and space with increasing speed bypass physical and cultural borders. Capitalism creates a unifying, artificial grounding, a master-code or common language that allows objects and ideas to be compared against each other under the rules of the market. This 'overcoding' (Deleuze and Guattari 1987: 42) is not only merging, hierarchizing and stratifying objects, ideas and individuals, but is also allowing socio-political and economic problems to surface globally almost instantaneously, only to be amplified by their co-dependence on the universal Capital. The parallel development of network technologies has led to the tightening of time intervals, spreading events and ideas faster than ever before in a non-linear fashion. The simultaneous homogenization of space and the abrupt discontinuities of time brought by networked cultures render the drawing of a coherent cartography of these resistance movements harder and harder to trace. The 'entangled genealogies' (Barad 2007: 389) of these movements cannot correspond to a sequential reading that sees them as a domino effect as their emergence is non-linear. A tracing of the conditions that made these movements and events possible would require a renewed focus on their relational character rather than their reading as an all-encompassing narrative.

Our Newtonian notions of absolute time and space have to be revised taking into account relational models elaborated by advancements in quantum physics and mathematics. Notions such as absolute distance and size in Cartesian space can be replaced by proximity/nearness and ratios of density in a topological (non-trivial) space. The strict categorization of spatial models, purely based on nested geographical scales ranging from global, regional and local together with the sequential account of time are rendered obsolete through the commonness that resistance movements generate. From the anti-austerity riots to the Occupy movement to the Arab Spring and to the hundreds of student protests, the rise of these social movements can only reveal the enmeshed socio-political properties of the intra-connectedness of scale. A cartographic mapping of these movements would resemble a Deleuzian section (DeLanda 2002: 125) that reduces the events to their purely diagrammatic assemblage, eliminating quantifiable data to its vectorial forces as a way to cut through a continuous dynamic system projecting a discrete tracing of its relations. The relational character of this model indicates the blurred lines on which none could claim locality or nonlocality. This disproof of Einstein's local realism through 'spooky action at a distance' experiments, in which two particles have entangled states, influencing each other instantaneously (faster than the speed of light) in spite of the distance between them, suggests that non-locality could exist in a continuous space without the separability required by distance. The principle that an object is directly affected only by its immediate surroundings and that any measurements observed are independent of the experimental setup was proven inadequate; entangled particles

could influence each other at a distance instantaneously. In fact, quantum entanglements and relational models show that there is no separability; no external position that can be maintained. The only externality can be that of the relations that make things emerge. This system, however, does not dismiss the reality of locality. Events, places and borders are both real and distinguishable, as the ongoing refugee crisis, environmental tragedies, and political struggles still taking place remind us. As Karen Barad suggests, our way of knowing and distinguishing the locality of 'phenomena' is purely epistemological and 'enacted' and does not automatically cancel out their ontological inseparability (Barad 2007:128).

Within these jerky trajectories, a post-human, pre-individual, universal affect appears to resonate within different ethnicities, cultures and geographical scales taking local manifestations according to the specificities of the materialization of its time and space. This affect is neither

fully expressed individually nor is it representational as it emerges as a mood: non-teleological and directional rather than intentional. Its local manifestations distinguish and define the specificities of its conditions of emergence. It can act instantaneously and at the same time its effects can be slow and gradual, fermenting and transforming vectors of change, leading to new 'lines of flight'. This posthuman condition clearly underlines that the locality of events is real and epistemological. It is an 'agential cut' (Barad 2007: 140) that is iteratively enacted and in this way opens up novel ways of knowing. As we remain ontologically entangled and inseparable, it is crucial to reformulate a new solidarity that can transform our ethical models and the way we affect and are being affected.

See also Commutation Ontology; Ecopath; Neo/New Materialism; Nomadic Sensibility.

Lila Athanasiadou

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MAKEHUMAN

MakeHuman is an Open Source software for modelling three-dimensional humanoid characters (<http://www.makehuman.org>). Through its curious naming the project evokes the demiurge, dreaming of 'making' 'humans' to resemble his own image. Including a concrete software object in this glossary means addressing specific entanglements of technology, representation and normativity: a potent triangle that MakeHuman sits in the middle of. But it does not only deserve our attention due to the technological power of self-representation that it affords. As an Open Source project, it is shaped by the conditions of interrogation and transformability, guaranteed through its license. Like many other F/LOSS projects, MakeHuman is surrounded by a rich constellation of textual objects, expressed through publicly accessible source code, code-comments, bugtrackers, forums and documentation.¹ This porousness facilitated the shaping of a collective inquiry, activated through experiments, conversations and mediations.² In collaboration with architects, dancers, trans*-activists, design students, animators and others, we are turning MakeHuman into a *thinking machine*, a device to critically think along physical and virtual imaginaries. Software is culture and hence software-making is world-making. It is a means for relationalities, not a crystallized cultural end.³

Software: We've Got a Situation Here

MakeHuman is '3D computer graphics middleware designed for the prototyping of photo realistic humanoids' and has gained visibility and popularity over time.⁴ It is actively developed by a collective of programmers, algorithms, modellers and academics and used by amateur animators to prototype modelling, by natural history museums for creating exhibition displays, by engineers to test multi-camera systems and by game developers for sketching bespoke characters.⁵ Developers and users evidently work together to define and codify the conditions of presence for virtual bodies in MakeHuman.⁶ Since each of the agents in this collective somehow operates under the modern regime of representation, we find the software full of assumptions about the naturalness of perspective-based and linear representations, the essential properties of the species and so forth. The deviceful naming of the project is a reminder of how the semiotic-material secrets of life's flows are strongly linked to the way software represents or allows bodies to be represented.⁷ The modern subject, defined by the freedom to make and decide, is trained to self-construct under the narcissistic fantasy of 'correct', 'proper' or 'accurate' representations of the self. These virtual bodies matter to us because their persistent representations cause mirror affects and effects on both sides of the screen.⁸



Screenshot MakeHuman

MakeHuman is ‘middleware’, a device in the middle: a composition machine that glues the deliriums of the ‘quantified self’ to that of Hollywood imagery, all of it made operational through scientific anthropomorphic data and the graphic tricks of 3D-hyper-real rendering. From software development to character animation, from scientific proof to surveillance, the

practices crossing through MakeHuman produce images, imaginations and imaginaries that are part of a concrete and situated cultural assemblage of hetero-patriarchal positivism and humanism. Found in and fed by mainstream mediated representations, these imaginations generally align with the body stereotypes that belong to advanced capitalism and post-colonialist

projections. Virtual bodies only look 'normal' because they appear to fit into that complex situation.

Un-taming the Whole

The signature feature of the MakeHuman interface is a set of horizontal sliders. For a split second, the surprising proposal to list 'gender' as a continuous parameter promises wild combinations. Could it be that MakeHuman is a place for imagining humanoids as subjects in process, as open-ended virtual figures that have not yet materialized? But the uncomfortable and yet familiar presence of physical and cultural properties projected to the same horizontal scale soon shatters that promise. The interface suggests that the technique of simply interpolating parameters labeled 'Gender', 'Age', 'Muscle', 'Weight', 'Height', 'Proportions', 'Caucasian', 'African' and 'Asian' suffices to make any representation of the human body. The unmarked extremities of the parameters are merely a way to outsource normativity to the user, who can only blindly guess the outcomes of the algorithmic calculations launched by handling the sliders. The tool invites a comparison between 'Gender' and 'Weight' for example, or to decide on race and proportions through a similar gesture. Subtle and less subtle shifts in both textual and visual language hint at the trouble of maintaining the one-dimensionality of this 3D world-view: 'Gender' (not 'Sex') and 'Weight' are labelled in the singular but 'Proportions' in plural; 'Age' is not expressed as 'Young' or 'Old', but race is made finite in its intra-iterations by naming a limited set of options for mixture.⁹

Further inspection reveals that even the promise of continuity and separation is based on a trick. The actual maths at work reveals an extremely limited topology based on a closed system of interconnected

parameters, tightening the space of these bodies through assumptions of what they are supposed to be. This risky structuration is based on reduced humanist categories of 'proportionality' and 'normality'. Parametric design promises infinite differentiations but renders them into a mere illusion: obviously, not all physical bodies resulting from the combinations would look the same, but software can make that happen. The sliders provide a machinic imagination for utilitarianized (supposedly human) compositors, conveniently covering up how they function through a mix of technical and cultural normativities. Aligning what is to be desired with the possible, they evidently mirror the binary systems of the modern proposal for the world.¹⁰ The point is not to 'fix' these problems; quite the contrary. We experimented with replacing default values with random numbers, and other ways to intervene with the inner workings of the tool. But only when we started rewriting the interface could we see it behaving differently.¹¹ Renaming markers, replacing them by questions and descriptions, by adding and subtracting sliders, the interface became a space for narrating through the generative process of making possible bodies.

A second technique of representation at work is that of geometric modelling or polygon meshes. A mesh consolidates an always-complete collection of vertices, edges, planes and faces in order to define the topology of an individualized shape. Each face of a virtual body is a convex polygon; this is common practice in 3D computer graphics and simplifies the complexity of the calculations needed for rendering. Polygon meshes are deeply indebted to the Cartesian perspective by their need for wholeness. It results in a firm separation of first inside from outside and secondly shape or topology from

surface. The particular topology of MakeHuman is informed by a rather awkward sense of chastity.¹² With all its pride in ‘anatomical correctness’ and high-resolution rendering, it has been decided to place the genitals outside the base-body-mesh. The dismembered body-parts are relegated to a secondary zone of the interface, together with other accessories such as hats and shoes. As a consequence, the additional set of skin-textures included in MakeHuman does not include the genital add-ons so that a change in material makes them stand out, both as a potentiality for otherwise embodied otherness and as evidence of the cultural limitations to representing physical embodiment.

In MakeHuman, two different technical paradigms (parametric design and mesh-based perspective) are allied together to grow representative bodies that are renormalized within a limited and restricted field of cultivated material conditions, taming the infinite with the tricks of the ‘natural’ and the ‘horizontal’. It is here that we see modern algorithms at work: sustaining the virtual by providing certain projections of the world, scaled up to the size of a powerful presence in an untouchable present.

But what if the problematic understanding of these bodies being somehow human, and at the same time being made by so-called humans, is only one specific actualization emerging from an infinite array of possibilities contained in the virtual? What if we could understand the virtual as a potential generator of differentiated and differentiating possibilities? This might lead us towards mediations for many other political imaginaries.¹³

A Potential for Imaginations

By staging MakeHuman through a performative spectrum, the software turned into a *thinking machine*, confirming

the latent potential of working through software objects. Sharing our lack of reverence for the overwhelming complexities of digital techniques and technologies of 3D imaging, we collectively uncovered its disclosures and played in its cracks.¹⁴ We could see the software iterate between past and present cultural paradigms as well as between humans and non-humans. These virtual bodies co-constructed through the imagination of programmers, algorithms and animators call for *otherwise embodied others* that suspend the mimicking of ‘nature’ to make room for experiences that are not directly lived, but that deeply shape life.¹⁵

Our persistent attention to MakeHuman being in the middle, situated in-between various digital practices of embodiment, somehow makes collaboration between perspectives possible, and pierces its own utilitarian mesh. Through strategies of ‘defamiliarization’ the potentialities of software open up: breaking the surface is a political gesture that becomes generative, providing a topological dynamic that helps us experience the important presence of impurities in matter–culture continuums.¹⁶

Exploring a software like MakeHuman hints at the possibility of a politics, aesthetics and ethics that is truly generative. To provide us with endless a-modern *mestizo*, an escape from representational and agential normativities, software CAN and MUST provide the material conditions for wild combinations or unsuspected renders.¹⁷

See also Altergorithm; Bodies Politic; Informatic Opacity; Otherwise Embodied Others; Storied Matter; Trans-Corporeality.

Notes

1. Free, Libre and Open Source Software (F/LOSS) licences stipulate that users of the software should have the freedom to

- run the program for any purpose, to study how the program works, to redistribute copies and to improve the program.
2. In 2014 the association for art and media Constant organized GenderBlending, a work-session to look at the way 3D-imaging technologies condition social readings and imaginations of gender. The collective inquiry continued with several performative iterations and includes contributions by Rebekka Eisner, Xavier Gorgol, Martino Morandi, Phil Langley and Adva Zakai (<http://constantvzw.org/site/-GenderBlending,190-.html>).
 3. The potential of software as a 'thinking machine' is that it can activate mechanisms of knowledge production, of not-only-text-based critical theory: 'A cartography is a theoretically based and politically informed reading of the present. Cartographies aim at epistemic and ethical accountability by unveiling the power locations which structure our subject-position' (Braidotti 2013: 164).
 4. 'MakeHuman is an open source 3D computer graphics software middleware designed for the prototyping of photo realistic humanoids. It is developed by a community of programmers, artists, and academics interested in 3D modeling of characters', *Wikipedia*, <https://en.wikipedia.org/wiki/MakeHuman> [accessed 18 April 2017].
 5. Present and past contributors to MakeHuman: <http://www.makehuman.org/halloffame.php> [accessed 18 April 2017].
 6. https://en.wikipedia.org/wiki/MakeHuman#References_and_Related_Papers [accessed 18 April 2017].
 7. The Artec3 3D-scanner is sold to museums, creative labs, forensic institutions and plastic surgery clinics alike. Their collection of use-cases shows how the market of shapes circulates between bodies, cars and prosthesis: <http://www.artec3d.com/applications> [accessed 18 April 2017].
 8. A code comment in *modeling_modifiers_desc.json*, a file that defines the modifications operated by the sliders, explains that 'Proportions of the human features, often subjectively referred to as qualities of beauty (min is unusual, center position is average and max is idealistic proportions)', <https://bitbucket.org/MakeHuman/makehuman> (version 1.0.2) [accessed 18 April 2017].
 9. *humanmodifierclass.py*, a file that holds the various software-classes to define body shapes, limits the 'Ethnic Modifier(MacroModifier) class' to three racial parameters, together always making up a complete set: '# We assume there to be only 3 ethnic modifiers. self._defaultValue = 1.0/3', <https://bitbucket.org/MakeHuman/makehuman> (version 1.0.2) [accessed 18 April 2017].
 10. In response to a user suggesting making the sliders more explicit ('It really does not really make any sense for a character to be anything other than 100% male or female, but then again its more appearance based than actual sex'), developer Manuel Bastioni responds that it is 'not easy': 'For example, weight = 0.5 is not a fixed value. It depends by the age, the gender, the percentage of muscle and fat, and the height. If you are making an adult giant, 8 ft, fully muscular, your 0.5 weight is X... In other words, it's not linear', <http://bugtracker.makehumancommunity.org/issues/489> [accessed 18 April 2017].
 11. MakeHuman is developed in Python, a programming language that is relatively accessible for non-technical users and does not require compilation after changes to the program are made.
 12. When the program starts up, a warning message is displayed that 'MakeHuman is a character creation suite. It is designed for making anatomically correct humans. Parts of this program may contain nudity. Do you want to proceed?'
 13. The *trans**-working field of all mediations is a profanation of sacred and

- natural bodies (of virtuality and of flesh). It evidences the fact of them being technological constructions.
14. Here we refer to Agamben's proposal for 'profanation': 'To profane means to open the possibility of a special form of negligence, which ignores separation or, rather, puts it to a particular use' (Agamben 2007: 73).
 15. 'The ergonomic design of interactive media has left behind the algorithmic "stuff" of computation by burying information processing in the background of perception and embedding it deep within objects' (Parisi 2013a).
 16. Breaking and piercing the mesh are gestures that 'This topological dynamic reverberates with QFT processes ... in a process of intra-active becoming, of reconfiguring and trans-forming oneself in the self's multiple and dispersive sense of it-self where the self is intrinsically a nonself.' (Barad 2015).
 17. 'Experiments in virtuality – explorations of possible trans*formations – are integral to each and every (ongoing) be(coming)' (Barad 2015).

Femke Snelting and Jara Rocha

MATERIAL FEMINISMS

What's the matter with feminism? The recent so-called 'turn' in feminist theory toward *matter* has been met with mixed reactions. After all, even if the poststructuralism that dominated feminist theory in the 1990s might have put the emphasis elsewhere, feminist interest in materiality – in fleshy, material bodies, in the material effects of immaterial processes, in 'nature' that too often served as a foil to 'culture' – has remained steady. A concern for materiality – if that is all that this turn means – is hardly *new*. Characterized as primarily ontological, and drawing

increasing attention to the non-human or more-than-human, and the biological and ecological dimensions of life matters, this turn has also elicited questions about the focus of feminist theories. Do material feminisms undo or otherwise discount language, discourse and representation as tools of power? Is this turn's espoused reorientation towards ontology a dismissal of epistemology as a site for groundbreaking feminist scholarship? Or even more troublingly, is it a disavowal or forgetting of ethics as feminism's *raison d'être*? What does concern about non-human or more-than-human matter have to do with the ethical and attendant political projects of feminism? In this turn, have we not, so to speak, lost the feminist plot?

One response to these concerns would be the assertion that material feminisms don't think merely 'about' matter. They attempt to think *with* it, in ways that articulate specific ontological, epistemological and ethical commitments. *Material feminism is thinking with matter*. Matter here is lively; it destabilizes anthropocentric and humanist ontological privilege. Understanding matter (including non-human nature and the biological substrata of human life) as something that 'feels, converses, suffers, desires, yearns, and remembers' (Barad 2012: 60) as that which 'reads and writes, calculates and copulates,' (Kirby 2011: 95) or as what attempts to 'question, solve, control, calculate, protect, and destroy' (Wilson 2004: 82) suggests that matter is in fact *agential*. While this claim is not uncontroversial (as it may risk diluting feminist conceptions of moral agents), it importantly reminds us that when matter moves us (or moves other matters) this is not a brute causal determination. Agency here is quite basically about 'changing the possibilities of change' (Barad 2007: 178). *All matters take part (differently) in this agency-as-a-doing,*

where possibilities for change emerge in ongoing intra-actions of matters that are never completed. Rather than a dilution of agency as applied to humans, agency in feminist materialisms invites us to consider how non-human bodies or matters might contribute to their own actualization.

This recuperation of matter's liveliness does not mean that issues of language and representation are overwritten, or effaced. Thinking with matter also foregrounds *thinking*. Important insights into representation and discursive constructions are not eschewed, but rather themselves understood as entangled in matter's own expressive limits. Self-evident materiality does not trump discursivity, any more than ontology would epistemology; considerations of matter as agential in fact substantially contribute to why feminist materialisms are not only an ontological but also an epistemological and ethical concern. Such epistemological stakes are highlighted, for example, when Barad reminds us that 'knowing is a matter of part of the world making itself intelligible to another part' (Barad 2007: 185). Even if the matters we think with inspire us to think in new ways, we are never thinking alone. Or, put otherwise: if we understand non-human matter as agential, then we must also give up on epistemological mastery. Material feminisms thus draw on feminist epistemological critiques of total knowledge, resonant with what Donna Haraway has called 'situated knowledges' (Haraway 1988) and Rosi Braidotti has called an epistemological position of 'embeddedness and embodiedness' (Braidotti 2005).

Still, in the context of these onto-epistemologies a question remains: 'was this turn (whatever we want to call it) an ethical turn?' (Åsberg 2013: 7). Cecilia Åsberg provides an excellent synopsis of the ethics at stake in the new feminist turn to materiality, where this emerges in an

effort 'to respect and meet well with, even extend care to, others while acknowledging that we may not know the other and what the best kind of care would be' (ibid.: 8). The ethical commitments of thinking with matter do not come from a 'normative morality' (Puig de la Bellacasa 2010); ethics here does not comprise intentional 'right actions', moral universalisms, or an extension of human ethical programs (e.g. human rights) to the non-human world (Braidotti 2013: 190). Because this ethics is inseparable from the ontologies and epistemologies that condition it, it must also reject human mastery. We may not know who or what the other we encounter is, or needs, but forever entangled in these relations, we must negotiate the ethics of these meetings and their collaborative matterings. As such, this ethics demands that we remain open, attentive and curious towards the other, and what she asks of us. Barad calls this an ethics of responsivity: it is 'about responsibility and accountability for the lively relationalities of becoming of which we are a part' (Barad 2007: 393).

This material thinking expands a feminist conception of ethics, but it also raises the difficult question of toward whom or what a feminist ethics should be directed. Might we join thinkers such as Val Plumwood, Rosi Braidotti and Claire Colebrook in understanding 'a critique of masculinism [as] intertwined with a concern for the nonhuman' (Colebrook 2012: 72)? If the deep structures of power and oppression are a feminist issue, then these concerns do not stop at the human subject – or rather, they force a recognition of that subject as also a material one, embedded in and as worldly materiality. Such an expression of care and concern for the non-human is not a homogenized or 'flat' ethics; within a feminist cartography of power, difference still always matters (Braidotti 2013). A relationship of *respecere*

toward the non-human does not erase differences between humans and non-humans, or among differently situated humans. In fact, an ethics of responsivity, never knowable in advance, pointedly *underlines* such differences: how am I responsible to *this* body, *this* time, in *this* encounter? Material feminisms are not a negation or erasure of a feminist genealogy of ethical thinking, but its very embrace and further development.

Yet to fulfil this ethical promise, feminist materialisms must resist instrumentalization at all levels; we must remain vigilant in our refusal to reduce these matters to their use-value for the thinker. Here, this includes a refusal to treat these matters as mere fodder for our intellectual products, or to simply recruit matter as metaphor, concept or conceit. Even (or *especially*) as we call on non-human matter to ignite our theoretical, creative fires as our collaborators, 'we must find another relationship to nature' – or non-human matter more broadly construed – 'besides reification, possession, appropriation, and nostalgia' (Haraway 2008: 126). We must insist that matter, in all of its non-human and more-than-human guises, is not only a 'co-labourer', doing all the grunt work for little or nothing in return (Neimanis 2012). The ethics at stake here are thus not just 'in general', to be learned from these matters, but an ethics to be *directed specifically toward* these matters we 'think with'. 'Thinking with' in a feminist context must remain committed to holding on to this 'with', even once the heavy thinking is done. These matters give us insights, theories (publications, jobs, livelihoods), but what are we giving back? How are we honouring these matters and their gifts? An acknowledgement of the ethics implicated in a feminist material turn is also a provocation.

This 'thinking with matter' isn't new as such. It gathers both possible pasts and

potential futures; it collects not only feminist thinkers from diverse types of inquiry, but also acts transversally, unfolding both backwards and forwards, and gathering thinkers from different (non-linear) times. It might be that we are only recently paying attention to material feminisms *as such*. In other words: *feminism has never been immaterial*.

See also Neo/New Materialism; Post-human Critical Theory; Postdisciplinarity; Feminist Posthumanities.

Astrida Neimanis

MATTERING

Karen Barad begins *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* with a seemingly straightforward definition of mattering. It refers to the idea that 'Matter and meaning are not separate elements Mattering is simultaneously a matter of substance and significance' (Barad 2007: 3). The material world and its meaning are co-constituted through the iterative process of mattering. But this notion of mattering has a complicated theoretical history. Its genealogy can be traced from Barad's transdisciplinary formulation of the term at the intersection of physics, science studies, material feminisms (Alaimo and Hekman 2008), new materialism (Coole and Frost 2010) and posthumanism to its earlier development in poststructuralist and feminist theory. While I want to make the case that 'mattering' is the most robust framework the (post)humanities have for theorizing the *dynamics* of naturecultures (Haraway 2003) – which is to say the way in which change occurs across entangled material and discursive phenomena – I also want to

highlight how the term's rhizomatic ancestry is a testament to the non-separability of dynamics and ethics.

Mattering is a kind of posthumanist performativity that emphasizes matter's capacity to matter, to achieve significance in its being *as* doing. Matter here is not ground or essence, but agential, 'produced and productive, generated and generative' (Barad 2007: 137). To attend to matter in this way is posthumanist because agency, historicity and intentionality – the keys to meaning-making – are understood not as attributes of human culture and subjectivity, but as transcorporeal enactments that extend across and through human and nonhuman bodies (Alaimo 2010). And it is performative because it suggests that discrete entities and the meanings attached to them emerge within, rather than precede, the relations that constitute them. When we pose the question of what matters and how, we are not dealing with pre-existing bodies upon which language inscribes meaning, but with relations of doing, acting and becoming that exist in material-discursive superposition until an agential cut intervenes to demarcate clear boundaries between words and things. And this agential cut, or boundary-making practice, is a part of the very phenomenon it specifies, rather than apart from it.

Performativity is thus the dynamic core of mattering. 'To specify or study the dynamics of a system', Barad tells us, 'is to say something about the nature of and possibilities for change' (2007: 179). Normally, in the natural sciences, studying dynamics means observing how the variables that describe the state of a system change over time. But this understanding of the nature of change is rendered incomprehensible under the rubric of mattering's performative dynamics. Indeed, if the properties of a system are not determinate outside of the system's relation with other

entities, how can we claim to observe that system's evolution in isolation? This insight suggests that we completely rethink dynamics. With mattering, 'the very nature of change and the possibilities for change changes in an ongoing fashion as part of the world's ... dynamism' (Barad 2007: 179). A performative understanding of matter, in other words, alters the very nature of change and causality.

Causality, the core principle of classical dynamics, suggests that change occurs when one discrete entity (cause) influences another (effect), where both the causative and effective agents pre-exist their relation. However, once we replace causality with performativity as our central dynamic principle, the concept of change changes. Change is no longer a question of what causes what, but of what coexists with what. The rules of Bohr's (1958) complementarity and indeterminacy relations – the quantum theoretical precedents for Barad's dynamics of mattering – are such that they provide information not about what causes produce what effects, but about what observable values and corresponding states of existence can come into being simultaneously. As I have noted elsewhere, 'Theoretically ... indeterminacy relations should thus tell us how mind and matter can or cannot coexist within different events, given a sufficiently detailed account of the apparatus/experimental arrangements in question' (Jones 2014: 193). The dynamics of mattering tell us what meanings and states of matter can simultaneously co-exist and which cannot within specified material-discursive contexts.

The combination of the cultural studies vocabulary of performativity with the vocabulary of quantum physics in this account of mattering should provide a rough sense of the term's complex disciplinary history. We certainly cannot mention performativity without evoking

Judith Butler's pioneering formulation of the term in gender studies, feminist theory and queer theory. Indeed, Barad makes clear that her twin concepts of posthumanist performativity and mattering are further developments of Butler's concepts of gender performativity and materialization as she articulates them in *Gender Trouble* (1990) and *Bodies That Matter* (1993). Barad extends to matter Butler's reconceptualization of gender as a doing rather than an attribute. She thereby develops a parallelism between the processes of *gendering* and *mattering*. If 'gender is a doing, not in the sense that there is a pregendered person who performs its gender, but rather with the understanding that *gendering* . . . is a temporal process that operates through the iteration of norms' (Barad 2007: 57), then mattering accounts for the role of matter, as an active agent, in such processes of the materialization of gender and other identities. Mattering is a part of the process of gendering, amongst other performative practices. The concept of mattering thereby expands the dynamics of performativity to include nonhuman bodies and practices as well as human ones – a step Barad laments Butler neglecting.

But neither Barad's extension of performativity to matter nor my gesture to the indebtedness of the concept of mattering to Butler is ultimately about inclusion. It is about responsibility, about ethics, an ethics inscribed in the very dynamics of mattering. As Barad writes about her insistence on bringing the insights of performative cultural analysis to bear on science studies,

The issue is not simply a matter of inclusion. The main point has to do with power. How is power understood? How are the social and the political theorized? Some science studies researchers are endorsing Bruno Latour's proposal for a new parliamentary governmental structure that

invites nonhumans as well as humans, but what, if anything, does this proposal do to address the kinds of *concerns* that feminist, queer, postcolonial, (post-)-Marxist, and critical race theorists and activists have brought to the table?

2007: 58, emphasis added

The inclusion or exclusion of accounts of the materialization of matter, meaning or identity, in other words, is not an end in itself, but *comes to matter through the articulation of those accounts within specific contexts and histories*. That is, including versus excluding is a difference that makes a difference to certain political concerns and priorities and not others based on how those concerns have been addressed within the field(s) in question. We cannot include or exclude 'certain issues without taking responsibility and being accountable for the constitutive effects' (Barad 2007: 58) those inclusions or exclusions have within certain disciplinary histories.

Such is the ethics of mattering that complements and is non-separable from its dynamics. For, according to mattering's account of how some bodies and meanings become associated and not others, when we decide to draw on certain theorists and traditions and not others, we are participating in a boundary-making practice that matters for the field in which we are making an intervention. We are a part of a material-discursive process of changing the possibilities for change. As such, we cannot feign to be exempt from the 'responsibility and accountability for the lively relationalities of becoming of which we are a part' (Barad 2007: 393). By focusing on the dynamics of performativity in this entry, I am part of an agential cut within posthumanism that places Barad and Butler at the centre of the conversation about the terminology of mattering.

With this theoretical cut, I mean to address, share and promote the broader

concerns of posthuman feminist theory. Proto-posthumanist and posthumanist feminists – such as Butler, Haraway, Barad, Alaimo and Braidotti (2013) – have developed the concept of *mattering* in order to understand material bodies as sites of political struggle. These theorists deploy the term to account for the agency of human and non-human bodies in the iterative (re)configuring of gender norms and sexual power differentials. According to this genealogy, the dynamics of *mattering* are never not political. Thus, even when theorizations of *mattering* ‘do not speak directly to the questions of sex or gender, they still have their roots in feminism as a social movement, via their insistence that the human body is, simultaneously, a political, ontological, and epistemological site’ (Alaimo 2014: 16). An ethical investigation into the dynamics of *mattering*, then, means not just including the theorists that developed the concept, but also responsibly supporting their feminist, posthumanist politics.

See also Commutation Ontology; Locality/ Non-Separability; Neo/New Materialism; Material Feminisms; Naturecultures; Posthumanist Performativity; Transcorporeality; Quantum Anthropology.

Brandon Jones

MAXWELL'S DEMON (NON-ANTHROPOCENTRIC COGNITION)

In this entry, I would like to discuss one of the key moments of reference in twentieth-century information science, which arose from thermodynamics and which in fact links the latter to the former in many important aspects. Maxwell's famous thought experiment explores how to think of heat, if we can conceive of it neither as a

force nor in (metaphysical) substantial terms (see *Negentropy*). Before discussing how the stakes were formulated in this thought experiment, and how these same stakes were re-articulated in famous discussions of it, it is important to understand that here, we have the beginning of a certain coinage of thinking about chance in purely operational terms: one which attributes probability to humanly imperfect faculties that need not, in principle, be taken into account if operations in the natural sciences be carried out by a ‘pure’ agency like the particular intelligence which Maxwell set out to design in his thought experiment. This very background links the concept discussed in this brief article to the discussions about artificial intelligence at large, also beyond the selected aspects that will be discussed here.¹

James Clark Maxwell responded to the problem of thermodynamics' irreversibility with a thought experiment designed to resolve the subjectivity which apparently inheres to experimental science when it involves heat balances (through probability). If heat is apparently not to be held identical with energy (irreversibility, second law) nor approached in metaphysical terms as a new kind of substance, then we can think of heat as the motion of molecules in populations, Maxwell maintained. Individually – so he formulated the belief of many of his contemporaries – the molecules must obey Newton's Laws: Every action, every collision, must be measurable and calculable in theory. This assumption led him to invent a scenario that involves a perfect observer, one whose faculties were not to be flawed like the human imperfect ones, in short, a cognitive agency freed from all subjectivity and probability, and hence whose reasoning would be freed from irreversibility. Maxwell set up the ideally perfect experiment where the observer is to be capable of

purifying the science of heat from the factual irreversibility at work in it (see *Negentropy*). For this observer, thermodynamics would be as determined and without need for the assumption of a final cause or any other agency that acts in non-reasonable manner from a distance, as Newtonian physics.²

When Leó Szilárd attended to Maxwell's thought experiment, he hoped to dissipate the rather metaphysical discussions that had emerged and gave rise to both animist as well as vitalist discussions of the possibility of a 'perpetual movement' which Maxwell's agency – if considered a legitimate concepts – would render real.³ Instead he re-considered Maxwell's purely mechanical agency at stake in computational terms and equipped it with the capacity to memorize and evaluate all the observations it makes, and hence be capable of making up for the inevitable expenditure of energy through understanding how it could be balanced again.⁴ The core assumption of Szilárd⁵ was that even this perfect observer's faculties of observation would have to be accounted for in terms of measurement and calculation or else – if observation is not formalized – the thought experiment's value for justifying a classical notion of experimental science is nullified at once (since by definition such observation would transcend the conditions of experimentation). In order to account for the demon's observation in those terms, Szilárd introduced 'information' and 'memory' into the set-up (although he did not speak of 'information' properly, but spoke of the results of measurements which needed to be memorized in whatever 'form') (Gleick 2011). Szilárd effectively transformed Maxwell's original conception of a demon, acting mechanically like a thermostat, into a *deus ex machina*, an artificially intelligent being that can remember whatever experiences it makes while measuring.

But there were problems with faculties perfected in Szilárd's manner as well: once we assume that a system needs to be quantized in order to be measured and hence remembered, we are dealing with the unknown quantities of microscopic variables that 'make it possible for the system to take a large variety of quantized structures': stochastic definitions (Laplacean determinism) apply only to lower frequencies like those of a thermostat (in essence the kind of intelligence Maxwell conceived of), but not to higher frequencies like those of an oscillator (the re-development of Maxwell's intelligence by Szilárd); higher frequencies display no stochastic distributions; the position and magnitude of the waves cannot be at once observed and hence such observation involves probabilities. Even if the perfect agent would apply his perfect faculties by measuring (objectively), its assumption would not lend itself to stigmatize probabilities to the side of subjectivity against a supposedly stochastic distribution of objective nature.

Probability enters the picture of Laplacean determinism in that the movement of molecules has to be measured and calculated *in populations (rather than individually)*. This implies a foregrounding of a certain role of code in this measuring and calculating.⁶ The methods of probabilistics differ from those of stochastics with regard to this role of encryption. From this perspective, entropy is a term to measure the dissipation of heat by means of encrypting 'a large amount' – large enough to count the totality of possible transformation in an ideal state in which every next step is equally likely (entropy). The core assumption of thermodynamics is that the total amount of energy in the universe is invariant, that nothing can be added or subtracted to it (First Law of Thermodynamics). Entropy is the name for that number, and its extension (largeness of this number) is

subjected to encryption in algebraic code (see *Equation*). To think of energy like this, in terms of entropy, does not depend upon a semantic or substantial interpretation of energy, and it does not need to know just how much energy there really is in the universe (see *Invariance*). Every system that real (empirical) science can identify is *one that factors in* in this only cryptographically knowable invariant amount total of energy in the universe.

Léon Brillouin, building upon the work of Szilárd, went a step further. Familiar with Turing's (1936, 1952), Shannon's (1948) and Wiener's (1948) work on a mathematical notion of information and their dispute with regard to whether information can be measured in terms of the experimental entropy notion applied to physical systems (Shannon), or whether it needs to be accounted for in Schrödinger's terms of negentropy import in biological systems,⁷ Brillouin foregrounded the role of 'code' in such 'intelligent' computation and applied a *double* notion of negentropy and entropy – one to energy, one to information, under the assumption that both are linked by code: free (entropic) information to him is the maximum amount of *a priori* cases formulated in a code. The *a priori* cases can be computed by combinatorics, and each of them must be regarded as equally likely to happen in entropic information. Bound (negentropic) information is empirically measured information (in experiments with any particular manifestation of such a code). This transcendental in the measurement of information allows for thinking of information as a kind of currency that through circulating is capable of transforming energy into information and vice versa. This is how Brillouin could affirm the ultimate failure of Maxwell's thought experiment: not even an observation can be obtained gratuitously, he maintained, and all information has its price.

The implications of such an economy, one that transforms information into energy and vice versa, has only rarely been explored so far. It is mainly pursued in the work of Michel Serres, which I want to point to in conclusion to this entry. Thus we want to ask with Michel Serres: 'What does this demand for an absolutely exact measurement mean?' He resumes:

In a famous theorem, Brillouin proved that a perfect experiment can absolutely not be realized, because it would produce an infinitely large amount of information and, in addition to this, an infinitely large amount of negentropy would have to be expended ... the classical physicist believed that he could go to the very limits, and observe what would happen if all mistakes in observation could be reduced to zero; today we know that this margin is impossible, because the costs for this observation would rise to infinity. Absolute determinism is a dream, for perfect precision with regard to the initial conditions cannot be achieved. In other words, this demand [for the perfect experiment, VB] exceeds the limits of a possible experiment, it transcends its own postulates. It is possible to prove that one can never know exactly all the parameters of an experiment. There remains a rest of chance, a remainder of the unknown.⁸

The consequences Michel Serres draws from the failure are as original as they are daring: chance is to be regarded as the object of science, he maintains, not nature! Michel Serres sees in information theory a philosophy of physics that is inherent to the domain of physics. It is remarkable, he points out, that Brillouin titled his book *La science et la théorie de l'information*. This book contains, according to Serres, an epistemology of the concept and the praxis of experimentation, formulated in the language of physics, exhaustively descriptive, quantified, normalized and

constitutive. This epistemology is at once one of abstract principles, of natural laws that empirically grant precise and approx- imational insight in the sense of natural philosophy. But at the same time, in the theory of code, language, script and trans- lation it contains, this epistemology is at once one of modern, critical philosophy as well. 'Philosophers ought no longer search for an epistemology of experi- mental reason, nor write schoolbooks about it; it exists already'.⁹ The theory of information is the philosophy of nature inherent to physics precisely in that it acknowledges this remainder of chance, which insists in all that can be known as substantial to any concept of understand- ing and knowledge. It is this remainder upon which Serres' 'logiciel intramatériel' operates. The subjectivity or agency of this 'logiciel' constitutes 'objective transcen- dentale', a transcendental objectivity whose forms of intuition are not, as in Kant, constituted by physics notions of time and space, but by Brillouin's 'a priori probabilities' – the maximum and finite (albeit, depending on the code at stake, very large) number of equally likely cases which the combinatorics of a code may compute. To Brillouin and to Serres, the codes in terms of which information can be measured – as the currency that circulates in energetic expenditure – are to be regarded as different levels of negentropy in a manner analogous to the energy levels in quantum mechanics, where bound particles can take on only certain discrete values of energy (rather than any energy, as is the view for particles in classical mech- anics). Codes, as levels of negentropy, provide the sufficient reason for a certain disposition of knowing or 'architectonic speculation' (see *Architectonic Disposition*).

See also Architectonic Disposition; Equation; Execution; Invariance.

Notes

1. The point I want to highlight is that against all enthusiasms of this outlook (non-anthropocentric cognition and reason) stands a certain complication in how we think of chance: from a quantum- science point of view, there appears the need to complement the operational definition with one that considers also a certain 'substantiality' of chance itself – not in order to relativize the objectivist paradigm of science, but, quite contrarily, in order to maintain its centrality for a non-dogmatic, scientific understanding of knowledge (see *Invariance*).
2. 'A being whose faculties are so sharpened that he can follow every molecule in its course, and would be able to do what is at present impossible to us . . . Let us suppose that a vessel is divided into two portions, A and B by a division in which there is a small hole, and that a being who can see the individual molecules opens and closes this hole, so as to allow only the swifter molecules to pass from A to B, and only the slower ones to pass from B to A. He will, thus without expenditure of work raise the temperature of B and lower that of A, in contradiction to the second law of thermodynamics' (cited in Brillouin and Jeans 1921: 183).
3. Second perpetual motion of a second kind . . .
4. As Gleick (2011) points out, Szilárd thereby anticipated Turing's famous thought experiment by some years.
5. In his 1928 Habilitation entitled *Über die Entropieverminderung in einem thermo- dynamischen System bei Eingriffen intelli- genter Wesen*.
6. The systems of real physics can count as universal only in the mediate sense that they obey the laws of thermodynamics. But the entropic, thermodynamic universe itself cannot be thought of as a physical system properly, because the universe's entropy itself is an assumed

ideality – an ideality which is to serve as a support to the experimental paradigm of science, with the least possible semantical (biased) import.

7. Shannon discusses the term negative entropy, but considers its distinction negligible for information as a mathematical quantity notion. It was Norbert Wiener, who, via the work by John von Neumann, Alan Turing, Claude Shannon and Leo Szilard, maintained against Shannon that negentropy is in fact crucial, rather than negligible for a mathematical theory of information; it is largely due to this dispute that until today, different notions of mathematical information are in usage: (1) information as a measure for order in terms of entropy, and (2) information as a measure for order as negentropy; while both speak of information as a measure, and hence capable of establishing order, the two concepts of order are actually inverse to each other: order as negentropy means minimal entropy (maximal amount of bound energy, minimal of free or available energy in Schrödinger's terms), while order as entropy means minimal negentropy (maximal amount of free and available energy, minimal amount of bound energy in Schrödinger's terms). Much confusion in the understanding of 'information' arises from this still today.
8. 'Leben, Information, und der zweite Hauptsatz der Thermodynamik', in *Hermes III Übersetzung* (Berlin: Merve, 1992), 53–96, Here in my own English translation, pp. 90–1.
9. *Ibid.*

Vera Bühlmann

MEDIANATURES

Media is hardly just about media. Furthermore, nature is not merely nature

either but embedded in the cultural understanding of life. This is not to say that nature – to use the shorthand to refer to the biosphere, hydrosphere, geosphere and also atmosphere – is merely a representation or defined by cultural meanings. It is just to point out that the nature and animals have been understood and operationalized as a resource (as Martin Heidegger and others argued, including Braidotti 2006a: 98) and by way of technoscientific frameworks that define it through its chemistry and other sorts of analytics. This does not exhaust the intensity of nature as a living formation (Braidotti 2006a; Parikka 2014) but it does for sure force us to consider it as part of a feedback loop that involves much more than just nature. Hence to talk of medianatures, a term that is a useful neologism, is a way to try to grasp the intensive co-determination and co-emergence of the two spheres of natural dynamics and media cultural epistemologies, of the onto-epistemological situation that defines our technical modernity. Media are in and of nature in ways that expand any talk of the environment into a virtual ecology of 'social, political, ethical and aesthetic dimensions' (Braidotti 2006a: 123; see also Guattari 2000 and Fuller 2005).

Medianatures is a concept that owes its existence to Donna Haraway's notion of naturecultures. Naturecultures is a key term that features in many of Haraway's examples and discussions of companion species. It is a concept that troubles separations of nature from culture, and in general addresses the problematic categories by way of the microinteractions that define for example animal–human relations. Hence, when addressing companion species, Haraway speaks of the shared co-becomings in which the two are mutually implied: they are symbiotic and emergent. Such situated case studies are not merely

for the purposes of ontological meditation but they are ways to address 'livable politics and ontologies in current life worlds' (Haraway 2003: 4). They teach that ontologies not merely 'are' but they emerge; they are active realities, which resist stable typologies of being. Haraway draws on A.N. Whitehead's process philosophy and the active verb form: the world is formed through prehensions (ibid.: 6), an insight that forms Haraway's understanding of the world as knotted. This is where it becomes clear that the concept is driven by situated practices that take into account feminist knowledge, which refuses handed-down categories. It also draws from the reality of postcolonial situations that inform Haraway's examples. Indeed, it is also the anthropologist Marilyn Strathern's work that becomes an important reference point in thinking outside the dysfunctional dualism of nature or culture. Instead, Strathern's fieldwork in Papua New Guinea contributes to Haraway's concept in terms of offering the idea of partial connections that are not determined by 'wholes nor parts' (ibid.: 8). It is instead a relational nexus that one could also understand through Gilles Deleuze and Félix Guattari's (1987) emphasis on molecular realities that work under and across the visible, formed molar identities.

Naturecultures is a way of addressing the world of intra-actions and co-becomings in which the significant others – dogs, bacteria and a multiplicity of non-humans – are accompanying the so-called human. This sort of agenda contributes to the possibility of thinking outside the individual (Haraway 2008: 32–3) and other similar concepts that misplace concreteness (in Whitehead's sense) on the stability of the form (such as Nature). There would be a lot to be unfolded as to the philosophical genealogy of this sort of an account that – in addition to the already-mentioned

Whitehead, Deleuze and Guattari, feminist theory and for example Strathern – could be seen related to Gilbert Simondon's notion of individuation. Furthermore, through radical anthropology, one can summon a wide range of alternative metaphysics to understand the contemporary condition of mutation of understanding of culture and technology but also the multinaturalism (see Castro 2015).

Besides its own conceptual power, naturecultures allows us to think of medianatures, a concept which builds on the new materialist emphasis on the connectedness of material-semiotic (Haraway) and discursive-material (Barad) by way of a specific media cultural and technological focus. Similarly, as *mediation* happens across a whole spectrum of material realities (Grusin 2015; Cubitt 2014a; Parikka 2015) irreducible to the media devices, *media* itself can be seen to consist of an assembly of elements of nature (Peters 2015).

Instead of thinking that there is a historical disconnection between media culture and the natural formations that historically precede the modern technical media, medianatures works to illustrate the specific and situated material interactions that underpin media technological practices. Media technology itself is material; it is composed of a variety of geological material and geophysical forces. It needs metals and minerals to summon its worlds of audiovisuality, colour, speed, processing power and storage. Such processes of technical quality are made of seemingly odd elements such as lithium, coltan and rare earth minerals, while not forgetting the massive energy consumption of the devices and the networked cloud services. This assembly that we call media technology is reliant on massive global networks of energy and supply chains that themselves are linked to a geography of media

materials from African, Chinese and South American minerals, to various pipelines and power plants that provide energy (see for example Hogan 2015), to the labour conditions and practices that make these materials move (see Wark 2015a on the metabolic rift). It is a massive ecological operation that sustains the fact that we have a communication sphere of digital information that seems immaterial when it comes to the speed of retrieval of a web page, the reliability of the cloud-stored image and the instantaneous feeling of the intimate chat services that run, in most cases, through corporate servers. To talk of medianatures illustrates this double bind: on the one hand, media offers our epistemology, and is instrumentalized in the intensive mapping of the planet for its resources, materials and energy. And it is these resources, excavated often in places inhabited by indigenous people or in environmentally vulnerable areas like the Arctic, that place special emphasis on locality (see Cubitt 2014b). The epistemologically misplaced dualism of media and nature gives way to the intensive ties and individuations that bring about media culture as a formation that consists of ecologies of materiality as well as labour. In addition to the construction of technologies, issues also reach out to the discarded technology that is an e-waste hazard and becomes another disposed zombie media (Hertz and Parikka 2012) object in rural locations outside the main centres of consumption. They end up in regions such as west Africa (Nigeria and Ghana), China (Guiyu), Pakistan and India where the opening up of dead media technologies for their scrap metals is seemingly worth the time despite the massive health risks involved.

Hence, medianatures is a concept that speaks to the materiality of media technologies. But it does it in ways that are also

always about place and placement, of use and uselessness, of the work of material sciences and the ancient, prehistoric Earth materials such as fossil fuels firing up our computers. It is a philosophical concept but sustains the energy of Haraway's naturecultures in that also medianatures are to contribute to liveable politics and politics of global life of media products in their prehistory and their afterlife – as well as the various people exposed to media before, and after, they become media for the consumer sphere.

See also Digital Rubbish; Earth; Four Elements; Naturecultures; Neocolonial; Neo/New Materialism.

Jussi Parikka

METADATA SOCIETY

Metadata Society is the name given to the technopolitical form that emerges alongside and within the network society (Castells 1996) due to the growth of corporate and state datacentres since the late 1990s. Datacentres accumulate 'big data' – vast bodies of information about the world's climate, stock markets, commodity supply chains and the phone communications and social networks of billions of people for example. The establishment of these large datasets as primary source of cognitive capital and political power marks the birth of the metadata society, being precisely the *meta* analysis of data – mapping and interpreting their patterns and trends, and forecasting their tendencies – and not their brute accumulation that makes datasets meaningful and valuable. If the network society was a 'space of flows' (Castells 1996) that was based on the horizontal exchange of electronic information, datacentres incarnate the vertical accumulation of

information about information, that is *metadata*. 'Metadata represent the shift to a different and higher dimensional scale in relation to information: they disclose the collective and political nature that is intrinsic to all information' (Pasquinelli 2015b). Metadata describe also the abstract coordinates of a new posthuman condition that is the matrix of *dividuals* that compose the *superject* in the society of control (Deleuze 1992b).

History

The topological origin of the datacentre hegemony can be identified in specific bifurcations of the network society, in which particular nodes started to record, map or wiretap all the information exchanged through the network. As soon as the World Wide Web became a popular medium across the 1990s, the problem of its cartography was given. The cleverest solution to the navigation of the WWW came from Google's PageRank algorithm. The first datacentre set up by Google in 1998 (known as 'The Cage') can be considered the milestone of the birth of the metadata society, as it was the first datacentre to start mapping the internet on a global scale via vectors of ranking. In 2013 Edward Snowden revealed NSA's massive clandestine surveillance programme PRISM to the newspaper *The Guardian* (Greenwald and MacAskill 2013), initiating a big debate on metadata surveillance (Cole 2014). Thus the period between 1998 and 2013 can be roughly identified as the consolidation of the technopolitical form of the metadata society.

Genealogy

As a symbolic form of the information society, the database is also the new form of the archive of power (yet this aspect is

not apparent in Manovich 1999's essay 'Database as Symbolic Form'). The political space of data emerges as an extension of previous institutions of knowledge and power, although now under the complex and heavy rule of information sciences and mathematics. 'Datascape' were born in the registers of the ancient archives as simple squared grids: horizontal lines with the person's name and vertical lines carving out and ordering political data: age, gender, class, disease, crime, etc. The register's grids expanded their territories with the bureaucracy of the modern state (Desrosières 2002). The US census in 1890, for instance, was possible thanks to the introduction of punched cards by the Tabulating Machine Company (that in 1924 would change its name to International Business Machines, or IBM). The 1890 census already made clear how information technologies were contributing to processes of segmentation and racialization of US society. After the Second World War the encounter of statistics with the first mainframe computers generated the database as political form.

The database depicts *mathematically* the formations of power that Foucault was used to recording *institutionally*. Today the category of 'asocial behaviour', for instance, is computed by an algorithm in real time: there is no longer the need for a stable taxonomy codified by the disciplines of psychology or criminology. If a Foucault of the twentieth century could speak the same language of the institutional archive, a Foucault of the twenty-first century would require considerable technical training to access the digital one. According to such an epistemic divide, Manovich rightly identifies three 'data classes':

The explosion of data and the emergence of computational data analysis as the key scientific and economic approach in contemporary societies create new kinds of divisions. Specifically, people and

organizations are divided into three categories: those who create data (both consciously and by leaving digital footprints), those who have the means to collect it, and those who have the expertise to analyze it.

2012

Interestingly, William Gibson's original vision of cyberspace was also about an 'infinite datascape' rather than realistic spaces of virtual reality or hypertextual networks: 'A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding' (Gibson 1984). Gibson's intuition of the cyberspace was already about the problem of *meta-navigation* of vast data oceans.

Deleuze registered a similar shift, that is from Foucault's disciplinary society based on the production of the individual to the society of control whose power would be based on 'data banks' and the *modulation* of flows of communication.

We're definitely moving toward 'control' societies that are no longer exactly disciplinary. Foucault's often taken as the theorist of disciplinary societies and of their principal technology, confinement (not just in hospitals and prisons, but in schools, factories, and barracks). But he was actually one of the first to say that we're moving away from disciplinary societies, we've already left them behind. We're moving toward control societies that no longer operate by confining people but through continuous control and instant communication . . . One can of course see how each kind of society corresponds to a particular kind of machine – with simple mechanical machines corresponding to sovereign societies, thermo-dynamic machines to disciplinary societies, cybernetic machines and computers to control

societies. But the machines don't explain anything, you have to analyze the collective arrangements of which the machines are just one component.

Deleuze 1990

In his famous 'Postscript on the Societies of Control' Deleuze envisioned a form of power that is no longer based on the production of individuals but on the modulation of *dividuals*. Individuals are deconstructed into numeric footprints, or *dividuals*, that are administrated through 'data banks': 'We no longer find ourselves dealing with the mass/individual pair. Individuals have become "dividuals", and masses, samples, data, markets, or "banks"' (Deleuze 1992b)

The *dividual* mirrors and follows the idea of *objectile* that Deleuze discusses in *The Fold* (1993). The *dividuals* do not simply describe an atomized subject but make possible the posthuman consolidation of collective agents as *condividuals*, or as *superjects*. As Deleuze says, following Whitehead: 'just as the object becomes objectile, the subject becomes a superject' (1993: 21).¹ At least in the domain of the digital, data and metadata can be considered the *dividuals* that are used to compose new *superjects*, as when databases are used to map social patterns and forecast social trends. As Savat (2009) rightly observes, regarding the new techniques of modulation within the society of control, 'the newly emerging mode of observation is pattern recognition.'

Politics

Placing too much stress on the definition of the control society might not leave space for political imagination and posthuman trajectories. Deleuze was wondering about the political outcomes of Foucault's notion of biopolitics, 'had he not trapped himself within the concept of power relations?'

(1988a: 94). As a matter of fact, the same question could be addressed back to Deleuze. The paradigm of control (as it emerged also in the Heideggerian activism of Tiqqun, for instance) can be easily transform into a paradigm of victimization and victimizing posthumanism.

As Wendy Chun recognizes:

Deleuze's reading of control societies is persuasive, although arguably paranoid, because it accepts propaganda as technological reality, and conflates possibility with probability . . . This is not to say that Deleuze's analysis is not correct but rather that it – like so many other analyses of technology – unintentionally fulfills the aims of control by imaginatively ascribing to control power that it does not yet have and by erasing its failures. Thus, in order to understand control-freedom, we need to insist on the failures and the actual operations of technology. We also need to understand the difference between freedom and liberty since control, though important, is only half of the story.

Chun 2008: 9

The notion of metadata society aims to leave the potentialities open and to suggest alternative and more complex architectures of knowledge. Such infrastructures of metadata can be used against political control in a different way.² As Guattari wrote in his 1989 classic *Cartographies Schizoanalytiques*:

With the temporality put to work by microprocessors, enormous quantities of data and problems can be processed in minuscule periods of time, in such a way that the new machinic subjectivities keep on jumping ahead of the challenges and stakes with which they are confronted.

Guattari 2012: 11

Control is not the only possible episteme of the *dividual* – the episteme of the post-human *condividual* is yet to be invented.

See also Anthropocene Observatory; Algorithm; Altergorithm; Digital Citizenship; Networked Affect; Leaks and Stings

Notes

1. The terms *condividual* and *condividuum* originate from Deleuze and Guattari's *dividuals*. They were first introduced and employed by the project of cultural jamming Luther Blissett in 1995. See Marco Deseriis, *Improper Names: Collective Pseudonyms from the Luddites to Anonymous* (Minneapolis: University of Minnesota Press, 2015). For a genealogy of the concept of *dividuum* see also Gerald Raunig, *Dividuum: Machinic Capitalism and Molecular Revolution* (Los Angeles: Semiotexte, 2016).
2. See for instance the project PATTRN by Forensic Architecture (<http://pattrn.co>): 'data-driven, participatory fact mapping for conflict monitoring, human rights, investigative journalism, research and analysis' [accessed 18 April 2017].

Matteo Pasquinelli

METAMODERNISM

A term with a long and surprisingly heterogeneous history (Vermeulen and van den Akker, 2015), I develop metamodernism here along the lines Robin van den Akker and myself have suggested since the late 2000s (2010, 2011): as a heuristic label – as opposed, emphatically, to a programme or philosophy – to describe the 'structure of feeling', to borrow Raymond Williams' terminology (1977), trailing in the slipstream of the return of History – the whole gamut of geopolitical, financial, technological, demographic and perhaps especially ecological upheavals that have occurred at

the onset of the twenty-first century. My concise account here consists of three parts: the end of postmodernism; post-postmodern expressions in arts, culture and politics; and the metamodern turn.

Though, judging from the textbooks, there is still little consensus about what postmodernism entails, exactly – the cultural logic of late capitalism, an emancipatory program, a stylistic register characterized by eclecticism, parataxis and pastiche, a philosophical debate calling into question the universalizing truth claims of nineteenth-century academia, or a fashion fad, among many others – many now believe that the conceptual category describes a phenomenon of the past. From Josh Toth's *The Passing of Postmodernism* (2010) to Alan Kirby's 'The Death of Postmodernism and Beyond' (2006) to the V&A's 2012 obituary *Postmodernism: Style and Subversion, 1970–1990*, there is a sense that the postmodern idiom, if not entirely outdated, is no longer sufficient to describe contemporary culture. As Linda Hutcheon, one of the most prescient critics of the postmodern, wrote in the postscript to *The Politics of Postmodernism*, 'Let's face it: it's over.'

The postmodern moment has passed, even if its discursive strategies and its ideological critique continue to live on – as do those of modernism – in our contemporary twenty-first-century world ... historical categories like modernism and postmodernism are, after all, only heuristic labels that we create in our attempts to chart cultural changes and continuities.

2002: 165–6

Given the confusion around the notion of the postmodern, the reasons for its perceived outdatedness depend on whose account you read. For Kirby (2009), it should be sought in the digitization of

culture. Others, like Nicolas Bourriaud (2009), locate it in the creolization of the arts. Gilles Lipovetsky's suggestion for why postmodernism is out of vogue is hyper-consumption (2005). There are those who point to 9/11 and those who focus on the financial crisis, those who single out climate change and those who look at post-colonialism, object-oriented philosophy and the New Sincerity, the birth of the cyborg and the afterlife of humanism. In some cases, postmodernism is considered old hat because culture has changed beyond recognition; in others, it is said to be inadequate because its tropes have intensified (see for instance Nealon 2012). Many scholars reject the notion of the postmodern enthusiastically (because they take issue with its supposed moral relativism, or with pastiche, or with poststructuralism; see Eshelman's plea for performatism (2008), as well as, more recently, the programmatic philosophies of speculative realism and accelerationism), but there are also plenty who abandon it grudgingly.

The notion of metamodernism has been developed – neither reverentially nor reluctantly – in dialogue with Fredric Jameson's definition of postmodernism as the cultural logic of late capitalism (1991). Here, what is meant by postmodernism is the 'senses of an end' that by the late eighties had come to permeate (western) politics and culture, from Thatcher's TINA to punk's 'no future', from Andy Warhol's obsession with surfaces to Foucault's dismissal of psychoanalysis, the eclecticism of Robert Venturi's architecture to Fukuyama's End of History, *Body Heat's* pastiche to the disintegration of the Cartesian subject. In this context, the metamodern structure of feeling can be described as the belief that this 'end' was called all too hastily and/or opportunisticly. Ranging from the popularity of David Foster Wallace's essays on earnestness to

the prevalence of manifestos in the arts, from the hopefulness of the Arab Spring and the Indignados to the radicalization of right-wing politics, from book titles like the *Rebirth of History* (Badiou 2012) and *The Revenge of History* (Milne 2015) to sustainable architecture, the so-called 'quirky' cinema (MacDowell 2012) to speculative realism, there is a widespread feeling that this farcical play we call the human condition has not even finished its first act – even if no human subjects are to participate after the interval.

A contraction of metaxy (the word Plato uses to describe the ontological irreconcilability of Eros, who was part mortal, part divine)¹ and modernism, metamodernism can be situated at once beyond, with and betwixt modernism and postmodernism. The argument is that the positions taken by the likes of Foster Wallace, the Indignados or speculative realism oscillate between strategies we often associate with the modern – such as ideology, Reason and the subject but also Bauhaus – and tactics linked to the postmodern – the end of the meta-narrative, relativism and eclecticism; they hark back to past notions of futurity so as to rehistoricize the posthistorical present. It would be a mistake therefore to describe metamodernism simply as either an uncritical continuation of the modernist project or an indiscriminate rejection of postmodern positions; rather it is a pendulum swinging back and forth between the two, one that sways increasingly erratically, increasingly uncontrollably: a tragic desire, an informed naivety, a pragmatic utopianism, or, in the case of much right-wing extremism or indeed social media mobs, a relativism that is also, simultaneously, absolutist, occupying regardless whatever position is opportune on the day but with the ideological certainty (and moral self-righteousness) of the fundamentalist. The concept van den Akker and myself have

suggested to describe this epistemological *contradictio in terminis* is 'as-if', a comparison (*as*) with a conditional (*if*), which most scholars, foremost among them perhaps Eva Schaper (1964–5), have ascribed to Kant, specifically to his third critique and writings on history but which applies to his whole oeuvre: the interpretation of phenomena *as if* they were x, even though the interpreter understands they may well be, and must indeed allow for the possibility that they are y or z. In other words, the modernisms postmodernism responds to are not necessarily, or ever, representative of all modernisms – in any case, as Lyotard's later writings also imply, they refer rather more often to Hegel's *Indikativ* than to Kant's *Konjunktiv* II. Metamodernism, by questioning whether history, art or whatever can with certainty end at all, given that they may have always already been y or z, appears to infer, appreciatively or critically, the modernism of the latter.

Though by all accounts trailing in the slipstream of the technological revolutions, geopolitical instability, financial crises and ecological devastation shifting gears in the mid-2000s, the metamodern sensibility was not powered by these historical kickstarts – accelerated, definitely; sustained, presumably, but not necessarily powered. Indeed, many of the practices and phenomena considered metamodern preceded these events by years or even decades, the consequences of individual, regional or generational impulses more than anything else.

See also Art; Contemporary, the; Ecopathy; Gaga Feminism.

Note

1. See Eric Voegelin (1989) for a thorough analysis of the notion of metaxy.

Timotheus Vermeulen

METASTABILITY

The philosophy of Gilbert Simondon (1924–89) is a key resource for current theorizing that questions the idea of the human as a privileged and stand-alone entity. By offering an altogether new theory of what constitutes an ‘individual’, he effectively challenges the basic tenets of Western logic and metaphysics, and with that, commonly assumed ideas about unity and identity. At the same time, Simondon’s philosophy has inestimable value as a corrective to contemporary approaches that, taking inspiration from cybernetics and information theory, tend to conflate living being and technical being on the assumption that there are no significant differences between humans and other intelligent systems such as machines.

Instead of talking about substance, matter and form, Simondon conceives of the individual in terms of systems and states – with special emphasis on the notion of ‘metastability’, which he borrows from thermodynamics. The problem with the received ways of conceiving the individual, whether from the substantialist viewpoint or from the hylomorphic viewpoint, is that there is no proper place for the process of individuation; that is, for the genesis of the individual. Classical notions of unity and identity, which conceive the individual either as a self-identical entity or as a conjunction of form and matter, prevent us from understanding ontogenesis, the becoming of being. As Simondon points out, the ancients, who in their theorizing recognized nothing but instability and stability, movement and rest, had no clear conception of metastability. For them, being excludes becoming because ‘being was implicitly presumed to be in a state of stable equilibrium at all times’ (1992: 301).¹ The reason why the ancients failed to recognize the existence of states with

relative permanence was that, as Simondon explains, they did not have an appropriate physical paradigm to help them make sense of such states. ‘In order to define metastability, it is necessary to introduce the notion of the potential energy residing in a given system, the notion of order and that of an increase in entropy’ (ibid.: 302). Only then is it possible to get a firm grasp of the becoming of being ‘as it doubles itself and falls out of step with itself [*se déphaser*] in the process of individuating’ (301).

Simondon’s notion of the individual challenges established ideas about oneness and sameness in two respects: first, the individual is never completely one with itself, and second, it is not the whole being but merely a phase in the ongoing genesis of being. The individual, therefore, has only a relative reality; there is always more to being than what is made to appear in a single act of individuation. To come to terms with this ‘more’, the non-identity of the individual with itself, Simondon introduces the notion of the ‘preindividual’. The idea that becoming happens in phases, and that the individual has only a relative existence as an expression of one of these phases, presupposes the existence of a preindividual state. As Muriel Combes succinctly puts it:

Before all individuation, being can be understood as a system containing potential energy. Although this energy becomes active within the system, it is called potential because it requires a transformation of the system in order to be structured, that is, to be actualized in accordance with structures. Preindividual being, and in a general way, any system in a metastable state, harbors potentials that are incompatible because they belong to heterogeneous dimensions of being.

Combes 2013: 3–4

This is why preindividual being – conceived as a metastable system rife with potentials

– is ‘more-than-one’ (Combes 2013: 5). A paradigmatic example of a preindividual regime that goes beyond unity is found in quantum mechanics, with the wave-particle duality, which Simondon understands as ‘two ways of expressing the preindividual state by means of the various manifestations exhibited when it appears as a preindividual’ (1992: 304). In contrast to a stable equilibrium, a metastable equilibrium is conflictual – but the ‘conflict’ in question is a productive one: it is the incompatibilities and tensions in the preindividual state that make individuation possible, by inducing modifications in the system parameters that break the equilibrium and allow the system to dephase (that is, to change its state). Simondon expands on the conflictual nature of metastable systems:

Individuation must therefore be thought of as a partial and relative resolution manifested in a system that contains latent potentials and harbors a certain incompatibility with itself, an incompatibility due at once to forces in tension as well as to the impossibility of interaction between terms of extremely disparate dimensions.

Simondon 1992: 300

Individuation, then, is conceived as process of mediation that brings into communication disparate elements that, in the preindividual system, belonged to ‘different orders of magnitude’. Simondon explains:

At the same time that a quantity of potential energy (the necessary condition for a higher order of magnitude) is actualized, a portion of matter is organized and distributed (the necessary condition for a lower order of magnitude) into structured individuals of a *middle* order of magnitude, developing by a mediate process of amplification

1992: 304

Thus understood, individuation is a process that sustains potentials by making

them compatible. The resulting individual does not exhaust the potentials in the preindividual state. Instead, and due to the sustained potentials, the individual contains an inheritance of preindividual reality. This means that even individuated being retains the characteristic of being more-than-one: ‘The preindividual nature, which remains associated with the individual, is a source of future metastable states from which new individuations could eventuate’ (1992: 306). The individual, in other words, retains its capacity to fall out of step with itself, and to undergo a development that proceeds by ‘quantum leaps through a series of successive [metastable] equilibria’ (ibid.: 301).

Simondon’s theory of individuation, with its emphasis on conflictual systems and their discontinuous progression through a series of metastable states, allows for a new understanding of unity and identity that breaks with the classical laws of thought, first by granting pre-eminence to the process of individuation over the individual, and second by recognizing that individuation produces more than the individual. There is a unity that is more than one, and there is an identity that incorporates elements other than itself. The individual as Simondon conceives it is not opposed to difference but is born out of tensions and sustained by tensions – it even evolves thanks to these tensions. As Simondon conceives it, being has a ‘transductive unity’ (1992: 311). ‘Transduction’ is at once a metaphysical and logical notion, which expresses the sense of physical, organic and psychic processes, and beyond that, within the field of knowledge, ‘the actual course that invention follows’ (replacing here the notions of deduction and induction) (ibid.: 313).

This, however, should not be taken to mean that all these processes are the ‘same’ (in the old sense of ‘sameness’ that excludes significant differences). Rather, he

approaches these processes in an ‘analogical’ manner, maintaining that transductive operations are at play in all of them. Yet there are differences. Whereas physical individuation is ‘concentrated at its boundary with the outside world’, there exists within living being ‘a more complete regime of *internal resonance* requiring permanent communication and maintaining a metastability that is the precondition of life’ (1992: 305). Living being, therefore, ‘is not only the result of individuation, like the crystal or the molecule, but is a veritable theater of individuation’ (ibid.). Moreover, even if Simondon, in his consideration of technical individuation (see *Technicity*), maintains that technical being evolves through a process of ‘concretization’ where it gradually loses its artificial character and becomes more and more like a living being, he criticizes cybernetics by dismissing their ‘initial postulate about the identity between living beings and auto-regulated technical objects’ (Simondon 2012: 59).² For, even if technical objects tend toward concretization, they differ from living beings that are ‘concrete from the start.’³ Living being is ‘not at all the machine to which it is assimilated functionally by the model of cybernetic mechanism’ (1992: 306). In a similar vein, he refuses the reductionism implied in the probabilistic notion of information:

[T]he notion of information must not be associated with that of the signals or supports [*supports*] or vehicles of information, as the technological theory of information tends to do, derived by abstraction as it is in the first instance from transmission technology.

1992: 316

Simondon, in contrast, sets out to save information as meaning, which for him has to do with expression of being as conceived in his theory of individuation. Information is ‘that by which the incompatibility within

the unresolved system becomes an organizing dimension in its resolution’ (1992: 311).

In conclusion, to return to the issue of the relation between humans and intelligent machines, an idea could be not to understand this relation by reducing one to the other, but rather, to understand this relation as an amplifying coupling of technics and life in Simondon’s sense, that is, as a mediation across disparate dimensions that releases new potentials.

See also AI (Artificial Intelligence); Naturecultures; Negentropy; Ontological Turn; Posthumanism; Process Ontologies; Technicity.

Notes

1. From the English translation of the introduction to Simondon’s doctoral dissertation, *L’individuation à la lumière des notions de forme et d’information*, which develops his theory of individuation. While defended in 1958, the dissertation was published only in 1964 (the first part) and in 1989 (the second part). Both parts are published in Simondon (2005).
2. Gilbert Simondon, *Du mode d’existence des objets techniques* (Paris: Aubier, 2012), p. 59: ‘postulat initial de l’identité des êtres vivants et des objets techniques auto-régulés.’ This work is Simondon’s seminal treatise on technology, which was published as a complementary thesis to his main doctoral thesis. First published in 1958.
3. ‘concrets dès le début’.

Aud Sissel Hoel

MONSTER/THE UNHUMAN

O Monster, Where Art Thou?

The monster or the unhuman is not a negation but a non-relation, which is not

to say that it is immune to situational interaction or relationality, but instead to highlight that the monstrous is a rejection of the stifling non/human binary entrapment.¹ The monster is not an abstract conceptualization, but an instantaneous, enacted entanglement. It is a transitory enmeshed alignment situated in the immediacy of praxis. The monster is thus a continuous, unstable project of both disassembly or ex-figuration and of unsanctioned coupling; concrete and relational, it is a practiced hybridity of form which eludes conceptual formalization, existing as it does as a state of contestation and troubling – shifting, adjusting, and dissolving at whim.

The essentialist spell of subject formation is undone not merely by the bringing to the fore of its latent foil, the anti-human, its malingering other without which the liberal subject, the (hu)man, would be unable to constitute itself, but through a destabilization of the entire notion of congealed subject-formation in the first place via a repudiation of its inescapability. The unhuman is thus not a simplistic negation of the human, but a polymorphous, monstrous aberration of the unitary, humanistic and anthropocentric subject form in its entirety. Let us now turn to a brief analysis of how the monster manifests itself in the dissident writings of Max Stirner, before examining a case study of a modern-day monster: the data pirate.

Monstrous Unions

A *union of egoists* – a free-form, self-constructed, voluntary relationality formed amongst cognizant actants – is a notion introduced in the nineteenth century by Max Stirner via its juxtaposition to the liberal project of subject construction. The State and the Church, for Stirner, are both interested in imposing the

imprisonment of subject formation by congealing a concrete form dubbed *Man*, marked by involuntary permanence, ‘so the State betrays its enmity to me by demanding that I be a man ... it imposes being a man upon me as a duty. Further, it desires me to do nothing along with which it cannot last; so its permanence is to be sacred for me’ (Stirner 1845b). The creation of State-based communities, with moral, civic subjects constitutes an immobile fettering which denies entities the possibility of fostering a personalist self-actualization, that is to say egoism, ‘the State is a society of men, not a union of egos ... therefore we two, the State and I, are enemies. I annihilate it, and form in its place the Union of Egoists’ (ibid.). The union of egoists thus consists of free interactive agents who voluntarily decide to engage with, or conversely abstain from, one another, as juxtaposed with State-borne subjects, Men, whose very creation and engagement is modulated by dictated designation inscribed in legal and social codas.

As Stirner points out, however, the creation of a standard idea of ‘Man’ in turn logically implies the existence of its negative, the un-man (e.g. ‘*man* stands against *men*, or, as men are not man, man stands against the un-man’ (1845b)). This latter figure being that which looms at the edges of civilized society, which must always be reined in and kept at bay via the imposition of State/Church-sponsored moralism, as manifested through the threat of demonic forces in the church or the ruthless law breaker by the State. The spell of essentialism is thus here undone by bringing to the fore its latent foil, its malingering other without which the liberal subject, Man, would be unable to constitute itself. Stirner’s active introduction or forefronting of the unman into the discourse of subjectification serves to destabilize said

subject formation via a repudiation of its inescapability; or in other words, the unman offers a way out of the confines of humanist subject formation (Newman 2001a: 67, 2001b: 309–30). That this simple logical foil exists as a latent shadow in every discussion of the liberal subject is also what creates the possibility of a rejection thereof.

And yet the monster is not mere negation, for a negation functions via, and thus is dependent on, the invocation, implicit or otherwise, of its dialectical converse – Man (Stirner 1845b). Instead, as Feiten points out (2013: 129), Stirner ultimately rejects the un/man binary altogether: ‘[I] shall not ask henceforward whether I am man or un-man in what I set about; let this spirit keep off my neck’ (1845b)! In place of the un/man, Stirner postulates the egoist; and in place of the State, composed as it is of men, there is the union of egoists. For Stirner, the figure of the egoist functions as a signifying other which serves to highlight the possibility of *things not as they are*, of the existence of other formulations of social cohesion aside from the State, namely a union of egoists freely interacting as self-construction as opposed to those under the weight of imposed subjectivity, the oppression brought on by being moral men.

Going further, however, it is here pivotal to elucidate that the term Stirner uses for what is literally translated as the ‘unman’ – *unmensch* – also means *monster* (Landstreicher 2011). The egoist is thus not a simplistic negation of the (hu)man, but a polymorphous, monstrous aberration of the subject form. Crucially, Haraway deploys a similar vocabulary, observing that ‘[c]yborg unities are monstrous and illegitimate’ (1991), further situating Stirner as partaking in the tunnelling towards the posthuman. The ‘un-man’ is thus no mere negation, but a disruption of

the stifling dichotomy of State-produced subjectivity itself.

Realization, not Conceptualization

But how, concretely, could monsters and their unions come about? A common critique of Stirner made both in the nineteenth century (Stirner 1845a) and in the twentieth (Newman 2010a: 160, 2010b: 43), is that the underlying conceptualization of monstrous couplings is left unsatisfactorily vague. A notion of egoist monsters congregating and enacting realities disjointed from State-sanctioned subject formations is tantalizing indeed, but how may it actually be manifested? Stirner is tentative on the matter, albeit precisely to preclude the very trap of *a priori* conceptual congealment which the monster strives to escape; that is to say, Stirner intentionally avoids a prolonged blueprinting of the union of egoists precisely to avoid the possibility of the monsters’ entombment into a prescriptive and oppressive enclosure of premeditated form and function.

In lieu of a conceptualization of the monster, Stirner instead points to the fact that hundreds of potential monstrous unions happen daily, citing a myriad of examples ranging from children coming together on the street to engage in an impromptu round of play; to falling in love (1845a). Thus we here see the union of egoists identified as a lived experience, characterized by the underlying facets of voluntary association and self-organization: ‘the union of egoists is not a concept but a name used to refer to each of the particular instances of individuals acting together’ (Landstreicher 2012). We can therefore read the union of egoists not as a concrete conceptualization, a recipe for congealment of subjectivity, but as a *relational actualization*, or an *assemblage*. The monstrous union of egoists is neither a theoretical tool nor a

conceptual model for subject construction and interaction, but a practised hybridity of form which eludes conceptual formalization, existing as it does as a bit of polymorphous code; shifting, adjusting, and dissolving at whim, predicated upon an imminent potency of dissolution, an always-unbinding impermanence (Stirner 1845b).

Piratical Monsters

Monstrous couplings, in their rejection of State-sanctioned subjectivity, pave the way for the potentiality of ‘bringing disparate groups together to “unionize” on a foundation of shared criminality’ (Antliff 2011: 162). One such modern-day manifestation may perhaps be observed in situational data piracy – those monsters who come together to engage in the contestation of so-called intellectual properties by engaging in the illicit unbridled dissemination of information via the *unauthorized* digital distribution of various outputs of cultural production.

Notably, there is no singular, monolithic figuration of the data pirate; instead, ‘greatly varied and contrasting environments create very different types of pirates and many different piracy scenes’ (Craig 2005: 160). There is thus a plurality of piracies, spanning geo- and cyber-spatial localities and interactivities, with ‘piracy itself [being] difficult to pinpoint’ (Lechner 2015: 21). Monstrous pirate unions are formed of those who – notably through their actions, not through abstract conceptualization – reject the authoritarian designation of the author function as enforced via the technologically-mediated and State-backed enactment of various intellectual property laws. Hence, the self-actualization of the monsters composing these unions need not come from developed manifestos writing about their disdain for said strictures, for it instead stems from the enacted practice of piracy

alone. Data pirates come together to engage in the free promulgation of said data due to an explicitly expressed interest in unshackling the fetters of intellectual property – that the interest may be expressed *in action* as opposed to via ancillary written pronouncement thereof is irrelevant to the fact that said tacit proclamation is always-already self-contained in the act alone.

Adopting ever-new means of data dispersal and modes of content protection circumvention, once discrete acts of piracy are complete, pirate bands may then disband, while other groups coalesce in their own turn, and so on. Given that any number of release groups – temporary conclaves of data pirates – engaging in their monstrous unions to freely disseminate cultural knowledge exist at any given time, monsters are hence not merely all around, but the piratical monster is instead an all-pervasive permeation which saturates and violates the coercive operation of statist subject-formation. Unions of piratical monsters, in other words, constitute an ever-ongoing, multifarious project of both disassembly and unsanctioned coupling, eschewing the stagnation of stasis at all costs in favour of unbridled dissemination. Enacted as a practice of relation, that encompasses its resistance in the act itself, the monstrous, unhuman coming together of the union of egoists or data pirates are thus marked by monstrous indeterminacy, and thus by a vibrant potentiality that is devoid of prescribed modes of subjectivity.

See also Bodies Politic; Critical Posthuman Theory; In/Human; In-Human; Zombie.

Note

1. Portions of this entry have previously appeared in the author’s doctoral dissertation (Mazurov 2015).

Nikita Mazurov

MULTISPECIES

Rather than simply celebrate the fact of multispecies mingling, it is better to begin with the question: *cui bono* (who benefits) when species meet? Creatures once confined to the realm of *zoe*, or bare life which is killable – have started to appear alongside humans in the domain of *bios*, with legible biographical and political lives in the social sciences and the environmental humanities. Rather than make other kinds of critters count only as conscious agents, networked actors, intentional communicators or ethical subjects, the field of multispecies studies assumes that other organisms do not have to show their human equivalence. The notion of the ‘non-human’ is like ‘non-white’ – implying the lack of something.

Departing from ‘the question of the animal,’ the polemic by Jacques Derrida arguing that ‘the human–animal distinction can no longer and ought no longer be maintained,’ the field of multispecies studies also engages with ‘the question of the fungus’ and ‘the question of the plant’ (Derrida 2008). Fungi illustrate ‘practices that thrive in the “gap” between what is taken as wild and what is taken as domesticated,’ according to the Matsutake Worlds Research Group (2009). ‘Thinking like a fungus’ opens up questions like: ‘Who is doing the domesticating? And to what end?’ *Plant-Thinking*, the recent book by Michael Marder, regards plants as ‘collective beings,’ as ‘non-totalizing assemblages of multiplicities, inherently political spaces of conviviality’ (2013).

Multispecies studies involves practising the art of noticing; it involves passionate immersion in the lives of others. In an era when many posthuman thinkers have turned their attention to global climate change, an era when the agency and action of *anthropos* has been scaled up to embrace

and endanger the entire planet, others are turning to the *topos* of territory, soil and city. Multispecies ethnographers and artists are following Donna Haraway, who insists: I am a creature of the mud, not the sky. Agitating against Anthropocene discourse, multispecies studies involves writing and making culture in a mode that is less anthropocentric than prevailing trends. In blasted landscapes that have been transformed by multiple catastrophes, ethnographers and artists are illuminating modest sites of biocultural hope.

Timothy Ingold has recently suggested that we abandon the multispecies idiom since the notion of *species* itself is a human construct. ‘Only in the purview of a universal humanity,’ he maintains, ‘does the world of living things appear as a catalogue of biodiversity, as a plurality of species’ (2000: 217). Paying clear attention to the ebb and flow of agency in multispecies worlds reveals that humans are not alone in our practices that group kinds of life on the basis of similarity and divide others on the basis of difference. Diverse organisms engage in processes of recognition, differentiation, and classification – bringing themselves and others into being as ‘species’. In other words, species emerge as entangled agents *become with* one another in common worlds. As beings rediscovered each other in intergenerational dances, species persist across time and space. Species also sometimes *become beside themselves*, to paraphrase Brian Rotman (2008), they are intermittently present to themselves, becoming multiple and parallel, with glee and dissolution.

Species involve a multitude. Emerging findings about microbial companion species give a new twist to Annemarie Mol’s suggestion that bodies are ‘an intricately coordinated crowd’ (2002: viii). If species sometimes appear to be in isolation, perhaps

it is just because of the limits of our own epistemologies and practices. Joe Dumit's microbiopolitical dictum states: 'Never think you know all the species involved in a decision. Corollary: Never think you speak for all of yourself' (2008: xii).

See also Biological Arts/Living Arts; Animism (Limulus); Epigenetic Landscape; Non-human Agency; Anthropocene and Chthulucene; Kin; Symbiogenesis.

Eben Kirksey

MULTIVERSE

The multiverse is a crucial notion in the frame of posthumanism and new materialism, representing, symbolically and materially, the ultimate decentralization of the human. Its relevance consists in deconstructing the possibility of any epistemological or ontological centre, not allowing for any type of centrism (from anthropocentrism to universe-centrism). On one side, it stands as the next step in the human revision of its spatiotemporal location, which, in the Western history of Astronomy, first posed the Earth at its centre, according to the Ptolemaic geocentric model. Then, shifting to the heliocentric model based on the contributions of Nicolaus Copernicus (1473–1543), it located the Sun at the centre, to later realize that our solar system is part of a galaxy, and that this galaxy is one among many, in a universe which, according to current scientific research (from quantum physics to the fields of cosmology and astrophysics), may be part of a multiverse.¹ The notion of the multiverse can be approached both as a metaphor and as an actual configuration of matter (Kaku 2005; Greene 2011). As a material hypothesis, it may unconceal a possible physical make-up of the universe

we are part of; it entails that matter, while constituting this universe, would also be actualizing an indefinite number of other universes, in a process of both relationality and autonomy. As a metaphor and a thought experiment, the notion of the multiverse greatly expands a speculative perception of the self, by relating the individual to other realms of existence which may go beyond a one-dimensional analysis. The notion of the multiverse can also be approached from a scale perspective of bodies within bodies: for instance, from the microscopic level of the bacteria living in our internal organs, the human body itself can be seen as a universe; that specific human body, within the context of the human species, can be considered a universe within a multiverse.

Here, it is important to note that, even though the notion of the multiverse radically deconstructs any dualistic paradigm, the current scientific perceptions of the multiverse are actually conceived through the self/others, here/there analogies, in an approach which resonates with traditional humanism, based on the necessity of the others as reverse mirrors of the self. On one side, these other universes are depicted to be so far that they will never be reached (Tegmark 2010); on the other, they are investigated through the anthropocentric desire of postulating different worlds with 'people with the same appearance, name and memories as you' (ibid.: 559). The double is often contemplated as a possibility within the scientific literature related to the multiverse and is at the very core of Hugh Everett's proposal of the many-worlds interpretation (1956), which focuses on the human-centric fascination with the idea of universes in which there might be other versions of 'me', in a re-inscription of the multiverse within the frame of egocentric assimilations, instead of a situated acknowledgment of ontic differences.

If the scientific perception of the multiverse does not fully represent the posthuman understanding of it, a historical outlook on the notion of the multiverse in philosophy may offer some other perspectives. The term 'multiverse' itself was coined by philosopher William James (1842–1910), in his essay 'Is Life Worth Living?' where he stated: 'Visible nature is all plasticity and indifference, a [moral] *multiverse* [my italics], as one might call it, and not a [moral] universe' (1895: 10). As an extensive frame,² the multiverse can be traced in ancient philosophy, for instance, in the cosmological approaches of the Atomists and the Stoics (Rubenstein 2014). Within the context of modern philosophy, the notion of possible worlds dates back to the work of Gottfried Wilhelm von Leibniz (1646–1716), specifically his 'Essays of Theodicy on the Goodness of God, the Freedom of Man and the Origin of Evil' (1710), where he claimed that the actual world is the best of all possible worlds.³ Such a view, which does not necessarily imply the actual existence of other worlds, has important antecedents in the reflection on possible worlds found in medieval⁴ theories of modality⁵ (cf. Knuuttila 1993). Within contemporary philosophy, the first thinker to fully revisit the notion of the multiverse was David Lewis (1941–2001) who, in 'On the Plurality of Worlds' (1986), advocated for a modal realism according to which this plurality of worlds have no relation with each other, neither spatial, temporal nor causal.

Instead of parallel dimensions ontically separated from each other, the posthuman understanding of a multiverse (Ferrando 2013) can be envisioned as generative nets of material possibilities simultaneously happening and coexisting, in a material dissolution of the strict dualism one/many, in tune with a relational ontology (Barad 2007). Neither monism nor pluralism by

themselves are feasible to sustain the ontic terms of the posthuman multiverse; both should be listed in order to disrupt the dualism one/many, thus avoid turning this discussion into the problem of the origins (is it a monism before being a pluralism, or a pluralism before being a monism?). The rhizome (Deleuze and Guattari 1980) offers numerous insights for a posthuman development of the multiverse, even though philosophically the two notions cannot be assimilated. For instance, the posthuman multiverse does not necessarily exclude the notion of a structure, but approaches it in a process-ontological way.⁶ In the frame of the multiverse, humans, as any other manifestations of being, can be perceived as nodes of becoming in material networks; such becomings operate as technologies of the multiverse, as modes of 'revealing' (Heidegger 1954), thus re-accessing the ontological and existential significations of technology itself. In such a frame, the multiverse can be perceived as a material and metaphorical path of self-discovery, once the self has been recognized as the others within.

See also Earth; Mattering; Ontological Turn; Process Ontologies; Posthuman Critical Theory; Terrestrial; Planetary.

Notes

1. It should be clarified that, in the words of cosmologist Max Tegmark, the multiverse 'is not a theory, but a prediction of certain theories' (2010: 558).
2. Here I would like to note that, within this frame, the multiverse includes, but it is not limited to, notions such as 'parallel dimensions', 'parallel worlds' and 'alternative realities'.
3. Such an optimistic view was famously satirized by Voltaire (1694–1778) in his *Candide; or, The Optimist* (1759).

4. For instance, Tim Wilkinson, in his article 'The Multiverse Conundrum' (2012), notes that during medieval times the question of whether God had created many worlds was sufficiently relevant for the Bishop of Paris, Étienne Tempier, to issue a series of condemnations in 1277 'to explicitly denounce Aristotle's view of there being only one possible world, which he thought to be at odds with God's omnipotence'.
5. Within this frame, the idea of possible worlds can be found in the works of Al-Ghazali (1058–1111), Averroes (1126–98), Fakhr al-Din al-Razi (1149–1209) and John Duns Scotus (1267–1308).
6. In this sense, the specific vibrations which, according to the String Theory (Randall 2005; Susskind 2006), would allow the coherence of each dimension of the multiverse, could be seen as a type of vibrational structure, even if not a definitive nor an essential one. It is important to note that, currently, String Theory is a mathematical model not yet supported by experimental evidence, and so it has been criticized for its lack of falsifiability (Woit 2007; Smolin 2006).

Francesca Ferrando

N

NATURECULTURES

The concepts of 'naturecultures' and 'natures-cultures' both denote the ontological priority of relatings over related beings and domains of being. Prioritizing relatings entails a perspective on the coming into being of bounded subjects, objects and domains such as the natural and the cultural. Priority is given to studying how, where and for whom boundaries are drawn. Bounded domains of being as well as the beings within them are said to be end results of complex relatings. In these relatings both boundaries between separate domains and individual beings come about as well as the relations among domains and the relations among beings emerge. More often than not such relations emerge as hierarchical. Therefore, nature(s)-cultures have to do with ontology, epistemology and ethics.

The genealogy of the concept of naturecultures differs slightly from the genealogy of natures-cultures. The first concept (naturecultures) is Donna Haraway's and stands in the tradition of feminist and anti-racist scholarship into technoscience and (or: as) everyday life. The term features prominently in *The Companion Species Manifesto: Dogs, People, and Significant Otherness* (Haraway 2003). The second concept of natures-cultures comes from Bruno Latour's book *We Have Never Been Modern* ([1991] 1993) and is based in science and technology studies as the anthropological study of 'laboratory life'

from an agnostic standpoint (cf. Latour and Woolgar [1979] 1986).

Haraway (2003: 2) writes in the opening section of *The Companion Species Manifesto*: 'In layers of history, layers of biology, layers of naturecultures, complexity is the name of our game.' And in addition to complexity, naturecultures are about emergence. The complexity of naturecultures points at the impossibility of separating domains such as history and biology in technoscience and everyday life alike. Any biological question has an immediate historical dimension and any historical issue is entangled with biological processes and phenomena. *The Companion Species Manifesto* explains this state of entanglement through the example of how dogs and humans relate on the West Coast of the United States. Both dogs and humans have played their part in histories of colonization and colonizing processes have affected dog-dog, dog-sheep, dog-human, human-human and many other relatings. All of these are still ongoing on the many entangled layers of history and biology in the twenty-first century (cf. DeLanda 2000).

We Have Never Been Modern presents Latour's theory of modernity as a process whose 'textbook version' has never happened in actuality. In actuality, any process of modernization is at least double:

Modernity is often defined in terms of humanism, either as a way of saluting the birth of 'man' or as a way of announcing his death. But this habit itself is modern,

because it remains asymmetrical. It overlooks the simultaneous birth of 'nonhumanity' – things, or objects, or beasts – and the equally strange beginning of a crossed-out God, relegated to the sidelines.

Latour [1991] 1993: 13

As an anthropologist of science and technology, Latour is invested in the study of the culture of technosciencelabs. This *culture* purifies its laboratory life as pertaining to the *natural* domain only. Latour demonstrates that this purification is a consequence of what his and Haraway's colleague Sharon Traweek (1988) calls a 'culture of no culture', the assumption that objectivity is at work and that gender, racism and other power dynamics are henceforth (or: naturally) kept at bay. Laboratories are assumed to be quintessential ivory towers. The point is, however, that 'All natures-cultures are similar in that they simultaneously construct humans, divinities and nonhumans' (Latour [1991] 1993: 106). In order to come up with a fully bounded human subject (the lab scientist), one needs to assume the messiness of the nature studied. And in order to study and capture messy nature as consisting of purely physical processes and phenomena, the scientist has simultaneously to assume a God's eye view and to rule out the processes and phenomena being of divine (i.e. immortal and uncapturable) nature.

Both Haraway and Latour study how nature and culture as bounded domains and the natural and cultural beings within these domains come into being and how this process is 'never finished, whole, simply there and original' (Haraway 1988: 586). Domains and beings do not pre-exist in nature(s)-cultures. What pre-exists in nature(s)-cultures are local 'collectives' (Latour [1991] 1993: 107), and the collectives as well as the relations within them are nothing but partial and temporal. In other

words, 'All collectives are different from one another in the way they divide up beings, in the properties they attribute to them, in the mobilization they consider acceptable. These differences constitute countless small divides, and there is no longer a Great Divide to take one apart from all the others' (Latour [1991] 1993: 107). The modern assumption of the Great Divide between nature and culture was not only ontologically false but also wrongdoing in its gendered, racialized and colonizing effects.

See also Cosmopolitics; Ecosophy; Econtology; (Material) Ecocriticism; Ecomaterialism; Medianatures; Terrestrial; Symbiogenesis.

Iris van der Tuin

NECROPOLITICS

As Michel Foucault (2003, 2008) outlined in his seminal work on biopolitics, the late eighteenth century saw the emergence of biopower, a new political economy of governmentality that included strategies focused on the systemic monitoring and regulation of living organisms. These included both human and non-human life-forms (see for instance agricultural techniques, water management and animal husbandry) and the management of populations through demographics, health and hygiene and modernized policing techniques. The bio-political management of early modern times was simultaneously pragmatic and instrumental. It introduced significant innovations into the notion of 'making live and letting die', which had been operational in the political economy of sovereignty since medieval times. Biopolitical governmentality marked a significant shift from the exercise of absolutist

power to 'let live and make die' by a singular sovereign over the hierarchically organized people. As Foucault put it, this new governmentality brought into being a modernized notion of the social body and of the subjects that embodied it. Biopolitics exerts social and political power over a new type of social body:

not exactly society ... nor is it the individual-as-body. It is a new body, a multiple body, a body with so many heads that, while they might not be infinite in number, cannot necessarily be counted. Biopolitics deals with the population, with the population as a social problem, as a problem that is at once scientific and political, as a biological problem and as power's problem.

Foucault 2003: 245

This population as the target of biopolitical management includes human and non-human agents, which in turn require modes of governance that combine the production of knowledge, the gathering of information and the invention and implementation of updated forms of monitoring and control. It is a mixed political economy where discourse and/as power produces a new type of social subject: the informed and willing citizen who self-implements the basic rules of law.

Now more than three decades after this insightful analysis, it remains 'urgent to assess the state of the theoretical debates on bio-power after Foucault, especially in terms of its legal, political and ethical implications' (Braidotti 2007). In a postcolonial, neo-imperial, neoliberal era in which technologies of destruction are not only more ubiquitous but are also more tactile (Mbembe 2003: 34), how to account for death and dying? Here, Achille Mbembe offers a supplement or corrective to Foucauldian notions of biopolitics in asking:

Is the notion of biopower sufficient to account for the contemporary ways in which the political, under the guise of war, of resistance, or of the fight against terror, makes the murder of the enemy its primary and absolute objective? ... What place is given to life, death, and the human body (in particular the wounded or slain body)? How are they inscribed in the order of power?

Mbembe 2003: 12

Life and death can, of course, not be separated and Foucault is the first to recognize it, going so far as to coin the term 'thanatopolitics'. In contemporary critical theory, biopolitics and necropolitics are not opposites but rather two sides of the same coin (Braidotti 2007; Mbembe 2003). They function like bifocal lenses that allow us to analyse power relations and examine the inextricable politics of life and death. Moving away from Foucault, necropolitics as a theoretical paradigm of analysis is concerned with how life is subjugated to the power of death (Mbembe 2003: 39). It asks who gets to live and who must die (or who must live and who is let die), in the contemporary political economy, thereby putting forth a different hypothesis from classical bio-power. Necropolitics uncovers the mechanisms whereby certain bodies nowadays are 'cultivated' or grown for the purpose of enhancing life and (re)production, while others are marked for or neglected into death. This shift of priorities constructs a new political economy based on constantly shifting boundaries between 'legitimate' subjects, indexed on life, and 'illegitimate' non-subjects, indexed on death.

Mbembe developed the concept of necropolitics to account for contemporary warfare and the various ways in which 'weapons are deployed in the interest of maximum destruction of persons and the creating of *death-worlds*, new and unique forms of social existence in which vast

populations are subjected to conditions of life' (Mbembe 2003: 40). These death-worlds, which denote not only physical death but also social and political death, affect entire populations, 'conferring upon them the status of *living dead*' (Mbembe 2003: 40). Similarly, slow death (Berlant 2007: 754), and slow violence (Rob Nixon, 2011), that is to say the physical exhaustion and diminishment or elimination of certain human and non-human populations, is a defining mark of the contemporary era.

More recently, this theoretical lens has been cogently applied within queer studies. Jasbir K. Puar (2007) made significant inroads into this now-growing field of queer necropolitics, interrogating which queer lives can reproduce life and which are left to die or are actively targeted for killing. In their recently published volume *Queer Necropolitics*, Jin Haritaworn, Adi Kuntsman and Silvia Posocco have pushed this paradigm further to show how the necropolitical can be read as 'a tool to make sense of the symbiotic co-presence of life and death, manifested ever more clearly in the cleavages between rich and poor, citizens and non-citizens (and those who can be stripped of citizenship); the culturally, morally, economically valuable and the pathological; queer subjects invited into life and queerly abjected populations marked for death' (2014: 2). In this volume, Foucault's and Mbembe's foundational thinking around biopolitics and necropolitics form the frame for deeper and more inclusive theoretical engagements, even as they are indeed queered.

Posocco underscores the connection between 'queer' and 'necropolitics': 'A consequence of the shift to a biopolitical and necropolitical theoretical register is precisely the detachment of "queerness" from one of its key referents, i.e., "gay and lesbian"' (2014: 84). In connoting "those

whose bodies are marked by racialized and sexualized technologies and produced through the *dispositifs* of race and sexuality for death, including social death, queerness has the potential to disrupt power structures and necropolitical networks (ibid.). Countering a focus on identity categories that might fall under the LGBT umbrella and challenging heteronormative, homonormative and transnormative assumptions and privileges, queering necropolitics illuminates the ways in which normativity is linked to neo-colonial and neo-imperialist processes and how the biopolitical and the necropolitical continue to exert life- and death-giving forces that have gendered and racialized dimensions.

Here, 'queer necropolitics' serves as a concept-metaphor to illuminate ambivalent processes of exclusion and inclusion, signifying how inclusion itself can also be viewed as deadly. As Haritaworn, Huntsman and Posocco incisively ask, 'If modern genders and sexualities (both dominant and subordinate) have been formed against constitutive Others whose primitivity is signified as perversity – and as a failure to perform proper gender binaries – what is at stake in seeing inclusion through or into these identities?' (2014: 3–4). A queer take on necropolitics further bolsters a framework for analysing life and death in an ever-increasingly neoliberal environment that folds in some previously othered others while marking other others for social extinction and social death (Patterson 1982), particularly those who experience intersecting forms of oppression, including racism, sexism, xenophobia, homophobia, transphobia, poverty, ableism and criminalization.

See also Bios; Bodies Politic; Geopolitics; Lampedusa; Neocolonial; War.

Christine Quinan

NEGENTROPY

'Thought interferes with the probability of events, and, in the long run, therefore, with entropy' (Watson 1930: 220–2, cited in Gleick 2011). The term 'negentropy' is born from this very situation. It was introduced by Schrödinger to distinguish biological systems from physical systems, and then generalized by Léon Brillouin into the domain of information theory. The perspective from which it will be discussed here situates the term in a certain problematic: the central paradigm of empirical experiments for science, and how the algebraic encryption of quanta in quantum physics interfere with non-probabilistic practices of measuring and counting in this paradigm. It is only by means of computations performed upon cyphers, the mathematical way of articulating *naught*, *nothing*, and the equational manners of balancing and completing by involving an encrypted negativity to all countable and measurable positivity, that probabilistic procedures are applicable: for it, the amount total of possible cases that are said to happen with probabilistically determinable likeliness must be finite and countable. Negentropy, in accordance with this, means negative entropy; it quantifies and makes countable the symmetrical negative of what the term entropy quantifies and makes countable. And entropy was introduced by Robert Clausius in want of 'a word for measuring a quantity that is related to energy, but that is not energy' (Gleick 2011: Kindle position 4313).

The problem that triggered postulations of an interference between thought and this particular quantity, entropy, must be understood before the background of the modern assumption that thought cannot affect the nature of its object, that it only affects the subjective understanding of this nature. While subjectivity depends

upon will or intent, natural forces are working determinably and gratuitously. We can formulate the analogue of this situation in terms of thermodynamics, insofar as the conversion of heat into energy, or energy into work, leaves the amount of heat (in this analogy playing the corresponding role to the nature of thought's object) unaffected: the total heat in a system remains constant, it merely passes from a hotter body to a colder one. At the same time, the second law of thermodynamics states that we cannot maintain an identity between heat and energy: 'No matter how much energy a closed system contains, when everything is the same temperature, no work can be done. It is the unavailability of this energy that Clausius wanted to measure' (4323). If heat is regarded as the manifestation of energy in a system, what is needed is a distinction between energy that is available for work, and energy that is not: the total amount of heat in a system may be constant, but it cannot be transmitted (from a warmer to a colder body) *without some work being executed*. Thus, the work done by natural forces in the thermodynamic setup cannot be regarded, after all, as 'gratuitous' in the same manner as it is in classical physics. Thermodynamic processes introduce a certain irreversibility into how we think of the conversion of energy from one form to another – 'Time flows on and never comes back', wrote Léon Brillouin (1949: 93) – which in the classical formulation of natural laws does not exist. When the modern paradigm for experimental science builds on the assumption that thought leaves the natural object it tries to conceive untouched, we can see now that it is exactly this assumption which appeared to break down – if physical processes involve a certain irreversibility, then the thinking that guides experiments plays in a manner that cannot so easily be

disregarded (Brillouin 2013 [1956]: Kindle position 2766).¹ In thermodynamic processes, energy is not lost, but it dissolves, it becomes 'useless.' This is the so-called 'expense problem' related to the irreversibility that applies to thermodynamics: the total amount of entropy (unavailability of energy for work) in all physical systems that can be studied empirically, experimentally, necessarily seems to increase. There is hence a source of disorder that applies to systems which 'seemed strangely unphysical,' that even 'implied that a part of the equation must be something like knowledge, or intelligence, or judgement' as James Gleick puts it in his recent study *Information: A Theory, A History, A Flood* (2011). He continues: 'Dissipated energy is energy *we* [emphasis added] cannot lay hold of and direct at pleasure, such as the confused agitation of molecules which we call heat' (Gleick 2011: 4355). Heat, it began to be clear, cannot be regarded as a force nor as a substance; it was not equivalent to energy. In the course of these developments, order – as the epitome of objectivity – acquired a certain amount of subjectivity; it entailed the eye of an observer: 'It seemed impossible to talk about order or disorder without involving an agent or an observer – without talking about the mind.' The above-used formulation, 'necessarily seems to increase,' expresses the controversiality of the second law as properly a law: it is based entirely on observation. Its philosophical or even cosmological implications, if it indeed is a 'law,' are immense: it introduces the inevitable (however distant) doomedness of all life on earth. Lord Kelvin was not the only well-established scientist who began to consider the consequences of the Universe's 'heat death,' as this doomedness was often referred to, for science. Resolutions to this problem began to be discussed in terms of the possibility of a

perennial kind of motion that began to be linked up with an interest in 'A perfect experiment' as one that is liberated from reasoning biased by the imperfect human faculties and their limitations (see *Maxwell's Demon*), and that arguably still haunts today's discourse on Artificial Intelligence.²

Let us jump now to the introduction of the negative entropy term. Erwin Schrödinger introduced it in *What is Life? Mind and Matter* (1944) as a term that allows us to expand the thermodynamic view from physics to biology, and thus also to relativize the implications of the physical view on the entropic universe. His point of departure is that animate systems are capable of metabolizing – of binding and incorporating temporarily – a kind of energy which he called 'free' in the sense of 'available,' or 'unbound.' Negentropy came to mean for Schrödinger a term that allows for quantifying life (but is not life) similar to how, for Clausius, entropy had come to mean a term that allows to quantify energy (without being energy). What used to be the energy-expense problem of work for Maxwell turned henceforth into a veritable economy in terms of import and export at work in the biosphere-world of thermodynamics – organisms import negentropy (quanta of life), as Schrödinger put it, and the more they do so the more they rid themselves of entropy (quanta of physical entropy now conceived as disorder, vis-à-vis an organism's temporary order/organization). The biological paradigm hence seems to contradict the second law of thermodynamics, and instead suggests that the metabolisms that make up the biosphere were in fact capable of decreasing rather than increasing the universe's entropy (the amount of work unavailable in the thermodynamic universe). The competing paradigms contrast like this: while thermodynamic physics relates the notion

of the universal to the universe (as, ultimately, one generic nature), biology relates universality to the specific natures of life forms. The physicalist notion of entropy, which in physics started out as denoting not *the absence of order* but *the virtual presence of order in any of its possible variations*, appeared, from the light of how biology's operational term of negative entropy can quantify life, as the relative absence of possible variations of order, or as the relative absence of order, or, in short, as 'disorder'.

It is this dilemmatic impasse between a certain monism and its pluralist counterpoint that the introduction of 'information' into the thinking about thermodynamic processes managed to abstract from, and to open up. I can only point briefly here to how this converting between information and energy works (see Brillouin 2013 [1956] for an extensive and detailed discussion). My core reference is the quantum physicist Léon Brillouin's adoption of Schrödinger's term of negative entropy in a manner that adds an algebraically quantized (cryptographic; see *Equation*) notion of information to this competition (between physics and biology). Brillouin conceived of information as a kind of currency that circulates in energetic expenditure (the import and export between systems), such that 'all these [macrological, quantum physical, VB] unknown quantities make it possible for the system to take a large variety of quantized structures, the so-called Planck's complexions.'³ With this, he began to postulate information science as the proper domain for quantizing how physical entropy (the virtual presence of any-order) and biological entropy (the absence of order, disorder) relate to one another without subjecting one to the other. Familiar with Turing's (1936, 1952), Shannon's (1948) and Wiener's (1948)

work on a mathematical notion of information and their dispute with regard to whether information can be measured in terms of the experimental entropy notion applied to physical systems (Shannon), or whether it needs to be accounted for in Schrödinger's terms of negentropy import in biological systems,⁴ Brillouin foregrounded the role of 'code' in such 'intelligent' computation and applied a *double* notion of negentropy and entropy – one to energy, one to information, under the assumption that both are linked by code: free (entropic) information to him is the maximum amount of *a priori* cases formulated in a code (any finite system of ordered elements like the Morse code, or the Roman alphabet, the periodic table in Chemistry or the DNA in molecular biology); the *a priori* cases can be computed by combinatorics, and in entropic information each of them must be regarded as equally likely to be actualized. Bound (negentropic) information is empirically measured information (in experiments with any particular manifestation of such a code). This inclination in the measurement of information allows for thinking of information as a kind of currency – an operator capable of establishing general equivalence, equivalence between observation and object – that circulates in the physical expenditure of energy in executed work as well as in the economy of import and export in a biological system's metabolism. 'We cannot get anything for nothing, not even an observation,' Dennis Gabor famously maintained (Dennis Gabor, MIT Lectures, 1951 cited in Brillouin, *ibid.*, position 3805). This very important law is a direct result of our general principle of negentropy of information, Brillouin elaborates, and '[I]t is very surprising that such a general law escaped attention until very recently' (*ibid.*). The acquisition of information in measurement

not only has a price, it also yields something: an increase in operational power; an idea that lends itself to develop a theory of how to quantize and hence quantify in like manner to energy (Clausius) and life (Schrödinger) something like ‘power of abstraction’ (see *Invariance*). It is this very idea, that information and energy articulate each other in an evolutionary dynamics and in mutually reciprocal manner, that the assumption of a perennial motion is no longer needed in order to proceed with the experimental paradigm in science. With Brillouin’s quantum-cryptographical theory of information, information can be transformed into energy (as electric current), and the other way around (through studying distributions of heat).

See also Artificial Intelligence; Architectonic Disposition; Invariance; Maxwell’s Demon.

Notes

1. In the measurement of any physical system, there are macroscopic and microscopic variables to be taken into account. The former refer to those quantities that can be measured in the laboratory, but they do not suffice to define completely the state of a system under consideration. Once a system is also considered in quantum terms of its radiation and absorption, there is an enormously large number of microscopic variables to be taken into account as well – and these one is unable to measure with accuracy as they regard positions and velocities of all the individual atoms, quantum states of these atoms or of the molecular structures, etc. ‘Radiation is emitted when a physical system loses energy,’ Brillouin explains, ‘and absorbed when the system gains energy’ (2013 [1956]: 2776).
2. In other words, as Serres asks, can we maintain that the second law of thermodynamics, which states the necessary increase in entropic energy, is itself universal – even though it is only a ‘Law’ based on experience? His answer is: ‘Yes, but not quite in the manner of Newton. It [the second law] is [universal], if I may say so, in non-continuous manner, from region to region. There are archipels, here and there, between them, islands of negentropy. In the limit case we have to deal with an antinomy in the Kantian sense, when one assumes for that instance the universe as being either open or closed. In any case, it is universal in its negation or better: in that which it excludes: perennial motion’ (Serres 1992 [1974]: 80; author’s own translation).
3. Brillouin: ‘There is no continuity at the atomic level but only discrete stable (or metastable) structures, and the atomic system suddenly jumps from one structure to another one, while absorbing or emitting energy. Each of these discrete configurations of the quantized physical system was called a “complexion” by Planck’ (2013 [1956]: 2762).
4. Shannon discusses the term negative entropy, but considers its distinction negligible for information as a mathematical quantity notion. It was Norbert Wiener, who via the work by John von Neumann, Alan Turing, Claude Shannon and Leo Szilard maintained against Shannon that negentropy is in fact crucial, rather than negligible for a mathematical theory of information; it is largely due to this dispute that up until today, different notions of mathematical information are in usage: (1) information as a measure for order in terms of entropy, and (2) information as a measure for order as negentropy; while both speak of information as a measure, and hence capable of establishing order, the two concepts of order are actually inverse to each other: order as negentropy means minimal entropy (maximal amount of bound energy, minimal of

free or available energy in Schrödinger's terms), while order as entropy means minimal negentropy (maximal amount of free and available energy, minimal amount of bound energy in Schrödinger's terms). Much confusion in the understanding of 'information' arises from this still today. Cf. Gleick 2011, around position 3956, although, it must be observed, Gleick does not seem to be aware of the implications of the issue at stake.

Vera Bühlmann

NEO/NEW MATERIALISM

The first explicit mentionings of 'neo-materialism' can be found in the work of Rosi Braidotti (2000) and Manuel DeLanda (1996). The Italian-born French feminist philosopher Braidotti and Mexican-American writer, philosopher and artist DeLanda are both heavily influenced by the French philosophy of Gilles Deleuze (and Félix Guattari). This does not make the new materialisms a strictly 'Deleuzian' or 'Deleuzo-Guattarian' field of interest and scholarship. The work of Deleuze (and Guattari) is not to be followed or copied. *What is Philosophy?* (Deleuze and Guattari [1991] 1994) calls precisely for its readers to create concepts in a geophilosophical sense. That is, in a state not of the armchair or the ivory tower, or of the agora (the marketplace of humanist ideas), but of an environmental position. Environmentalism traditionally embraces care for the planet and for future generations. The geophilosophy of *What is Philosophy?* proposes that and more, because not only are the earth and its inhabitants affirmed but the book is also comprised of an affirmation of the past and the future (as yet unknown). Such a philosophy cannot but be research-based and inter- and transdisciplinary in nature.

So, the new materialisms are mainly a research methodology for the non-dualistic study of the world within, beside and among us, the world that precedes, includes and exceeds us. The effects of putting one's scholarly trust in dualisms such as matter-meaning, body-mind and nature-culture are reductivizing as the environment (of a scholar) is never neatly organized or classifiable. Neo-materialist researchers want to know how dualisms emerge, in natural environments (from wilderness to city parks), in society at large (politics, the economy), in art and in media, and in activism. Just like that, neo-materialist researchers want to know, in the tradition of science and technology studies, how conclusions are drawn. At the end of the day 'conclusions' are a dualism of before and after, whereas life itself is – in the terms of the French philosopher Henri Bergson ([1907] 1998) – an unstoppable creative evolution.

New materialism is known for its dismissively critical response to the linguistic turn in the humanities and the social sciences. This image is, however, based on a reductive understanding of the neo-materialist movement in thought or one that leads to misleading interpretations of new materialist scholarship. Examples of both the foregoing statements may serve as an introduction to the new materialisms and to how they have come about.

The example par excellence of the new materialisms *not* having their origin in a dismissively critical response to the linguistic turn is comprised of the work of Australian sociologist Vicki Kirby. In her 1997 monograph, *Telling Flesh: The Substance of the Corporeal*, Kirby develops a neo-materialist theory of embodied subjectivity by closely reading the ambiguous science of the Swiss linguist Ferdinand de Saussure. Her 2006 book-length

commentary on Judith Butler develops a new materialism by zooming in on the productive tensions in the oeuvre of the American feminist and queer philosopher Butler whose work is generally seen as the keynote of feminist postmodernism. Finally, in her 2011 monograph, *Quantum Anthropologies: Life at Large*, Kirby initiates a distinctively Derridean new materialism, which can only be a contradiction in terms if the new materialisms are truly and canonically anti-linguisticist. Kirby writes that ‘if “there is no outside of text”, as (the Algeria-born French philosopher Jacques) Derrida suggests, then it is in “the nature of Nature” to write, to read and to model’ (V. Kirby 2006: 84). In other words, Derrida’s ‘there is no outside of language’ should be rewritten as: ‘there is no outside of Nature’ (Kirby 2011: 83).

The new materialisms can only be treated in a most reductive manner when their baseline is interpreted as anti-linguisticism. A clear example of this train of thought can be found in the work of London-based Australian feminist, queer, and anti-racist theorist Sara Ahmed, whose heatedly debated article ‘Imaginary Prohibitions: Some Preliminary Remarks on the Founding Gestures of the “New Materialism”’, published in 2008, suggests that the work of Kirby’s US colleague, the feminist science studies scholar and theoretical particle physicist Karen Barad, invites for a thorough dismissal of the linguistic turn. Ahmed meditates on the opening lines of Barad’s article ‘Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter’, an opening sequence that reads as follows:

Language has been granted too much power. The linguistic turn, the semiotic turn, the interpretative turn, the cultural turn: it seems that at every turn lately every ‘thing’ – even materiality – is turned into a matter of language or some other

form of cultural representation. The ubiquitous puns on ‘matter’ do not, alas, mark a rethinking of the key concepts (materiality and signification) and the relationship between them. Rather, it seems to be symptomatic of the extent to which matters of ‘fact’ (so to speak) have been replaced with matters of signification (no scare quotes here). Language matters. Discourse matters. Culture matters. There is an important sense in which the only thing that does not seem to matter anymore is matter.

Barad 2003: 801

In spite of the argument that unfolds in Barad’s article (an argument about the *entanglement of matter and meaning*), Ahmed reads Barad’s take on the overemphasis on language as a dismissal of everything linguistic. Ahmed’s evaluation of the work of Barad is not only an exaggerated response (see, e.g., Davis 2009, van der Tuin 2008). It has also created schisms in feminist academic communities (Irni 2013a). First, in Ahmed’s article itself, a schism is created between the new materialisms and the foremothers of feminist science studies: feminist biologists of the 1970s. Second, the debate spurred by Ahmed’s article has generated – next to responses of Noela Davis, Sari Irni and myself – a following of *critics* of the new materialisms: the young cultural theorist Dennis Bruining (2013), for instance, and his academic tutor Nikki Sullivan (2012). A damaging result of all this is the disjunction between Sullivan’s somatechnics – a theory of the impossibility of separating (questions of) the body and (questions of) technology – and the new materialisms. It is certainly more productive for the academic and societal impact of feminist scholarship as well as the burgeoning schools of thought of somatechnics and the new materialisms (and the environmental humanities and the medical

humanities and object-oriented ontology and speculative realism and materialism) to cooperate and share bibliographies, publications and scholarships.

See also Posthuman Critical Theory; Ecosophy; Feminist Posthumanities; Mattering; Object-oriented Ontology; Process Ontologies; Quantum Anthropology; Material Feminisms.

Iris van der Tuin

NEOCOLONIAL

The neocolonial indicates conditions that resuscitate, or re-enact, colonial dynamics. Therefore the term 'neocolonial' is clearly connected to the notion of postcolonialism. But rather than marking the overcoming of colonial dominations (through decolonization, independence and cultural autonomy), it indicates an ongoing persistence of colonial traces as well as new hegemonic formations. These are not necessarily related to territorial domination; rather they are linked to more diffuse forms of economic, military, financial, environmental, cultural and technological supremacies (see *Planetary*).

It could be argued that the term 'postcolonialism' has emerged not only to contest past imperial legacies but also to account for current neocolonial formations, which continue modes of imperialist actions and ideologies in contemporary global contexts (Huggan 1997). This implies that the colonial era is not over but also that colonial 'remains' (Stoler 2008; Amin 2010; Young 2012) have impacted beyond civilizational terms and are intrinsic to the combined and uneven developmental logic of the modern world system (Spivak 1991, 1999; Dirlik 1994; Wallerstein 2004; Lazarus 2011). The term 'neocolonial'

also dismantles simple centre-periphery divides – north and south, First World and Third World – re-articulating power structures within flows and nodes that can be either local or global (Appadurai 1996; Castells 2007). Neocolonialism obfuscates and complicates clear-cut divides, producing more oblique and insidious structures of transnational dependency. Issues of nation, gender, race, ethnicity, class, religion and sexual orientations are reorganized, not only in relation to the colonial but also to neoliberal formations, in which the 'economization of everything' corrodes public institutions, social justice and democracy itself (Brown 2015).

The issue of capitalism is central to the debates on neocolonialism (see *Capitalocene and Chthulucene*), as the investment of foreign capital is seen to be used not for the purpose of the development of former colonies, or underdeveloped countries, but as a new form of domination, control and subjection. The economic and financial power of more advanced countries is seen as protracting the impoverishment of less developed countries, or of promoting biased notions of development and progress. There are many instances of humanitarian aid (Chouliaraki 2014; Grewal 2014), development interventions (Enloe 1989) and peacemaking missions (Henry 2015) that support the export and imposition of neocolonial models of economic growth and political democracy, and that thwart the efficacy of grassroots organizations and movements. This contributes to a renewed form of control and influence under the guise of solidarity, charity campaigns and human rights activism, contributing to a protracted representation of victimhood and backwardness versus the homogenous and universal proposition of a common humanity and happiness (Mohanty 1984; Benhabib 2002; Berlant 2011).

However, the traditional alignment between the developed world and the underdeveloped world has shifted and new powers have emerged, such as the BRICS (Brazil, Russia, India, China and South Africa), who control new regions of the world, at times overlapping with former Western colonies or the Third World but also new areas. There is also a 'new' neocolonialism going on. For example, China has authorized loans to African governments in exchange for access to natural resources in order to support its skyrocketing economic growth. China is now Africa's largest trading partner, but it is not the local African economies that benefit from this. The benefits are for the Chinese enterprises that systematically import cheap Chinese labour to staff their construction projects, offering very little opportunity for development in the African unskilled labour force. This is a new form of neocolonialism that creates African dependence upon Chinese investments without leading to sustainability and development (Tiffen 2014).

These new forms of neocolonialism can involve multinational corporations continuing to exploit the (natural) resources of former colonies (material resources or indigenous know-how), or new areas of influence, the implications for labour and refugee migrations, the policies of international funding agencies such as the IMF and World Bank, the outsourcing of labour forces, the chain of love in the care sector (Parreñas 2003), technological surveillance and environmental imperialism (see *Anthropocene*).

The continuing histories of ecological imperialism, for example, are linked to the nagging persistence of environmental racism in the context of contemporary climate change. Political and environmental justice contests neocolonial takes by suggesting that new contemporary environmental problems must be reframed, not

just in global terms but also in planetary terms (Heise 2008) requiring a 'more integrated and conceptually sensitive approach to environmental issues' than has often been the case to date (Rose et al. 2012). Environmental disasters are not always obvious or visible, or capable of being spectacularized by the media; they can also be part of a continuing, slow violence, imperceptible and unmitigated, that threatens the livelihood of minorities and indigenous groups (Nixon 2011).

Equally, neocolonialism impacts on forms of securitization in unequal ways, using systems of surveillance and control of the 'other' (migrant, refugee, alien) as a potential threat to Western democracy and therefore monitored through databases (Frontex, Eurosur) and biometrics (Broeders 2009) in order to link national security to migration and international terrorism. Therefore the digital revolution did not do away with unequal power relations, in the name of the democratization of information and access to technological advancement. Not only is the question of the digital divide a matter of urgency in relation to issues of use, access and literacies (Graham, Hale and Stephens 2012) but the internet itself is menu-driven according to standardized, default identities, as Nakamura theorizes with her notion of cybertypes (2002), in a way that reaffirms the structure of inequality and racism online. Furthermore, neocolonial patterns are present in the way digital communications are structured online, which, despite the mantra of participatory culture (Jenkins 2006), exploits free digital labour, uses profiles gathered via social networks for commercial and marketing aims, and repurposes the internet for capitalistic gains that lead to digital neocolonialism. As Stuart Hall said in an interview, 'The whole internet, the whole digital world, is currently financed by using this

information as a commodity ... This information is operationalizing knowledge about what the popular is, making it more empirically precise, giving it demographic location, giving it place, situation, etc.' (Hay, Hall and Grossberg 2013: 23).

While new digital applications consume vast amounts of energy and produce CO₂ to safeguard digital storage and maintenance, there is also the issue of labour outsourcing for the digital assembly lines, the role of remote call centres and e-waste, the waste disposal of obsolete technologies in non-Western countries (see *Obsolete Technologies*) that are harmful and toxic because of the metals and chemicals that, once released, lead to long-term illnesses and impairments. Greening the media is therefore a plea made by scholars such as Maxwell and Miller in order to unveil the environmental practices and impacts of electronic media corporations, countering the idea of information and communication technology as clean and ecologically benign (Maxwell and Miller 2012).

To conclude, even though the term 'neocolonialism' can become too flexible and all-purpose, it still connotes in its essence new, unequal distributions of human, financial, environmental and cultural resources that put countries, peoples and subjects into positions of subalternity and protracted dependence.

See also Anthropocene; Capitalocene and Chthulucene; *Obsolete Technologies*; Planetary.

Sandra Ponzanesi

NEOCYBERNETICS

Developments in cybernetics and systems theory have been prime movers of contemporary posthumanism. Arriving in the

mid-twentieth century, the metadiscipline of cybernetics gathered physics, mathematics, biology and engineering into a conceptual synthesis freeing research from the old Romantic essences of the mechanical and the organic: 'the operation of the living individual and the operation of some of the newer communication machines are precisely parallel' (Wiener 1950: 15). This is because they may both be observed to incorporate negative feedback to self-regulate their respective operations. In its evolution to the present moment, cybernetics has also self-incorporated its own feedback, producing significant philosophical responses altering its original technoscientific premises. Neocybernetics denotes this newer line of self-referential systems theory and yields a discourse of neocybernetic posthumanism.

Since the 1970s one may distinguish between first-order and second-order cybernetics. 'First-order' is a back formation for the original cybernetic logic centred on operational circularity in natural and technological systems (Rosenbleuth, Wiener and Bigelow 1943), in which, for instance, output effects are fed back into causal inputs, thus superseding a strictly linear description. Nonetheless, first-order cybernetics maintained traditional scientificity in its stance of objective detachment toward the systems it designed and observed. 'Second-order' cybernetics arose when the philosophically minded cyberneticist Heinz von Foerster forged a 'cybernetics of cybernetics' by turning the logic of operational circularity upon itself (von Foerster 2003). Recursion was now explored in its own right as formal self-reference in those systems capable of rising to cognitive operations, to wit, 'observing systems' (von Foerster 1981).

Living systems came to the fore in this description, followed by social systems. Working closely with von Foerster,

biologists Humberto Maturana and Francisco Varela instantiated second-order cybernetics in the concept of autopoiesis. At its inception, the theory of autopoiesis provided a formal blueprint for biological systems' self-referential maintenance of material membranes, self-produced boundaries between internal operation and external environment. In an autopoietic system, cognitive self-reference takes the form of operational self-production maintained by an organizational closure, not of the system *tout court*, but of the autopoietic process internal to it. In the living cell, autopoiesis *is* cognition (Maturana and Varela 1980). Sociological systems theorist Niklas Luhmann then lifted autopoiesis out of its biological instance for a general theory of self-referential self-producing systems encompassing but also enclosing psychic and social levels of operation. One could now *operationally* dissociate the separate autopoieses of consciousness and communication (Luhmann 1995; Clarke 2014).

Neocybernetics disarticulates the spurious unity and universality of the humanist subject to redistribute its virtual multiplicity within a worldly nexus inter-embedding semi-autonomous systems and their respective environments. Co-evolutionary self-referential systems construct complex co-dependencies and co-observances. The different kinds of autopoietic systems possess operational concurrence: living, psychic and social systems all exhibit the autopoietic, self-referential and self-producing form, but without overriding operational unity. Each kind of autopoietic system produces only its particular mode of cognition – life, consciousness or communication, as the case may be. Luhmann speaks to this operational heterogeneity in the epistemological constructivism of neocybernetic theory: 'the traditional attribution of cognition to

"man" has been done away with. It is clear here, if anywhere, that "constructivism" is a completely new theory of knowledge, a posthumanistic one' (Luhmann 2002: 147).

Where the Derridean critique of Western metaphysics observes the privileging of speech over writing, the neocybernetic critique of dialectics observes the privileging of phenomenology over sociology, prioritizing mind over society, consciousness over communication. Second-order systems theory dissolves phenomenological notions of intersubjectivity because psychic systems and social systems cannot merge. Nonetheless, they coevolve, either system taking the other as its immediate and indispensable environment. Luhmann's contention that 'humans cannot communicate' is a deliberate provocation disarming high-humanist presumptions of subjective prerogative with the posthumanist dictum that 'communication constructs itself' (Luhmann 2002: 176–7). In other words, once social systems are observed as constituted by the recursive re-production of communicative events, human beings (along with their streams of consciousness) properly reside in the environments of communication systems. To avail themselves of those operations, to 'participate in communication' (ibid.: 169–84), persons must couple through material media to ahuman, supra-individual systems: 'Luhmann's handling of systems theory accomplishes just the sort of "conservation" of the logic of the *gramme* that Derrida calls for, a conservation that is crucial to any posthumanism whatsoever' (Wolfe 2010: 8).

Neocybernetics immerses the human once more into the coupled multiplicities of living and non-living systems and their environments. Steeped in these seas of operational sentience, this welter of autopoietic cognitions – whether these are metabolically registered or technically inscribed, consciously immediate or

socially delayed – writing itself emerges as the semiosis that perfuses the natural world. Communication is re-described here as an emergent evolutionary process shared out whenever social autopoieses chance to happen. As we continue to learn, these processes are in no way exclusive to human beings. They occur as not only among non-human animals; they also go all the way down to the microbes (Ben-Jacob et al. 2004). ‘Nearly all our predecessors assumed that humans have some immense importance, either material or transcendental. We picture humanity as one among other microbial phenomena’ (Margulis and Sagan 1997: 18–19). The signature gesture of neocybernetic post-humanism is to change our prior notions about human priority by adjusting worldly relations between the human and the non-human in a manner that honours their co-dependent autonomies.

See also Extended Cognition; Non-Human Agency; Posthumanism; Technicity.

Bruce Clarke

NETWORKED AFFECT

Counter to rationalized conceptualizations of network media as an issue of information management, retrieval and exchange, online communications are not merely about storing and sharing data but also about the spread, attachment, amplification and dissipation of affective intensities. Network media help to shape and form connections and disconnections between different bodies, both human and non-human. These proximities and distances, again, may intermesh and layer with the bodily intensities of sexual titillation, political passions or their abstraction in the creation of monetary value alike.

As the capacity of bodies to affect and be affected by one another (e.g. Spinoza 1992; Massumi 2015a), affect cuts across, and joins together, bodies human and non-human, organic and machine, material and conceptual – across bodies of flesh and those of thought (Deleuze 1988b: 127; Gatens 2000). Following Spinoza (1992), bodies and their capacities are constantly shaped and modified in their encounters with the world and the other bodies inhabiting it. Such encounters may then increase or diminish, affirm or undermine their life forces and potential to act. The notion of networked affect (Paasonen, Hillis and Petit 2015) is a means to address these interconnections as the circulation and oscillation of intensity in the framework of online communication that involves a plethora of actors. These include individual users, more-or-less emergent collective bodies, human and non-human and thus also devices, platforms, applications, interfaces, companies, files and threads.

Addressing affect as being networked results in positioning it as always already in-between different bodies. It is something that emerges in encounters between them, that shapes these encounters and animates the bodies involved. Instead of being articulated as an issue of individual capacity or property, affect, understood as networked, is that which makes things matter and gather attention. Additionally, it possibly adds to the individual sense of liveness as intensity that reverberates with personal embodied histories, orientations and values (Ahmed 2004; Cho 2015). Such a framing does not situate networked affect as either visceral gut reactions specific to the human or as nonhuman pre-personal potentiality. Rather, it allows for an examination of how intensities shape our ubiquitous networked exchanges, how they circulate, oscillate and become

registered as sensation by bodies that pass from one state to another.

As Jodi Dean (2010, 2015) argues, the uses of social media are driven by a search for affective intensity that orients and provokes the interest and curiosity of users as they move across platforms, click on links, share and comment, searching for a shiver of interest, amusement, anger or disgust. Intensity, or what Dean discusses as ‘the drive’, is that which drives the movements across sites and applications. What the users encounter on social media platforms, however, are not only other people but equally image and video files, animated GIFs, emojis, comments, algorithms, information architecture and routines of data mining. Although their parameters are of human design, these non-human factors curate the shapes that our sociability may take, what we can see and in what kinds of constellations on these platforms – and, perhaps to a degree, how we may feel about these interactions. Sarah Kember and Joanna Zylinska therefore argue that ‘It is not simply the case that “we” – that is, autonomously existing humans – live in a complex technological environment that we can manage, control, and use. Rather, we are – physically and ontologically – part of the technological environment, and it makes no more sense to talk of us using it, than it does of it using us’ (2012: 13).

Tero Karppi (2015: 225) points out how Facebook, the currently dominant social networking site, aims to cater for ‘happy accidents’ through its algorithms that are set to render visible things that users may not expect or actively search for. Similarly to the ‘like’ buttons, such designed serendipity aims at affective modulation, or amplification (Massumi 2015a: 31) in the positive register. The controversial Facebook emotional manipulation study of 2012, conducted by a team of psychologists from Cornell, encapsulates much of this. The

experiment involved the news feeds of 689,003 Facebook users, and analysis of some three million posts consisting of 122 million words, without the users’ explicit informed consent (Kramer, Guillory and Hancock 2014). The research team tweaked the algorithms selecting the content visible in users’ news feeds and manipulated them to show more or less positive or negative posts. The overall aim was to assess how this affected the users’ emotional states. Their hypothesis – and finding – was that ‘emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness’ (Kramer et al. 2014: 8788).

Without further unpacking the limitations or conceptual nuances of this specific study here, it points to the centrality of affective modulation in and for the operating principles of much commercial network media – from social networking sites to online newspapers and clickbait. In other words, affective modulation is in-built in, and central to, the production of value as ‘dependent on a socialised labour power organised in assemblages of humans and machines exceeding the spaces and times designated as “work”’ (Terranova 2006: 28). As forms of affective labour, this value production involves the manipulation of affects, social networks, and forms of community alike (Hardt and Negri 2000: 293; also Coté and Pybus 2007). This is an issue of ‘the corporeal and intellectual aspects of the new forms production’ where ‘labor engages at once with rational intelligence and with the passions or feeling’ (Hardt 2007: xi). Not only do social media ‘produce and circulate affect as a binding technique’ (Dean 2015: 90) to attract returning and loyal users, but affective stickiness is also intimately tied to the production of monetary value.

Network media involves both personal and collective affective economies (Ahmed

2004) linked to memories, feelings, attachments, monetary value, politics, professions and fleeting titillations. Explorations of networked affect as the fuel for action help in mapping out how online platforms, exchanges and devices matter, as well as that which they affect – the purposes they are harnessed to and the outcomes that they facilitate. Here, any clear binary divides between the rational and the affective, the human and the non-human or the user and the instrument used are guaranteed to break down.

See also Affective Turn; Algorithm; Body Without Organs; Post Internet; Non-Human Agency; Political Affect.

Susanna Paasonen

NEURONAL AESTHETICS

At the beginning of the twentieth century Santiago Ramón y Cajal's Nobel Prize-winning discovery of the structure of neurons as separate cells which communicate via synaptic connections counts as one of the founding moments in neuroscience (Ramón y Cajal 1906); the 1950s discovery of the DNA and molecular biology was a second step in the establishment of modern neuroscience (Shepherd 2010), but in the posthuman era knowledge about and consciousness of the brain has taken on an entirely new dimension. As Rose and Abi-Rached have demonstrated in their book *Neuro*, a 'neuromolecular style of thought' has modified many basic and behavioural sciences by the prefix 'neuro-' in neurochemistry, neuropathology, neurophysiology, neurobiology, neuropsychology, etc. (2013: 41–3).

Jean-Pierre Changeux's book *The Neuronal Man*, published in France in 1983, contributed in important ways to

bringing scientific knowledge about the brain to a larger and more popular audience. Neuroscientific knowledge left the lab and has travelled into the world and into the domain of aesthetics, a field with strong humanist roots. 'Neuroaesthetics' is not uncontested but should nevertheless be connected to the posthuman. A neuronal approach of aesthetics enfolds a double danger of alienation. In the first place there is a risk of too rigorous a reductionism of aesthetic experience to bundles of axons and dendrites, and of forgetting an entire humanities tradition of sophisticated reflection on aesthetics (and other branches of philosophy). As Oliver Sacks acknowledges in *Musicophilia*, 'There is now an enormous and rapidly growing body of work on the neuronal underpinnings of musical perception and imagery ... but there is always a certain danger that the simple art of observation may be lost, that clinical description may become perfunctory. And the richness of the human context ignored' (2007: xiii–xiv). Moreover, the neuroturn cannot be uncoupled from the digital turn, which has extended the idea of human knowledge and experience in significant ways beyond the borders of the autonomous subject into a networked man-machine sphere. Neuronal aesthetics therefore symptomatically carries the double dangers of, on the one hand, reductionism of the human experience to the microbiology of our neurons, and on the other hand the dissolution of human agency into computed networks. But there are also opportunities for multi-layered and networked approaches to aesthetics and experience that may offer insights into important aspects of the posthuman condition as embodied, extended and networked forms of agency.

The term 'neuroaesthetics' is of fairly recent date and was coined by Samir Zeki

(2002; Chatterjee 2010). Neuroaesthetics as an emerging field of interest in neuroscience aimed at finding the neural basis of the creation and perception of art works. As such it is entirely defined by scientific experiments discovering laws of beauty and aesthetic perception in the brain. Principles of amplification (peak shift), symmetry, isolation, grouping and contrast are among the perceptual principles of the brain that distinguish normal perception from aesthetically organized perception (Ramachandran and Hirstein 1999). Also phenomena such as abstraction (parsimony), synaesthesia and the emotional response to art are areas of neuroscientific investigation (Hasson et al. 2008; Changeux 2012). These insights are important but cannot tell the entire story of art and aesthetics. It has to be said that certainly not all neuroscientists make this claim. Following an experimental methodology, they point out some of the material underpinnings of aesthetic experience. However, given the overwhelming emphasis on the brain sciences, it is important to emphasize that art cannot be reduced to the neurobiological laws that guide them, and to keep in mind that art is also a form of investigation itself. As Alva Noë has argued, art is a 'strange tool', an engagement with the world and our technologies, and ultimately a way to understand the way we organize and re-organize ourselves. (2015: xiii). Art therefore proposes its own manner of investigation and its own legitimate source of knowledge that goes beyond understanding the neuronal laws of beauty.

Just as importantly, art and culture are in constant communication with the brain. The brain is not a fixed and completely genetically determined entity. Precisely because of the now largely acknowledged plasticity of the brain, there is a very large role for 'epigenetics' determined by the environment, culture and education

(Changeux 1983). So once neuronal aesthetics is defined from these multiple perspectives and multiple disciplines that each keep their own method and level of investigation, we can get a more integral perspective on the various levels of material and immaterial aspects of experience that can neither be reduced to the intricateness of neuronal organization nor be completely cut away from the material conditions of life. Neuronal aesthetics in that sense would be a new materialist approach of aesthetics that calls for a revival of the salons of the early twentieth century where artists, writers, physiologists, medics and philosophers came together to discuss their findings and investigations into the interiors of the human body, brain and mind, such as the Zuckerkandl salons in Vienna around 1900, recalled by Eric Kandel in his book *The Age of Insight* (2012).

The second danger connected to 'neuronal aesthetics' has to do with the close connection between the brain, the computer and cybernetics. Very concretely, the rise of contemporary neuroscience co-evolved with the rise of digital technologies that allow visualizations of the brain via non-invasive scanning techniques such as Magnetic Resonance Imaging (MRI) and Computational Tomography (CT). On another level, the co-development of knowledge about the brain and computation has rapidly transformed into networks of human and non-human actors which interrogate many traditional assumptions of the autonomous human being. In *My Mother was a Computer* Katherine Hayles (2015) argues that the posthuman has entered the 'Regime of Computation', whose brain is extended in a 'global cognisphere': 'Expanded to include not only the Internet but also networked and programmable systems that feed into it, including wired and

wireless data flows across the electromagnetic spectrum, the cognisphere gives a name and shape to the globally interconnected cognitive systems in which humans are increasingly embedded' (Hayles 2006: 161). Humans are no longer the only ones that think; our machines are smarter and more cognitive than ever before. They perform many thinking and perceiving operations for us, and thus the incorporation of artificial intelligence and augmented intelligence into our daily lives questions the classical sense of human subjectivity, and the autonomy of consciousness that seem to be absorbed in this extended cognisphere. As if the world becomes one giant computed brain.

As Hayles points out, computation as a relational process that can run in the brain as well as in other media is more than a metaphor. Or rather, the computational metaphor is so powerful because if the technology for fast networked processing did not exist there would be no metaphor. And so 'means and metaphor are dynamically interacting' (ibid.: 163). What is important again is to see that the prevailing knowledge of the brain and the computer are supported by data provided by the empirical evidences of the sciences but just as much by cultural and artistic models that propose the organization and re-organization of our transforming conditions on another level, on the level of experience and understanding organized in aesthetic forms (narratives, images, music, performance). Again, we have to understand neuronal aesthetics as a multi-layered, embodied and embedded form of aesthetics of the posthuman condition as a computed brain.

See also Alienation; Plasticity; Neo/New Materialism; AI (Artificial Intelligence).

Patricia Pisters

NOISE

The contemporary understanding of noise straddles two worlds: on one side is qualitative sensation and subjective judgement; on the other is the quantitative calculation of objective probabilities. The former is highly context-dependent and may concern unwanted sound or information extraneous to a certain end; the latter is also relative to the analytic framework. There are a number of different quantitative conceptions of noise relating to randomness, including low-resolution transmission, information theoretic and psychoacoustic models, the analysis of noise into various colours corresponding to generic spectral densities in frequency distribution, chaos theoretic conceptions of nonlinearity, perturbations below the threshold of measurement, stochastic resonance and turbulence.

In information theory noise is conceived as the level of interference in the communication of a message, or the amount of information available at the receiver that did not come from the sender. Though transmission noise cannot be entirely eliminated, Shannon's innovation was to show that a certain degree of *redundancy* allows the receiver to discriminate between information and noise. The cybernetic conception of noise is defined as the forces that disrupt the organizational coherence of the system or hinder the attainment of its goal state. The confusion between these various uses of the term noise is compounded by three different specifications of the technical term entropy in thermodynamics, information theory and cybernetics.

We are thus presented with several conceptions of, or formulas for, the relation between noise and information that are highly divergent. In popular usage, noise is deemed meaningless by choice – its

information content is considered irrelevant and intrusive according to personal taste. In information theory, noise is described as an information-rich, observer-dependent interruption of a message, and is objectively determinable according to impersonal criteria; since information theory suspends or brackets the analysis of meaning noise is neither meaningful nor meaningless. In cybernetics, noise is characterized both as an indeterministic chaos that is the opposite of information and must be kept at bay through the negentropic maintenance of order and as interference to information processing or obstruction to program execution.

Any talk of randomness or noise presupposes the definition of an analytic context, and a language or means of representation. This follows a negative definition of randomness, as what exceeds simulation or formal description (Thom and Chumbley 1983). The capacity to describe noise is relative to a certain scale of observation; this is particularly true for the analysis of complex hierarchically organized systems operating at many scales. Noise is thus relative to the form of analysis; however, it does not follow that it is either subjectivist or 'relational', as many humanities texts would have it. Space and time are also relative to a frame of reference but are nonetheless objective. For any context-specific or scale-relative *appearance* of randomness and noise, there are no *a priori* limitations to its description or scientific understanding at another scale. One might argue, then, that noise exists (has an objective ontological status), but *only* as an effect of information-processing dynamics and multi-scale complexity.

Noise should also be thought of in the temporal dimension: recognition and prediction are key to the conceptualization of noise. Noise is often caused by information excess, but can also be the result of

information scarcity or an inadequate conceptual framework for modelling. A multi-scale, meta-contextual understanding of noise is therefore necessary. Noise is a crucial aspect of signal transmission systems, by which we mean not just language and gesture as we know it, but distributed information processing systems manifesting at various ecological and evolutionary scales.

A thermodynamic system at equiprobability is highly symmetric, has high Boltzmann entropy and can perform no work; an equiprobable signal such as white noise is also highly symmetric, with high Shannon entropy and high information content, but can convey no message (Juarrero 1999). Information-processing systems, particularly complex evolved non-linear information processing systems such as humans, must always discriminate between signal and noise, since they cannot evade the necessity to abstract and compress information. Abstraction and approximation are not the deficits of rationality or of the technoscientific instrumentalization of the environment, they are the principal tools of practical and theoretical reason. Identifying regularities, quantifying probabilities, exploiting uncertainties and accounting for noise according to deviations from expectation are all intrinsic features of rational cognition.

If we think of a logical proposition as the program of a system in the cybernetic sense then defeasors are noise to the system. For example, a robot might be programmed to destroy all mammals, and to recognize mammals by their warm blood. Naked mole rats would be noise to such a system since they are mammals but not warm-blooded. In complex environments, where defeasors are likely to be plentiful, sticking to monotonic rules of deductive inference is not the best strategy.

Abductive inference and heuristics offer 'fast and frugal' solutions for the navigation of noisy environments (Bechtel and Richardson 2010). The extreme effectiveness of the non-monotonic character of abduction in cognitive systems is based on the long evolutionary development of intelligence, and its error-tolerance or resilience to noise is not as yet replicable by algorithmic procedures or artificial intelligence (Magnani 2009).

Noise is generally deemed an impediment to successful interpretation of data, and attempts are made to reduce or cancel it. However, it is just as often sought out as significant in its own right. This is particularly evident in science, where the presence of noise may be an important indication of the theoretical inconsistencies and practical deficiencies of the investigation or procedure. There is a wide range of examples where noise is purposefully incorporated into the system as a beneficial effect or as a functional aspect of its operation. For example, sensitivity to signal detection can be increased by the addition of a certain quantity of noise.

Both conscious and unconscious processes are much better equipped for noticing deviations from the regularity of patterns than they are for plotting all its details. If patterns are regularities that the organism is habituated to, then it is to *perturbations* of this regularity that its attention is directed, and that its unconscious neuro-computational mechanisms are primed for anomaly detection (Bouwer and Honing 2012). The pattern-governed organism is primed to react to noise. This is evident in tests on auditory pattern resolution in fMRI scans, showing neuronal activation potential spikes, or 'mismatch negativity' responses, to highly complex patterns (Näätänen 1990).

Whether a highly compressed description with a high noise ratio is better than a

less compact description that is more error tolerant is relative to the pragmatic situation, and this depends on the speed at which pattern recognition is required, the risks associated with failure, and to cognitive resource allocation problems in general. In effect, the sensory experience of biological organisms is a highly evolved mechanism for pattern recognition whose lossy compression rate allows for a significant quantity of noise. The payoff is a reduction in cognitive processing cost allowing for rapid response times.

The concept of noise is related to the causation-correlation problem in statistical probability. Variables that are correlated appear as a signal of their causal connection. When a causal connection is inferred but the correlation is merely contingent then the inference is a false positive: what was taken for signal was, in fact, noise. Conversely, correlated variables may be taken to be only contingently related and ignored as noise. In such a case, if in fact there is a causal connection then what was understood as noise was actually signal; a false negative.

The discrimination between signal and noise can be modelled according to the Bayesian calibration of a decision criterion on a probability distribution, known in signal detection theory as the 'receiver operating characteristic' (Proust 2013). The discovery of patterns in random auditory or visual noise is a phenomenon called pareidolia, which is part of a wider class of probability estimation fallacies called apophenia (including the gambler's fallacy, overfitting of statistics, etc.).

Some theorists have applied the conception of noise to the analysis of complex adaptive systems such as evolutionary ecologies and financial markets. However, it can be argued that randomness is such an intrinsic part of the functional organization of such systems that it

cannot be considered noise in the sense of interference (Felin et al. 2014). What has previously been understood as neural noise is likely to be just the entirely functional two-way dynamic projection of counterfactual possibilities, only a portion of which are given to phenomenal experience (Metzinger 2004: 51). It is important to stress that this is *not* noise, but a highly canalized randomness continually modulated by bottom-up and top-down processes of coordinated constraint maintenance and propagation.

Randomness, noise and uncertainty are often posed as undermining reason or representation. On the contrary, we must think of the elaboration of the former as the outstanding achievement of the latter. Reason is not opposed to noise, rather it thrives on the discovery and explanation of noise, the prediction and control of random processes. Noise is intrinsic to cognition, to reason, and to the revisionary-constructive elaboration of freedom.

See also AI (Artificial Intelligence); Metadata Society; Anonymity.

Inigo Wilkins

NOMADIC SENSIBILITY

The enduring sense of Roma as a people spread across territories without historic attachment to any concrete place of origin seems almost unique amongst cultural collectivities. This absence of a point of departure, in effect a diasporic community with no strong idea of where the journey began, presents a new way of imagining community that privileges social connection over geographic belonging – and the consistent, territorial and thus humanist basis it depends on. To explore this idea further let us consider one of the enduring

symbols of Roma histories; that of *nomadism*. It is not the actuality of nomadism that is meant here but a *legacy* of nomadism that I refer to as a *nomadic sensibility* – a sensibility through which Roma maintain an inherent understanding of the vagaries and contingencies of life on the move. This gift of a nomadic history and its enduring sensitivity has been passed down through generations to today's Roma, and persists to inform the Roma worldview – a worldview which has set Roma groups apart from, and often in opposition to society at large.

There has long been potential for the Roma cultural model to inform innovative thinking, but any clear awareness of this has been obscured by pervasive prejudice. As a community that maintains a robust sense of self while facilitating adaptation, Roma would seem to present an appealing proposition for nations in flux. We know the Roma model (Baker 2013) of existence to have greatly influenced the artists and thinkers of the avant-garde (Sell 2013). Any web search for the term 'bohemian'¹ will deliver definitions that conflate creativity, unconventionality and Gypsiness – here art, lifestyle and ethnicity are simultaneously combined in a single concept. A reminder of the concept of bohemianism is relevant today because it gives us a way of articulating and quantifying the value of Roma culture and of its people. It also offers a counter narrative to the 'Roma problem', thereby perhaps increasing the possibilities for Roma emancipation and equality.

During times of political, economic or social upheaval the possibilities offered by communities perceived to embody alternative value systems again become of interest to contemporary thinkers. The art world is regularly first to pick up on such possibilities, but where art leads, society often follows. Recent art initiatives have

been helping to move the image of Roma beyond the notion of a culture in constant crisis toward the idea of Roma life as valuable rather than objectionable (including Baker and Hlavajova 2013). This shift in perception is long overdue, but the conscious attempts by Roma cultural actors and supporters² to present new narratives about our community are perhaps the beginning of a re-evaluation. New representations of Roma culture through artistic practice are not only challenging perceptions of Roma but also ideas about the way we all live today. By aiming to be *social* rather than socially engaged – arising as it does from the material necessities of survival founded in the cultural urgencies of the Roma social group – the nomadic sensibility recognizes equality across the practices of life and art; a humanistic gesture that positions us all as artists – and equally none of us.

A history of nomadism and the collective experience of life at the edge of state control has resulted in the development of Roma's innate understanding of the value of the makeshift and its associated qualities of movement, transition, simultaneity and adaptability; qualities that have performed an important role the development of the Roma aesthetic to produce a set of values that are routinely played out through visual and sensory markers. The reasoning behind Roma's emphasis on aesthetic modes of acculturation becomes clearer when we consider the historic absence of a literary tradition within Roma culture; a factor which in itself has required the development of a complex visual vocabulary.

The pragmatism inherent within the nomadic sensibility stems from an adaptability and resilience learned through shared histories of movement and cultural narratives shaped by life on the outskirts of society. These qualities have historically equipped Roma with the facility to resist the often

inhuman treatment they received: economic and legislative pressure towards assimilation and expulsion – although not without hardship and serious instances of oppression. That same pressure to conform continues to be withstood through acts of living that operate across social, cultural and aesthetic boundaries to enact and symbolize the creative possibilities of mobility and diversity. By productively challenging such boundaries – precisely by constituting themselves across them – Roma recognize the danger of exclusion at the cost of meaningful connection. Yet that same willingness to interrupt established convention, whether territorial or aesthetic, that reflects the humanistic principle of unity of time and space and turn it into a crucial building block for citizenship, contributes toward Roma being cast as a threat to society – a deep-seated suspicion of Roma that continues to fuel anti-Roma feeling today.

The nomadic sensibility has by necessity encouraged the integration of Roma artistic practice within the social realm. This co-dependence of the social and the artistic is implicit within *Roma visuality* – or the collective qualities embedded in objects and artefacts that originate from, or circulate within Roma communities. These include objects made by and/or admired by Roma such as tools, textiles, décor and other ephemera of everyday life. The shared qualities found within these objects could also be described as a Roma 'style' which, when extended beyond the realm of the visual to include wider sensory perception, forms the foundations of a Roma aesthetic – a visual sensibility developed in part as a response to the pragmatic demands and consequent values of Roma life and the principles and urgencies of Roma experience.

A pervasive ambiguity is evident throughout Roma aesthetics and Roma social relations. Roma have long existed

within societies that they continue to remain apart from; a paradoxical position whose underlying conditions of *contingency* and *provisionality* characterize the simultaneity implicit within a nomadic sensibility. With this in mind it becomes apparent that Roma artistic practice and Roma life are both invested in the display and enactment of conditionality – a quality exemplified by a resourceful versatility that encourages the concurrent performance of multiple positionings – and which elicits equivalent outcomes throughout each corresponding milieu, whether artistic or social. This accordance of affect takes us further towards the idea that, in terms of the social agency that they distribute, Roma aesthetics and Roma experience are mutually influential. The transgressive possibilities of the nomadic sensibility continue to fuel widespread mistrust of Roma; a mistrust wedded to the notion of Roma as unfixed, unrooted, and – more significantly – unaccountable. The very qualities which mark Roma as suspect, at the same time represent a compelling potential to challenge existing boundaries towards new ways of understanding ourselves, both Roma and non-Roma, and our lives together.

Having developed in response to life on the move, the Roma aesthetic can be seen as an expression of Roma's historic nomadic sensibility, a sensitivity within which art has no place, unless as part of lived experience. Roma artefacts often stimulate the viewer, or user, to action. For example ornamented tools, toys, textiles and weapons can generate feelings of admiration, contemplation, revulsion or envy, whilst at the same time encouraging acts of play, work, comfort or violence. Consequently the user is given the opportunity to perform a variety of roles through their interaction with the artefact. The resulting physical and perceptual effects generated by the dynamic dealings of material, meaning and action are

common to many Roma artefacts – their multiple functions requiring multiple performances in spontaneous response by the user. Such ambiguity highlights the conditional character of the Roma aesthetic and the contingent nature of Roma life; states of provisionality that reflect a nomadic sensibility rooted variously in historic, recent and, in some communities, current itinerancy.

See also Art; Expulsions; Occupy (after Deleuze); Resilience; Terrestrial.

Notes

1. *Oxford English Dictionary*: 'A socially unconventional person, especially one who is involved in the arts. Mid-19th century: from French *bohémien* "Gypsy" (because Gypsies were thought to come from Bohemia, or because they perhaps entered the West through Bohemia).'
2. Including: European Roma Institute, Budapest, Hungary; Gallery8, Budapest, Hungary; Galerie Kai Dikhas, Berlin, Germany; Romani Cultural and Arts Company, Cardiff, Wales, UK; RomArchive, Berlin, Germany.

Daniel Baker

NON-HUMAN AGENCY

We have always known that things can do things, and even that things often conduct their thingy activities regardless of our human expectations or intentions. Why, then, is an entry on non-human agency in a posthuman glossary necessary? The bulk of the reason is that the concept of agency within literary critique, and more generally the Humanities, has long been associated with notions of intentionality, rationality and voice; in short, agency has traditionally been intricately tied to extremely

limited notions of subjectivity and power, or, as Stacy Alaimo rightfully acknowledges, ‘within the province of rational – and thus exclusively human – deliberation’ (2010: 143). Even in the ‘beyond the human’ anthropology of Eduardo Kohn, where it is argued that the subject of ethnographic investigations must be opened to a multitude of other-than-human beings, agency remains explicitly linked to limited conceptions of ‘subjecthood.’ Kohn explicitly claims that ‘selves, not things, qualify as agents’; the term ‘selves’ representing Kohn’s attempt to reconfigure a multiplicity of possibilities for subjecthood, including both vegetal and non-human animal life (2013: 92). Thus, Kohn fails to recognize the non-living as any sort of possible agent in his ‘beyond the human’ ethnographic account, which is a limitation that many working in the field of post-humanism seek to overcome.

In response to these humanist associations, the development of a profoundly expanded notion of agency that can accommodate the multiple non-human ‘actants’ with whom we share and co-constitute our common world¹ has become a chief concern among many posthumanist writers. Perhaps most notably, the new materialists are attempting to articulate a reconfigured vision of the human located within a constant flux of material flows that enable uncertain becomings with (and within) a lively and agential more-than-human world. For instance, Alaimo outlines a theory of ‘trans-corporeality’ in which bodies are reconfigured as permeable and porous sites in a state of constant relation, claiming that ‘reconsiderations of materiality . . . must grapple . . . with the question of material agency, since the evacuation of agency from nature underwrites the transformation of the world into a passive repository of resources for human use, which of course has had

devastating ecological effects (2010: 143). Here, Alaimo furthers Donna J. Haraway’s argument that ‘to be one is always to *become with* many.’ where becoming recasts being as an active and constant state of relationality (2008: 4). Trans-corporeal becoming could possibly enfold a plurality of non-human forces and agents into an expanded natureculture collective and give voice to the multiplicity of ‘things’ that can and do, in fact, act on their own and within their own terms; or, as Jane Bennet suggests, may be able to ‘expose a wider distribution of agency’ within human-nonhuman assemblages (2010: 122). Similarly, Latour argues that ‘the point of living in the epoch of the Anthropocene is that all agents share the same shape-changing destiny, a destiny that cannot be followed, documented, told, and represented by using any of the older traits associated with subjectivity or objectivity’ (2014b: 17). Articulating this multiply constituted throng of becoming is a prime goal of the posthuman project. Recognizing the plurality of non-human agencies with which we are in constant ‘intra-action,’ to borrow Karen Barad’s term, entails a reconfiguration of our relationship with the world. Barad suggests that we must understand these ‘intra-actions’ as ‘*the mutual constitution of entangled agencies*’ (2007: 33, original emphasis), in which individual entities do not exist outside of their relationships, if we are ever ‘to come to terms with the staggering transformations we are witnessing’ in the continually emergent age of the Anthropocene (Braidotti 2013: 96).

As non-human agencies continue to affect our current and continuing modes of becoming, the creation of new and vastly more inclusive ethical frameworks that can attend to the non-human agents at work in collaboration with our own human activities in bringing about possible futures

is (or should be) a prime aim of the post-humanist project.² By not recognizing the lively forces that intra-act in becoming-with(in) our more-than-human world, human hubris fuelled notions of human-kind's ability to transcend its 'natural' limits, control its surroundings and conquer the entire material world in the name of comfort, technology and progress, in reaction, rather than response, to perceived needs or, more accurately, fleeting human yearnings. As the posthuman project gathers momentum, this restricted and definitively humanist understanding of agency must be interrogated for its transcendent proclivities, in search of a much more mundane, material sense of what it means to act or to intervene and produce sometimes unforeseeable effects, in a lively and agential more-than-human network of relationality.

As posthumanist thinkers continue to attempt to dethrone, decentre or deterritorialize, what Western philosophy has called the autonomous human, with its hubristic and overconfident connotations of exceptionalism and transcendence – what has been considered the measure of all things, for far too long (Derrida 2008: 135) – the Anthropocene in many respects seems to undermine these movements, by reaffirming the central role that human activity has played in creating our current and continuing ecological conditions. Deleuze and Guattari suggest that all deterritorializations are always intricately involved in reterritorializations: 'the two becomings interlink and form relays in a circulation of intensities pushing the deterritorialization ever further' (1987: 10). Thus, a recognition of non-human agencies as entwined participants in our becoming further allows us to curb our transcendent inclinations. Moreover, what the Anthropocene actually does, then, is call attention to the many other agential

forces and beings with which we have always already been in constant intra-action during our overzealous forays into the previously deemed separate 'natural' world, which we have up until now failed to recognize. It forces us to reconfigure and 'reterritorialize' the human within a volatile mix of agencies, beings and forces, where the human is only one among a multiplicity of agents who are active in determining and enacting our (human or not) future possibilities.

As Western human exceptionalism has led to the many agential assemblages that now plague our troubling ecological times – manifesting as super-storms, environmental decay, toxicity, and mass species extinctions (to name a few) – the umbrella term 'the Anthropocene' forces us to reconsider these massive affective non-human agencies that we have unleashed, or at the very least helped to intensify. With the imposing figure of climate change, constantly surprising/shocking us with its diverse embodiments and affects, a renegotiation of the human's place in the material world is necessary and demands that the agential materiality that has always played an intricate role in our becoming with(in) the world be not only acknowledged, but considered on equal ontological grounds. This renegotiation will entail a new understanding of what it means to be agential, where agency is considered as a collaborative action or '*an enactment, not something someone or something has*' (Barad 2007: 178). Yet, as Barad points out, 'the acknowledgement of "nonhuman agency" does not lessen human accountability' (ibid.: 219). Rather, this acknowledgement should force us to become more accountable than we ever have been before, to the diverse muddle of other-than-human agencies with whom we compose our common world. Alaimo contends that 'the interacting material

agencies provoked by the staggering scale and fearsome pace of human activities will no doubt bring about unknown futures' (2010: 563). Yet it seems that these unknown futures are already here, and seemingly have been and will be for the unforeseeable future of the planet (hence the dawning recognition of the Anthropocene). These uncertain pasts, presents and futures, born from the intra-activity of entangled human and non-human agencies, are constantly becoming anew and changing the ways in which we become-with them. Thus, the quest to recognize the many other-than-human agencies that intra-act in our becoming-with(in) the world, an important aspect of the posthuman project, may be a crucial step in crafting more open and cooperative approaches for attending to our (human or not) possible futures, where perhaps all life may be able to continue and flourish in the continuing age of the Anthropocene. If we are to construct new ethical parameters, appropriate to our continuing anthropogenic times, for the interventions we seek to enact, then non-human agencies must

be taken seriously as the world-building forces that they also have always already been.

See also Anthropocene; Critical Posthumanism; Posthuman Ethics; Neo/New Materialism; Trans-corporeality; Naturecultures.

Notes

1. Bruno Latour, 'An Attempt at a "Compositionist Manifesto"', *New Literary History* 41, no. 3 (2010): 471–90, 484. Building on his work in *We Have Never Been Modern*, 'consequences overwhelm their causes, and this overflow has to be respected everywhere, in every domain, in every discipline, and for every type of entity,' all of which he terms 'actants'.
2. In addition, Braidotti suggests that posthumanism, as a critically 'generative tool', must seek new frameworks which can teach us 'to think differently about ourselves'.

Jeffrey Scott Marchand

OBJECT-ORIENTED ONTOLOGY (OOO)

What do ‘diamonds, rope, neutrons ... armies, monsters, square circles, and leagues of real and fictitious armies’ (Harman 2010b: 5) and ‘plumbers, cotton, bonobos, DVD players and sandstone’ (Bogost 2012: 6) have in common? The shallow answer to this question is that they all belong to the curious menagerie of *real* and *imaginary* things marshalled by object-oriented ontology (OOO), but the deeper answer is precisely what OOO aims to discover: what can be said of each of these *objects* of thought and talk, and indeed, of every such object, merely in virtue of the fact that it is an object? What are objects *qua* objects?

OOO is neither the only, nor the first philosophical approach to concern itself with this question. On the one hand, beginning with Aristotle, the metaphysical tradition has pursued the study of objects *qua individual substances* – the basic building blocks of reality in which accidents inhere (e.g. a man who may at different times be either wise or foolish, running or sleeping); on the other, beginning with Husserl, the phenomenological tradition has pursued the study of objects *qua intentional objects* – the fundamental units of consciousness through which qualities appear (e.g. an apple that may at once appear red, shiny, and even sweet and juicy). However, although OOO is influenced by both classical metaphysics (Leibniz as much as Aristotle) and phenomenology (Heidegger

as much as Husserl), it differs from each in a crucial respect. On the one hand, it rejects the classical notion that only those objects that *persist* in space and time are true substances (e.g. including transient events, mathematical objects and fictional characters); on the other, it refuses the phenomenological gesture of reducing the *ontological structure* of objects to the *intentional structure* of our consciousness of them (e.g. allowing that there is more to fictional objects *qua* fictional objects than *how* we think and talk about them).

Prima facie, OOO’s peculiarity lies in this attempt to combine the *descriptive scope* of phenomenology with the *speculative depth* of metaphysics. However, there are also a number of positive claims about the nature of objects that unite the different variants of OOO and distinguish them from other forms of contemporary metaphysics with similar concerns. We will focus on three core ideas: withdrawal, flat ontology and vicarious causation, explaining them by returning to the origins of OOO in the work of Graham Harman, and addressing the work of the main OOO theorists influenced by him – Levi Bryant, Ian Bogost and Timothy Morton – as it becomes relevant.

Harman’s object-oriented philosophy (OOP) is the original form of OOO from which other variants descend. OOP has numerous influences beyond those already mentioned (e.g. Whitehead, Latour, Lingis), but it originated in Harman’s interpretation of Heidegger’s tool-analysis (Harman

2002). Harman finds in this phenomenological description of our encounters with broken tools a general model of relations between objects: one object can *rely* on another (e.g. a person *using* a hammer, an animal *depending* on atmospheric oxygen, a bridge *incorporating* girders), but it does not thereby *exhaust* the underlying capacities on which it depends (i.e. there is more to hammers, oxygen and girders than their roles in construction, respiration and architecture), at least insofar as they can *disrupt* these relations (e.g. the hammer breaking, the oxygen igniting, the girders warping). He holds that, if we analyse the moment of breakdown, we can see that what appears to us as broken (the tool as *present-at-hand*) is something other than the executant reality we were relying upon (the tool as *ready-to-hand*). This forms the basis of Harman's distinction between the *sensual objects* we encounter in experience and the *real objects* that hide behind them (Harman 2010b: 20–50). The major innovation underlying Harman's subsequent work is the addition of a further axis of distinction between objects and qualities (e.g. between the man and his wisdom, the apple and its redness), producing a fourfold schema that also includes *sensual qualities* and *real qualities*. The relations between these four poles then constitute a system of ten categories (e.g. space, time, essence, *eidos*) that supply the technical infrastructure of Harman's metaphysics (ibid.: 95–135).

The emergence of OOO out of OOP was largely spurred by Harman's association with 'speculative realism' (SR), alongside Quentin Meillassoux, Iain Hamilton Grant and Ray Brassier (Bryant, Srnicek and Harman 2011: 1–18). There are questions regarding the extent of the commonalities between these thinkers, and thus the supposed unity of SR (Brassier 2014a), but the most obvious point of contact is their opposition to the pervasive philosophical

trend that Meillassoux (2008) identifies as 'correlationism'. Correlationism takes many forms – from its origins in Kant's transcendental idealism, to phenomenology, deconstruction and social constructivism – but it is characterized by the idea that the world (and its objects) cannot be thought outside of its relation to thought (and its subjects). This results in a prohibition on speculation concerning the world as it is *in itself*, and a reorientation towards critique of the conditions under which the world appears *for us* (e.g. consciousness, language, culture, etc.). However, the realist opposition to correlationism can be framed in either epistemological or metaphysical terms: *epistemological realism* objects to its scepticism, aiming to demonstrate that things can be known in themselves, whereas *ontological realism* objects to its anthropocentrism, aiming to demonstrate that things can exist in themselves (Bryant 2011: 13–20).

The thesis that objects *withdraw* from one another has its origin in Harman's initial separation of the sensual and the real. It is articulated slightly differently across the variants of OOO, but we can identify two essential components: first, that every object *exceeds* the ways in which it is presented to other objects; and second, that every object is *independent* of every other object. Excess constitutes OOO's rejection of epistemological realism, insofar as it ensures that there every object has hidden depths that can never be grasped by knowing subjects. Bryant's *onticology* interprets these depths as unactualized potential – or *virtual proper being* (Bryant 2011: 87–134). Bogost's *alien phenomenology* interprets them as subjective interiority – or *what it is like to be them* (Bogost 2012: 61–84). Though these theories are distinct, they can be seen as engaging different aspects of Harman's theory of real qualities (Wolfendale 2014: 135–62). By contrast,

Morton's main contribution is his account of *hyperobjects*: highly complex, massively distributed and extensively entangled phenomena (e.g. supermassive blackholes, global warming and evolution) that manifestly transcend our everyday understanding of things (Morton 2013b). Independence underwrites OOO's defence of ontological realism, insofar as it ensures that no object is constituted by its relation to a knowing subject. It also forms the basis of OOO's revival of substance: prioritizing individuality and discreteness over relationality and continuity, in opposition to many strands of contemporary metaphysics (e.g. actor network theory, process philosophy and related new materialisms) (Shaviri 2011).

The commitment to *flat ontology* is also interpreted in different ways, but can equally be broken down into two components: first, the *liberal* principle that everything that can be taken to exist should be taken to exist (e.g. Popeye, the East India Company, the empty set); and second, the *egalitarian* principle that everything exists in the same sense, or that no objects should be granted special ontological status (e.g. no ultimate cause, no fundamental atoms, no absolute totality). Ontological liberalism is most emphasized by Bogost (Bogost 2012: 11), and is essentially just the concern with descriptive scope discussed earlier. Ontological egalitarianism is most emphasized by Bryant (Bryant 2011: 279–90), and is responsible for the anti-anthropocentrism behind OOO's ontological realism, insofar as the possession of a unique capacity to know other objects is seen as an illegitimate ontological privilege. These concerns with treating *every* object equally and every object *equally* are shared by other contemporary metaphysicians (e.g. Markus Gabriel and Tristan Garcia), but it is the conclusion that relations between objects should be modelled on those between

subjects and objects that sets OOO apart from them. Conversely, the same universalization of subjectivity creates an affinity with panpsychists, vitalists and new materialists not committed to ontological liberalism (e.g. Deleuze) or substance metaphysics (e.g. Jane Bennett). However, what makes OOO unique is its peculiar synthesis of epistemological and ontological humility: we can't know anything in itself, but we aren't special in this regard, and so things in themselves can't know each other (Wolfendale 2014: 341–74).

Finally, the theory of *vicarious causation* attempts to reconcile the thesis that objects withdraw from one another with their obvious ability to interact with and thereby change one another, by explaining how their sensual facades *mediate* between them (Harman 2007). Harman does this by modelling causation on the deliberately indirect allusion to an object provided by metaphor (e.g. 'the cypress is a flame') as opposed to the supposedly direct knowledge provided by literal description (e.g. 'the cypress is coniferous'). He holds that in such encounters the *allure* of the sensual object grants us indirect access to the real object, insofar as it enables the latter to affect us. He thereby proposes a theory of indirect causation understood in terms of the emotional intensity produced by aesthetic experience (Wolfendale 2014: 97–105). Bryant develops an alternative theory based on systems theory and the idea that objects *translate* external perturbations into internal information (Bryant 2012: 153–62), but Bogost and Morton each subscribe to Harman's approach. Furthermore, though Harman uses his theory to motivate the claim that aesthetics is first philosophy (Harman 2007), it is Morton who pursues this idea furthest, proposing an expanded aesthetic theory of causation as 'magic' founded on a rejection of the principle of non-contradiction (Morton 2013a).

See also Animism; Neo/New Materialism; Posthuman Critical Theory; Ontological Turn; Speculative Posthumanism.

Peter Wolfendale

OBSOLETE TECHNOLOGIES

How and why do technologies die? Why have users come to accept the short lifespan of hardware and software? Technological obsolescence prompts the question of how technologies, as socio-technical assemblages, grow less relevant – a question that becomes increasingly important as technological life-cycles seem to speed up according to the logics of exponential progress. Moore's law, for example, posits that computing power doubles roughly every two years, implying a continual acceleration of technological obsolescence. But obsolescence in practice outstrips such a deterministic reduction, especially since it is often explicitly designed into technological artefacts as an economic imperative of accelerated consumption.

Illustratively, as a result of excessive consumption, the global quantity of electronic waste (e-waste) produced in 2014 was 41.8 million tons, only 6.5 million of which was collected by official take-back channels in nations across the Global North (Baldé et al. 2015: 20–5). The remaining flow of e-waste is processed in informal, unsafe and environmentally unprotected settings, largely across locations in the Global South (LeBel 2012).

Analyses of planned obsolescence thus offer a broader critique of consumer society that position our desire for the new within a series of late capitalist power dynamics that shape contemporary subjectivity. The new is defined against slower, dumber, backward, dirtier, noisier and/or uncool technologies which often reflect racialized,

classed and gendered schemes of classification. The values embedded in technological design reflect exclusionary normative ideals about such subjectivity, and so in this entry we develop an account of obsolete technologies from the perspective of feminist science and technology studies in order to link the concept of the posthuman with the unproblematized and often celebrated social death of various technologies. Specific artefacts considered fall under three broad categories: 1) planned obsolescence, e.g. Apple's hardware and software; 2) celebrated inventions that never became widely adopted, e.g. Google Glass; and 3) mass technological fads that quickly died out, e.g. the XO laptop. In each of these, obsolescence serves as a rupture that opens up onto the ideological substrates of design while also informing our imaginaries of the posthuman.

Most connected to economic rather than technical constraints, the concept of planned obsolescence became commonplace in modern US industry throughout the twentieth century, especially in the postwar years as a means of accelerating consumer demand (Cohen 2003: 293). Despite critiques of planned obsolescence that highlighted the artificiality of such demand and its attendant wastefulness (e.g. Packard 1960), both obsolescence in terms of the desirability or coolness of a product as well as obsolescence in terms of its lifespan or functionality continue to be used in contemporary industrial design of consumer goods. One of the more notorious firms in this regard is Apple, the company at the vanguard of portable technologies that construct and market posthumanism as a mass phenomenon. In order to maintain demand levels for its products, which saturate the market, Apple engages in planned obsolescence at the functional level through the relationship between hardware and software upgrades. Each

year's release of the new iPhone model, for example, brings an attendant software upgrade that tends to render older models exceedingly slow (Rampell 2013). So, in addition to demand generated through marketing appeals to coolness and increased functionality, Apple's profitability benefits from demand generated at the level of design. Automatically scheduled to become trash, iPhone design decisions add to the estimated three million tons of 'small IT' e-waste produced annually (Baldé et al. 2015: 24).

The blockbuster success of Apple's iPhone marks a contrast from another type of obsolescence: those widely publicized inventions in posthuman technology that never approached wide consumer adoption. Google Glass, for example, has remained a niche device, despite the posthuman potential contained within its wearable, augmented reality capabilities. Much of the analysis of Google Glass's failure to reach a mainstream audience beyond the tech-savvy elite centred around its noted gender bias. This bias is starkly manifested in humour blogs devoted to 'White Men Wearing Google Glass' and in critiques of the primacy of the (male) gaze in its human-machine interface designed by Western white men (Segan 2013). Google Glass's race and gender bias reveals how obsolescence can thus be a function of design that fails rather than succeeds. Many such examples predate Google Glass, as is apparent in a longer tradition of domestic technologies designed for women by men. The 'Audrey' personal technology device was marketed toward busy mothers as a kitchen computer that would organize family members' hectic schedules. Designed according to traditional gender scripts, Audrey worked to re-entrench limiting ideologies about a woman's place in the family's gendered divisions of labour (Rodino-Colocino

2006: 385). Moreover, as a rejoinder to the more liberatory framings of posthumanism, especially for women, Audrey worked to obscure the ways that internet technologies have covertly piled more work onto women's domestic 'second shift'. Gendered constraints of devices like Audrey and Google Glass show how technological obsolescence can emanate from design that inflects posthuman ideals with gendered stereotypes.

Posthuman subjectivities shift according to differential axes of identity, thus implicating differing modes for technological obsolescence. A final key narrative around obsolescence of posthuman technologies concerns the neocolonial development paradigm where Western ingenuity promotes itself as the utopian panacea to endemic poverty in the Global South. Within ten years of its founding in 2005, the One Laptop per Child programme evidenced the boom and bust cycle often attendant to such utopian development technologies that usually remain clouded in the mythical discourse of the technological sublime (Mosco 2004; LeBel 2012). The fanfare that accompanied the programme's rollout of easy-to-use, open-source, \$100 XO laptops to impoverished children in developing contexts in South America, Africa and elsewhere became progressively dampened with each successive report showing the ineffectiveness of the laptop to achieve its goal of disseminating digital citizenship. The obsolescence of the XO laptop highlights the ways that, rather than affording universal legitimacies, posthuman fantasies actually inhabit specifically located socio-technical assemblages. In the developing regions where the XO was deployed, constraints of basic infrastructure (water and electricity), technical support (software and hardware upgrades), cultural bias (Western ideals of childhood) and educational resources

(teacher training, school buildings), alongside those of the technologically deterministic framing for the laptop, rendered its actual usage in local contexts remarkably complex (Ames 2013). The multiple interfaces between the technological artefact and human subjectivity in the case of the XO evidence how posthuman imaginaries get complicated by material practices of the socio-technical that often lead to obsolescence rather than saturation.

To conclude, in all three of its incarnations reviewed here – planned obsolescence, inventions that were never widely adopted and utopian fads that failed – obsolescence can be positioned as a point of rupture that both captures the ideological substrates of design and illuminates the contours of posthuman imaginaries. Bringing a feminist science and technology studies approach to bear on the question of obsolescence interrogates its intersection with posthumanism through a number of questions, including: who are the designers of posthuman technologies? What are the (non-universal) values designed into such technologies? How is the interface between devices and users' bodies and agency imagined? These questions further invoke the perspective of media archaeology to add a historical attention to the celebratory rhetoric around 'sublime' new technologies (e.g. Gitelman 2006; Mosco 2004; Marvin 1997). Accordingly, when speculating on possible interventions into the perpetual cycle of newness that ideologically colours technological obsolescence, one direction to look is backward, corresponding with the Surrealist provocation to resuscitate 'the outmoded' as a way of disrupting the official narratives of history and suggesting alternative futures (Foster 1993).

See also Digital Rubbish; Extinction; Feminist Posthumanities; Neo/New

Materialism; Neocolonial; Static Glow; Wearable Technology; Youth.

Tamara Shepherd and Koen Leurs

OCCUPY (AFTER DELEUZE)

In a short text, published near the end of his life, Gilles Deleuze (2006) pays attention to 'occupation'. Though it is a concept that he used (albeit rarely) throughout his career, it is in this small text (in which he talks of the relation between the composer Pierre Boulez, the writer Marcel Proust and the concept of time) that it becomes clear that 'to occupy' is actually the greatest power of art. For it is in occupation that great art is able to reveal another world. And it is *only* great art that holds the capacity to realize this 'wholly otherness' both materially and mentally. Traversing the dualist oppositions between nature and culture, between technology and the earth, between human and non-human, between the mind and the body, as they have been organizing the surfaces upon which we live for so long, great art embodies the creative power to break through every reality and its organization of life.

In his text, Deleuze talks of the French composer (and conductor) Pierre Boulez, who had always considered himself very much inspired by poets and writers such as Michaux, Char and Mallarmé. But his relationship to Marcel Proust was of a different kind. To think the special relationship between the composer Boulez and the author Proust, Deleuze uses occupation in the following way: Boulez 'occupies' Proust, he claims. Noting how Boulez grasped Proust musically with such apparent ease or tactic, Deleuze concludes: '[I]t is as if he [Boulez] knew him [Proust] by "heart", by will and by chance' (2006: 40). More in particular, Boulez occupies Proust in his

notion of time, Deleuze claims, on the type of duration that is at work in Proust's novel *A la recherche du temps perdu*, and in Boulez's compositions. Boulez later referred to this duration as time 'in its pure state' (Campbell 2010: 152). But let us focus on this 'act' of occupation in general for now. How does it work?

Two remarks need to be made concerning Deleuze's emphasis on occupying. Firstly, to occupy is 'not connective', as Brian Massumi calls it (2011: 21). To occupy is not about 'being connective', not about a world possibly coming into an existence. No artwork needs *any* object outside of itself (the book, the composition) to refer to, nor does it need subjects (authors, readers, listeners) to code and decode the world it holds (see also Deleuze and Guattari 1987 [1980]: 23): there is in the end *no-thing being occupied*. Or to put it in more formal terms: in great works of art there is no difference between content (for instance a Proustian world) and form (*la recherche*). This – of course – follows from the fact that art is *never* 'about' something. It is something itself, as Samuel Beckett said (in Dearlove 1982: 123). It is itself an event, an occurrence, indeed an occupation. Art is not about an object, not about a subject. It is a transversal force that 'happens' to everything.

Thus, when occupying Proust, an artwork is by no means revealing the beauty of its 'original'. Knowing it by heart, by will and by chance, the genius writers, composers and other artists are not interested in copying anything. When art reveals a world this is never about revealing 'the beauty of nature' in the Kantian sense. Deleuze concludes that the Kantian aesthetic dictum tells us that 'he who leaves the museum to turn towards the beauties of nature deserves respect' (1984 [1963]: 56), which is not something that our analysis could agree with. On the contrary;

a world (an entire, extremely diverse and unlimited world) is revealed in the abstraction, in the composition, *in the occupation itself*. Thus a great artist is interested in how music includes the unheard, in how painting shows us the unseen and how the written word reveals to us the unwritten. The great artist is always already beyond the subject and the object, beyond any humanism, beyond any perspective. The twittering birds from Olivier Messiaen or Eric Dolphy, as well as those from Paul Klee, have nothing to do with 'the beauty of nature', with subjectivity, and not even with one another. Rather, they reveal a world we have been *radically* blind and deaf to, as Michel Serres (2010) put it recently, a wholly other nature that we have just never 'been in' before.

Secondly, Deleuze's use of occupation is monist, *id est*, necessarily both mental and physical. The revelation of a world is not imaginary or idealist, nor involves a perverse realism. The world given rise to is revealed as both a new material assemblage and as the idea that belongs to it. This necessarily doubled power of the arts is explained by Deleuze in terms of theatre, as he concludes: 'Theatre is real movement, and it extracts real movement from all the arts it employs. This is what we are told: this movement, the essence and the interiority of movement, is *not opposition, not mediation*, but repetition' (1990 [1969]: 10, italics in original).

The importance of art for any kind of activism, for the well-being of our planet, for love, cannot be underestimated. We should therefore push the argument even further: the revelation of another world is written, painted, sculpted, composed and created *exclusively by and solely within* art. This is what Deleuze means when he claims that 'It is only on the level of art that essences are revealed' (2000 [1976]: 38). Deleuze's inclusive, or rather *intensive*

experiments with art, are not interested in identifying the locus (the origin) of creativity within the artwork (or the artist, or the mind of the receiver), but rather start from sense, sensation and intra-active creativity. Battling chaos, battling opinion, battling the hard classifications that suffocate our environments, it is the revolt itself (the chaosmos as Joyce calls it) that reveals essences. Or, as Deleuze puts it: 'What is an essence as revealed in the work of art? It is a difference, the absolute and ultimate Difference. Difference is what constitutes being, what makes us conceive being. That is why art, insofar as it manifests essences, is alone capable of giving us what we sought in vain from life' (ibid.: 41). Proust continues the argument by claiming that this absolute, ultimate difference is 'a qualitative difference that there is in the way the world looks at us, a difference that, if there were no such thing as art, would remain the eternal secret of each man' (ibid.).

But why the urgency, which is obviously imposed upon us when Deleuze stresses the necessity to occupy? Why this *activist* need to reveal another, a wholly other world, through the arts? Surely because there is a necessity involved. Again, two remarks need to be made regarding this. First, contrary to current political ideology, to occupy is not about *critiquing* (or *opposing*) that which is being occupied (it is not about re-cognizing an opposition), but rather about *fully affirming* (or *absorbing*) it. Instead of occupying 'something' (an outside object) we are now asked 'to be occupied with something' (the revelation of a world). It turns a passive, subjecting force into an active and creative one. At the same time the occupation is not limited to a presence but is equally interested in those matters that are not there (yet). To occupy is then not a response to re-pression, it is not a re-sistance. Fully absorbing every relational movement in

Proust (jealousy, memory, etc.), Boulez, with great love, feels how all the virtual differences had already liberated themselves from the characters involved, giving rise to his timely composition. In loving-to-read Proust so intensely a transposition takes place that was 'playing the positivity of difference as a specific theme of its own' (Braidotti 2006a: 5). Thus the words and all the unwords of Proust resonate into something wholly other: another world. The music, with meticulous precision, was creating-while-liberating a block of duration, or, a *type* of time, that was always already there (in the text). Occupying Proust, to Boulez, was about opening up a new perceptual field (expressing itself musically) and revealing, as Beckett told us, the 'androgynous doubled earth on the other side', making apparent an unheard and an unforeseen *in Proust in music*.

Deleuze uses 'to occupy' thus not primarily as a socio-political term but as central to what we may call *the creative act*. It signals how art itself, rather than the artist/activist, *as an event*, has the power to give form anew. The creative act never starts as a political act or as social engagement, yet it concerns an affirmative power so strong that it always already reveals another politics, another ecology and another sociology. But 'to occupy' does not start as a rational act either. Rather, its power sets about creating or *materializing* a new environment in which objectivities and subjectivities take shape. To occupy is then not an activity which has to start with human activity. On the contrary: it is creativity itself and its ability to involve others (and the way these others, like humans, allow themselves to be involved with it) that mobilizes the true revolution. In other words: it is not the activist, the composer or the writer who 'occupies'. It is art that occupies, that never stops releasing the suppressed (the unheard and the unseen) and thus has the power to

stage another world. Art realizes occupation as it *thinks through involvement*. It is the archetypal ‘persona’ that involves the flows of matter (from paint to the hand of the painter) and the network of ideas linked to it (from fear to jealousy, from subjectivity to objectivity).

See also Art; Commons; the; Sensing Practices; Critical Posthuman Theory; Posthumanism.

Rick Dolphijn

ONTOLOGICAL TURN, THE

‘Ontology’ holds a precise meaning in philosophy, designating a branch of metaphysics that investigates the nature and categories of being. Within informational science, ontology examines formal naming practices and taxonomy. The term’s significations are, however, more flexible and thereby rather difficult to articulate precisely in anthropology, gender studies, the new materialism, ecocriticism, queer theory and the posthumanities (among the many overlapping fields that have embraced the ontological turn). Ontology offers a critical shorthand for investigation of the characteristics of being, with the implicit notion that lively traits may be found equally in humans and non-humans. Often deployed as a flattening device, ontology may open the door to posthumanism by refusing anthropocentric schemes for ordering the universe. Flint pebbles, matsutake mushrooms, elderberry shrubs, barn owls, global corporations like Disney and stories all possess distinct ontologies, and are all therefore equally worthy of study, especially through the assemblages they form to act in the world. Catalogues like the one I just formulated often structure ontological rumination in the humanities, where

ontology privileges apposition and conjunction over opposition and hierarchy.

The phrase ‘ontological turn’ is most familiar from anthropology, where it designates a disciplinary movement away from a focus on writing and text-making. Instead of exploring what phenomena and objects represent or symbolize within a given cultural system, anthropological work aligned with the ontological turn investigates the multifarious actions of objects and people, the networks that enable agency to unfold and for facts to become cogent. Bodies (human and animal), plants, weather, tools, affordances, imaginary beings and elemental materialities might all be considered on the same existential plane, equally necessary to make reality *real*. Such investigation does not presuppose progress narratives or historical development. A scientific culture intent upon explaining global warming is just as much an alliance of objects and peoples as any other culture in human history. This refusal to privilege contemporary epistemic modes over indigenous sciences or supposedly outmoded historical knowledge resonates profoundly with the aims of postcolonial studies, environmental justice and critical race studies – though such disciplines have not as yet necessarily been well represented. ‘The ontological turn’ gained wide currency through a panel held under that name at the annual meeting of the American Anthropological Association in 2013, at which the French sociologist of science Bruno Latour was one of the featured speakers.

Latour’s Actor Network Theory (ANT) emphasizes non-human agency and insists that ‘nature’ and ‘culture’ are not pre-existing or self-evident realities. Both therefore lack explanatory power. An object like a laboratory flask enters into multifold relations with other entities, creating through these connections hybrid or quasi objects that are composites of human and non-human

elements (ontology becomes distributed and shared). Objects are best understood in action, where their agency becomes palpable. A rock palmed along the shore is a participant in an inestimable history of subterranean forces, primordial volcanoes, the ceaseless rhythm of waves, fleeting use as a gull's hammer or warrior's arrowhead. An object is nothing more than the alliances it can support, defeat, foster or resist – and like any actant cannot be reduced to a play of deeper structures, especially not linguistic ones (language too often gets dismissed as immaterial; it is not). ANT is a movement-based, detail-oriented analytical mode that proceeds slowly, tracing the tangle of threads that form the networks connecting things to each other.

If ANT has a downside, it is a tendency to think of objects as being wholly absorbed into the networks in which they participate. They give themselves over completely, holding nothing back. The philosopher Graham Harman argues that no two objects can really touch each other (all touch is mediated), and that objects withhold a part of themselves from every relation (we can never know an object in its entirety). This approach is often called speculative realism, and in Harman's case more specifically *Object-Oriented Ontology (OOO)*. The particularity of objects is emphasized by Harman, so there is little room for taxonomy. Stone enters into relations as *a* stone – that is, as a particular pebble or boulder, a singular entity rather than a plural and generic substance. OOO grants objects their strange autonomy. They will always evade full apprehension, will always hold in their depths inexhaustible mystery.

Jane Bennett's vibrant materialism shares much with ANT and OOO, but her work embeds an ontology of the non-human within ethics and politics, giving it an activism the others lack. In Bennett's account a rock or similarly dense object is

not recalcitrant, for to describe it thus is only to narrate the world anthropocentrically. All materiality is inherently lively, exerting agency regardless of human alliance or intention. This omnipresent but often unobserved vitality invites a disanthropocentric ecology and a more complicated worldedness, one in which matter cannot be reduced to resource. Even more than Latour and Harman, Bennett describes a world enchanted by the vivacity of its non-humans, a dance of bodies and objects that requires an ethics of wonder and cautious regard.

If the ontological turn has a downside, it is that important human differences (especially race and gender) tend to vanish from attention. When things are examined as they exist for themselves, within secret solitudes, they can seem to exist beyond feminism, critical race studies, environmental justice, history. No man is an island, but after the ontological turn every object might be. Perhaps such isolation is the necessary consequence of movement beyond critical anthropocentrism. Yet withdrawal into mystery extracts objects from the urgent human stories in which they participate as props and actors. Object-oriented ontology, for example, is not about gender (too anthropocentric), yet as a mode of inquiry is often quietly gendered by the objects of its inquiry: tools, especially hammers; consumer products, especially electronics (toasters, cars, computers); and phenomena that are really big, like icebergs, plutonium distribution and the ozone layer. Room certainly exists for queer ecologies: Timothy Morton composed an essential essay with just that title (2010a). Objects are active in the making of gender and race, albeit unreliably, and that production is enabled through human–non-human alliance, through networks that intermix ontological distinctions. To ensure that the ontological turn does not turn away from human

difference, it is important to acknowledge that the turn to ontology builds upon a material turn of long duration, which itself has been an enduring feminist enterprise.

The new materialism is a feminist mode of inquiry that emphasizes not gulfs and separations but permeability and interpenetration, elemental intimacies over withdrawn mystery, what Stacy Alaimo has called *trans-corporeality*. Like Bennett's vibrant materialism, the new materialism resonates profoundly with non-modern modes of apprehending the agency of matter and objects, as well as the entanglement of bodies, matter and things within their generative environments. Some of the richest work in the new materialism has been conducted under what Serenella Iovino and Serpil Oppermann call material ecocriticism, examining how all matter is storied, full of narratives that may or may not involve the human, but that do not leave human particularity behind.

The ontological turn is, admittedly, a rather nebulous term – and perhaps its strength lies in its vagueness. With its emphasis on a non-human-centred cosmos, however, this turn (or veering) offers an essential catalyst to posthuman environs.

See also Commutation Ontology; Ecomaterialism; Econtology; In/human; Mattering; Material Feminisms; Posthuman Ethics; Object-Oriented Ontology.

Jeffrey Jerome Cohen

ORGANIZATION IN PLATFORM CAPITALISM

In an age of algorithmic governance and pre-emptive action, the prevailing schematic of politics is orchestrated around data analytics of social media. Politicians gravitate toward Facebook and Twitter on the

advice of their minders, assuming the pulse of the masses can be aggregated and calibrated back into policy-making. Oversight of this cybernetic machine is also pursued by humanities and social science researchers invested in digital methods that index the inputs of civil society in participatory mode. Against this managerial model of governance and knowledge production, the question of correspondence between data and the world of objects and things remains elusive as long as schemas of intelligibility command institutional, epistemological and political hegemony.

The fantasy of government through cybernetics was trialled at the prototype level in Stafford Beer's experiments in data-driven socialism in Allende's Chile in the 1970s (see Medina 2011). Such a model was revived in recent years with the attempt by the P2P Foundation, along with fellow travellers such as Bernard Stiegler's L'Institut de recherche et d'innovation (IRI), to install peer-to-peer models of socio-economic production and education in Ecuador. The attempt to implement a counter-hegemonic system in this instance failed primarily because of a struggle to find a common language. This is not a problem of what Naoki Sakai terms 'homolingual translation' so much as a problem of making a concept quantitatively jump into the form of a meme that penetrates and infects institutional mentalities.¹

As much as the free software and creative commons movements hit the mainstream they have paradoxically remained in the margins of the power of the stacks, otherwise known as platform capitalism. In earlier times there was either the mainstream or the margin. You could exist in one but not both. Within a near universal condition of a mainstream without margins, the capacity to devise and unleash the power of critique is consigned to the *trauerspiel* of modernity. Immanence

without an outside is submission with occasional resistance whose only effect is to supply data-driven capitalism with a surplus of records and related metatags.

For all the attempts to establish a critical mass for alternative practices in the age of the Anthropocene, which manifest as networks of organic food suppliers, hipster maker economies, co-working spaces, urban gardening and renewable energies, there remains a dependency on mainstream architectures from global logistics to data centres and the perpetuation of an international division of labour. There is no visible prospect of these core planetary systems being overhauled or replaced. Despite the proliferation of these sort of alternative practices, the decline in global working standards and employment opportunities is inseparable from the penetrative force of financial capitalism.

However much the possibility of thinking the Hegelian totality remains as a utopian position from which to overcome the fragmentation and dissipation of material life caused by identitarian politics, the digital architectures that operationalize the world increasingly withdraw from the grasp of the human. Even those such as Yanis Varoufakis, who have glimpsed the inner workings of the technocratic elite, are unable to manifest proposals for a movement of the disaffected. The network imaginary cannot on its own perform the work of implementation. Why? Because the stacks reign supreme.

The consolidation of resignation is one option. The ongoing agenda of the Mont Pèlerin Society is another. The regional geopolitical giants in Putin's Russia or the Beijing Consensus may, for all we know, deliver the path to restoration for a global future able to withstand the ravages of capitalism in ways not reliant on Silicon Valley's engineering logic of techno-solutionism. But unless we wish to commit to a paternal-

istic vision to be realized by whatever geopolitical elite invested in the global redistribution of wealth and resources, the question of organization without sovereignty remains to be addressed.

Organization aimed at clutching power from above will do nothing in terms of forging a global grammar able to design concepts that critique and direct debates on issues and conditions in order to regain the initiative. Cognitive capitalism obtains power, in part, because of its binding capacity (see Moulier Boutang 2011). It is able to distribute and implement a coherent message across a vast range of institutional and organizational settings. In other words, cognitive capitalism holds an elective affinity with technologies of mediation. Rituals of organization are required to galvanize sociality in coherent rather than perpetually dispersed forms and practice.

Where are the forms of organization that regenerate the collective confidence that typified the historical avant-garde? Can new modes of organization function in a centrifugal manner to escape the sectarianism of the group dynamic? A decade ago we proposed the concept of organized networks as a new institutional form in response to the 'walled gardens' of social media. We foregrounded the need for a strategic turn that could address the problem of sustainability of social organization. Neighbouring concepts such as 'platform cooperativism' and the many experiments in social centres and educational infrastructures such as 'freethought' are strong examples of how the work of invention is manifesting as new organizational forms.²

A distributed laboratory of thought is needed that fuses intellectual and political invention without the clientelism of the think-tank model. A praxis that dispenses with the misguided sentiment of post-capitalist economies and all the privilege that entails. The format of this glossary itself

is part of the cataloguing of concepts, problems and conditions that experiment with the organization of thought not consigned to the affirmation of the transcendent. How to unleash concepts that organize totality as a distributed architecture is key to the formation of autonomous infrastructures able to withstand the monopoly on decision gifted to algorithmic capitalism.

See also Algorithm; Algorithmic Studies; Commons, the; Digital Citizenship; P2P (Peer to Peer) Economies; Gulf Labor; Metadata Society; Hypersocial.

Notes

1. On the distinction between 'homolingual' and 'heterolingual' translation, see Sakai 1997 and 2006.

2. See Trebor Scholz, 2014, and the related event, 'Platform Cooperativism: The Internet, Ownership, Democracy', The New School, New York, 13–14 November 2015, <http://platformcoop.net/>. See also *freethought*, a collective formed in 2011 by Irit Rogoff, Stefano Harney, Adrian Heathfield, Massimiliano Mollona, Louis Moreno and Nora Sternfeld, <http://freethought-infrastructure.org/> [both accessed 19 April 2017].

Geert Lovink and Ned Rossiter

OTHERWISE EMBODIED OTHERS

Detail of Pierre Huyghe's *Untilled* (2011–12) at DOCUMENTA 13, an installation



Pierre Huyghe, *Untilled*, 2011–12. IMAGE COURTESY OF THE ARTIST, ESTHER SCHIPPER, BERLIN, HAUSER & WIRTH AND MARIAN GOODMAN GALLERY, NEW YORK.

within the composting site of Kassel's Karlsaue Park. Various entities – many of them living – formed a biotope, **one of the most remarkable inhabitants being Huyghe's pink-legged dog called Human.** Amidst masses of soil, piles of bricks and broken pieces of asphalt, she shared habitat with at least two puppies, stacks of concrete slabs and muddy pools around and from which various psychotropic plants grew and multiplied, their pollen transferred by bees whose large hive

enveloped the head of a sculpture of a reclining nude, in the middle of a muddy clearing. A staged performance, of which its actors' countless interactions over the course of three months couldn't have been composed, nor registered by human eyes.

See also Animism (Limulus); Body Without Organs; Forests; Multispecies; Postglacial; Multiverse.

Pierre Huyghe

P

P2P (PEER TO PEER) ECONOMIES

The notion of ‘commons’ has been defined in a manifold manner: first, as a combination of a shared resource where each stakeholder has an equal interest, i.e. the commons as an object; then as a community that maintains or co-creates it, i.e. the activity of commoning; and also as the commonly created model of governance (Bollier 2009, 2014). The commons sphere entails human and non-human actors and can include natural gifts such as air, water, the oceans and wildlife, and shared assets or creative work like the internet, the airwaves, the languages, our cultural heritage and public knowledge which have been accumulating since time immemorial (Bollier 2009). The environmental or natural commons, extensively studied by Elinor Ostrom (1990), has generally been part of the economic life since pre-capitalist era, by providing vital resources for the majority of human and non-human populations. However, modern economic systems, like capitalism or state socialism, have often enclosed the commons. While capitalism has generally attempted to commodify the commons, state socialism has frequently turned them into state-public property. Nevertheless, in both cases the enclosures of the commons were meant to bring these resources into the orbit of the dominant economy and its model of accumulation of surplus value. While many traditional commons survive, mainly in the

Global South, they are everywhere under stress of further enclosures and other pressures that endanger their vitality.

With the emergence of the internet and the Web, a new sphere of commons has been gaining ground in economic development in the form of peer to peer economies. This new form includes a shared resource produced by and for user communities and governed by these communities. It has a distinct feature, which is its ‘abundant’ nature. This abundance is the result of the near zero marginal cost of its reproduction, once a first copy has been produced. Thus, the user community of a digital commons is non-territorial and can in theory reach a universally distributed status, only limited by the lack of connectivity, language, user skills or interest, of its potentially global user community. Such digital commons have taken the form of knowledge commons, for example the free encyclopedia Wikipedia, or the myriad of free and open-source software projects. Moreover, through global open design communities, digital commons can be linked to distributed manufacturing that expands the domain of shared, common production, as is the case with the Wikispeed open-source car, or with the WikiHouse open platform for sustainable building and construction.

Yochai Benkler (2006) coined the term ‘commons-based peer production’ to describe a new model of economic production, different from both markets and firms. In commons-based peer production, the creative energy of autonomous

individuals is organized in decentralized, peer-to-peer networks. It is co-ordinated into meaningful projects, largely without traditional hierarchical organization or, often, financial compensation (Benkler 2006). In addition to this, Jeremy Rifkin (2014) has argued that such abundant commons will not limit themselves to digital commons, but will also emerge in physical economies; for instance, in the field of renewable energy or even in generic physical production, through the combination of desktop manufacturing/digital fabrication technologies and renewable/biodegradable material resources.

Arguably, the emergence of these digitally produced commons also creates an important change in capitalism itself. Michel Bauwens (2012) has defined this new form of capitalism as netarchical capitalism, with 'netarchy' meaning the hierarchy of the network. Netarchical capitalism could be said to come in two (or more) complementary forms. First, in the commons economy where commons are actually produced at the heart of the business model. In this case, netarchical firms create business models by developing added services around the commons, which are produced by the user communities. Firms reap the benefits of the human cooperation at the heart of commons production, and get the benefit not just of their own investment, but also of the investments of the whole entrepreneurial coalition which has invested in the same commons, and of the substantial amount of free labour. Thus we have firms like Google which monetizes search without producing any content, or Facebook, which may not rely on a commons in the strict sense, but monetizes the human interaction in social media. The second form of 'netarchical' capitalism creates platforms that enable peer-to-peer exchanges, where again no commons is necessarily produced,

but it relies on the exchanges between peers in a network. Hence, Uber monetizes ride-hailing without producing cars, or Airbnb monetizes rentals without producing physical assets for hospitality.

This externalization of production costs is one of the factors in their competitiveness vis-à-vis traditional players, such as taxis and hotels, which are not able to externalize such costs and are also subject to more stringent regulations due to their intensive use of salaried labour. The extractive nature of these business models makes the commons economy problematic under the dominance of capitalist economics. Making use of the particular entanglement of technologies involved in the digital commons with forms of interaction, such cases of netarchical capitalism – or for instance the so-called 'sharing economy' – find new contours in the enclosure of activities of cooperation, sharing and informality previously considered outside of capitalism. Thus the sharing economy may be said to create a 'value crisis' (Bauwens and Niaros 2016). The value crisis can be defined as a process whereby global user communities are increasingly able to produce use value through mutual co-ordination in networks, potentially growing in an exponential manner, while the monetization only grows more slowly and linearly at the margins, and is captured almost exclusively by the owners of private platforms. This form of the sharing economy can only create a crisis of increasing precarity, and could be interpreted as a form of hyper-neoliberalism, relying increasingly on free or increasingly cheaper precarious labour.

At the same time, we are observing the emergence of alternatives, marked by generative business models instead of extractive ones. To understand their logic, it might be useful to look at the institutional structure of the economy of the

commons. In short, the open productive communities, which create and add value into the shared resource pools, are at the core of such an economy. Moreover, the entrepreneurial coalitions, which create added value for the market, are around the digital commons. Further, the infrastructure of cooperation is often managed and maintained by for-benefit associations, such as the free and open-source software foundations. Changing the relationship between the creative communities and the market players is arguably key for an alternative, sustainable model for the commons economy.

In this new alternative model, the extractive nature of netarchical capitalism is replaced by ethical entrepreneurial coalitions. The latter create livelihoods around the commons in ways that enable contributors and these firms to co-create commons. ‘Open cooperatives’ have been proposed as a generic concept for different forms of ethical businesses that are mission-oriented, multi-stakeholder governed, and are committed to the co-creation of commons (Bauwens and Kostakis 2014). Such post-corporate entrepreneurial forms are also sometimes called ‘phyles’, i.e. business eco-systems which sustain communities and their commons. Amongst the examples that can be cited are the Enspirial network based in New Zealand; the Las Indias community based in Spain; the Sensorica open scientific hardware community based in Canada; Ethos in the UK; and Fora do Eixo in Brazil. These new coalitions are often marked by a desire to combine three characteristics, i.e. the sharing of knowledge (openness), the sustainability of their physical production processes, and the fairness of the reward systems. Therefore, these new forms of the commons economy are inventing not only new practices which do not enclose knowledge (open business models), but also

open value systems that can distribute value fairly in contribution-based systems.

Further, the great potential of this emergent system arguably lies in the four characteristics of its production methods (Kostakis, Roos and Bauwens 2015; Kostakis et al. 2017). First, by avoiding planned obsolescence in the design of the product; second, by sharing its technical and scientific knowledge for open innovation; third, by mutualizing physical infrastructures for manufacturing and relocating production through distributed microfactories/makerspaces; fourth, by using open supply chains and open accounting mechanisms for mutual coordination of producer communities; an open source circular economy may emerge which could contribute to the fight against climate change and ecological destruction. At the very least, this activity makes an important contribution to the ongoing dialogue on the potential challenges for the incumbent system by providing a commons-oriented vision for radical change emerging from the bottom.

See also Capitalocene and Chthulucene; Commons, the; Digital Citizenship; Digital Philosophy; Hacking Habitat; Resilience

*Michel Bauwens and
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PILL, THE (POSTHUMAN ICON)

We propose the oral contraceptive pill as one of the posthuman icons of the twentieth century. It may be easy to forget in contemporary times, where young women in the West have not lived with the fear of unwanted pregnancies, but the classic metal strip supplying three weeks of tiny white pills has had and still has a revolutionary impact on women’s lives all over the world. In fact, this small piece of

technology was so successful that it is simply known as 'the Pill'. For the first time in human history the Pill made it possible for women to separate sexuality from reproduction, allowing them to find a sexual freedom that had never existed before. Without fear of unwanted pregnancies, a large number of children, or worse, death in childbirth, women could now enjoy and explore sexuality in ways that were impossible before. Its invention in the 1950s consequently helped push and shape the sexual revolution of the 1960s.

The oral contraceptive pill, a combination of oestrogen and progesterone, celebrated its fiftieth anniversary in 2010. Since its official approval by the American Food and Drug Administration in 1960 the Pill has achieved global endorsement as the most widely used drug in the history of medicine. And although there have been critiques of the Pill, it still caters to millions of women across the globe as a popular means of controlling fertility, regulating menstruation, detecting or terminating pregnancies and managing female menopause.

The discovery and development of the anti-conception pill and its subsequent adoption was due to sustained efforts on the part of feminists. Following up on the efforts of the first feminist wave to achieve birth control at the end of the nineteenth century, for example by introducing the diaphragm, feminists reinforced their search for safer and more reliable means of birth control after the Second World War. Pioneer of women's reproductive rights, Margaret Sanger, helped found the International Committee on Planned Parenthood as early as 1946, which was to evolve into the world's largest non-governmental international women's health, family planning and birth control organization. In the early 1950s, Sanger encouraged philanthropist, suffragist and biologist Katharine McCormick to

devote a substantial part of her family fortune to subsidize the bio-medical research necessary to develop the first birth control pill. The research was carried out throughout the 1950s by biologist Gregory Pincus and was eventually finalized, patented and sold under the name of Enovid.

From the very beginning of its mass adoption, the Pill became one of the major symbols of second-wave feminist movements in the West. The control of reproduction was seen as a vital means to restore women's ownership over their own bodies, to freely enjoy sexual relations, and to improve their social status. Liberal feminist Betty Friedan – co-founder in 1966 of the National Organization of Women and author of *The Feminine Mystique* (1963) – was a passionate campaigner for women's access to free and full contraceptive rights. Radical feminist Shulamith Firestone, in *The Dialectic of Sex: The Case for Feminist Revolution* (1970), highlighted the role of reproductive freedom and the struggle for free contraception in the liberation of women. Anticipating later developments, Firestone argued that a shift of social priorities from reproduction to contraception and the full development of reproductive technologies constituted the core elements of a feminist revolution.

Politically, the most important contribution of the Pill was to materialize and represent publicly the categorical distinction and separation of sexuality from reproduction. Instigating twentieth-century sexual liberation movements in the West, the Pill de-naturalized reproduction and enabled women to become heterosexually active without the danger of unwelcome pregnancies. Moreover, as a form of contraception it offered many advantages over previous methods: it was convenient, highly effective, female-controlled, separated from the act of intercourse, and it did not require the consent – or even awareness – of a male

sexual partner (Gordon 2007; Kline 2010; Oudshoorn 1994).

The isolation and synthesis of female sex hormones that led to the development of the contraceptive pill also prepared the ground for modern reproductive technologies such as in vitro fertilization. Moreover, by opening the possibility of motherhood to single and lesbian women (Rich 1995), the Pill paved the way for the rejection of compulsory heterosexuality through the promotion of alternative kinship systems outside the patriarchal constraints of the nuclear family.

The radical sting of the Pill is that, by making it possible for women to choose whether to have children or not, it facilitated their rejection of traditional family structures (Diepenbrock 1998). Domestic life in the patriarchal family presents clear disadvantages for women by confining them to the role of caretaking in the private sphere at the cost of exclusion from the economic sphere. It isolates men from the lives of their children, and institutes a gendered economy that segregates reproductive labour and family life from wage labour (Labora Cuboniks 2015). The Pill supports a radical sexual politics for alternative family arrangements. This has not escaped the attention of organized religions and conservative political parties, which have waged an all-out war against it. Up until today, the Pill is not easily available in Catholic countries or in countries with a strong Christian fundamentalist presence.

The Pill's detractors have historically offered counter-arguments to stress its mixed blessings. In the 1970s eco-feminists adhered to authentic notions of female nature resulting in the rejection of any scientific manipulation of female bodies. This resistance evolved into the idea that bio-chemical contraception is politically dangerous, because it inserts women's

bodies into institutionalized practices of both liberation and control (Warren 1994). Following Foucault's bio-political analysis of the management of reproduction and sexuality in the 1980s (Foucault 2003, 2010), the radical feminist claim of liberation via technology was disputed. Throughout the 1990s feminist studies of science and technology pointed out the dangers as well as the advantages of working within bio-political systems of hormonal, bio-chemical and genetic management of bodies in a social order based on disciplining and punishing (Oudshoorn 1994; McNeil and Franklin 1991; Haraway [1985] 1991; Roberts 2008).

Queer critiques of naturalized and essentialized gender identities and norms radicalized these critiques. On the one hand Preciado (2013) emphasized the normalizing power of the Pill that builds upon and endorses the underlying hormonal and endocrinological design of 'normal' female bodies. In this framework, the Pill is taken as a 'chemical panopticon', that is to say a micro-instance that reflects macro-power formations – such as medical-legal institutions, the nation-states and global networks of bio-genetic capitalization of life (Cooper 2011). On the other hand, with the privilege of hindsight, it has become manifest that the hiatus between reproduction and sexuality that was introduced by the Pill in the 1960s marked not only a scientific change of paradigm, but also a profound fracture within patriarchal family power formations and the perpetuation of compulsory heterosexuality. It was, therefore, a watershed moment for the feminist movement.

In the light of this rich and complex history, of all the advantages and challenges it represents, as well as its huge impact upon the lives of millions, we wonder why the Pill is not more widely celebrated as the icon of a posthumanist subject position that emancipates women

from a naturalized regime of subjugation. Why are other images so hastily embraced as posthuman icons, like the destructive image of the mushroom cloud of a nuclear bomb, for instance, or the over-exposed mix of metal and wires in robotics? Instead of these rather overbearing images we suggest the humble Pill as one of the posthuman icons. The more modest 'wetware' of the Pill should be recognized for its revolutionary impact: it is a frontal attack on the naturalization of gender inequalities. The Pill testifies to the visceral call that, if nature is unjust, then we must change nature (Xenofeminist Manifesto 2015).

See also Bodies Politic; Geo-Hydro-Solar-Bio-Techno Politics; Pregnant Posthuman; Xenofeminism; Placenta Politics.

Anneke Smelik and Elisa Fiore

PLACENTA POLITICS

Placenta politics is a term that I coined to indicate the materialist feminist biopolitics of the relation between the material maternal body, the placenta and the foetus. I transpose this maternal-placental-foetal connection into a nomadic frame so as to argue that it composes a generative assemblage. The placental assemblage raises key issues of relationality, immunity and auto-immunity, which are best served by a neo-materialist philosophy of becoming and affirmative ethics within a monistic understanding of matter. I draw on the work of French feminist biologist H el ene Rouch (1987), who was inspired by the philosopher Luce Irigaray (1985a, 1985b) and by Lacanian psychoanalysis to propose the biological entity of the placenta as a third party that redefines the relationship between the maternal body and the other

body, the foetus, in immunological terms. The placenta splits the subject from within, in a non-dialectical process of internal differentiations that predicates the primacy of the 'other within'. Yet, this highly significant configuration has remained unrepresented within phallo-logocentric logic.

Therefore, I suggest moving placenta politics centre stage, but into a different theoretical direction. Firstly, placenta politics upholds an affirmative and non-aggressive bio-politics that opposes the military terminology and concepts that are customary in scientific discussions of immunology. The immunization process is usually formulated in terms of the individual and collective bodies' struggle for homeostatic stability and protection against external aggressive forces. Secondly, this approach to immunology has been taken as an analogy for politics and governance. For instance, Esposito's work on bio-politics (2008b) explores the immunological political economy of hospitality and hostility. I find it disappointing that what was originally a politics of life – biopolitics – which also included a reappraisal of the politics of dying and letting die, has become almost exclusively focused on thanato-politics, to use Foucault's term (1977). In contemporary discussions, this issue blends with necro-politics (Mbembe 2003), that is to say extermination and extinction. Bio-politics should not position life only on the horizon of death, but also as the generative force of both human and non-human organisms (Braidotti 2006b). In terms of the immunological debate this means that the question is not that and how the organism is capable of self-preservation at the expense of some of its weak or diseased parts, but rather that in most cases it actually does not attack them. And I would like to add that, specifically in pregnancy, the organism does usually not expel the foetal other, but rather hosts it and nurtures it.

Wolfe (2010) explores the immunological paradox with Derrida's notion of the pharmakon. This refers to the process by which poison is injected so that the presence of what Nancy (2000) would call 'an intruder' is registered by a constituted system. That encounter, which triggers the infection or the disease, also creates a first line of defence against it. The first line of auto-immunological defence gestures towards a cure or to secure immunity from the very disease that is triggering the composition of the encounter. The auto-immunological principle is that the pathogen that is injected in controlled doses into the body does not destroy the entirety of the organism, but helps the immune system to learn how to defend itself. Derrida's ethics of immunity proposes not the exclusion, but the incorporation and vicarious substitution of the vital/lethal other.

None of these bio-political thinkers, however, ever take the maternal body and the placental assemblage into consideration, which makes Rouch's work all the more significant. Thus, they miss a crucial dimension of the immunity process. In my view, placenta politics is necessary to understand the specific form of auto-immunity that is the maternal-placental-foetal assemblage. Pregnancy foregrounds the crucial idea that the immune system does not always attack what has been injected into the body. If we focus on insemination, gestation and birth, the question shifts to another plateau: what are we to make of the fact that the female body actually hosts and cares for the egg, then embryo, then foetus, then baby? The placenta is the operative factor of immunologically compatibility: it is formed by the extension of the maternal body's blood vessels into another tissue that both connects and separates the embryo from the maternal organism. It is ejected as an extra entity about thirty minutes after the

birth has taken place. This is a far cry from the thanato-political or necro-political discourse of the tactical expulsion of alien elements or the aggressive elimination of the alien other. The paradigm of placenta politics presents instead a model of generative relationality.

In feminist materialist terms the mother-placenta-fetus assemblage can be read as a state of pacifist cooperation and co-creation between organisms, in a specific relational frame that facilitates their co-existence, interaction and growth. The placenta stresses the notion of evolution through mutual cooperation. I argue that the placenta is a powerful figuration – Deleuze (1994) would call it 'conceptual persona' – for a co-creative and collaborative model between separate yet related organisms, agents and living matter: maternal, placental and foetal. Placenta politics is about affirmative ethical encounters – it is the original form of trans-corporeality.

I want to argue further that the placenta is the perfect figuration for thinking both unity and diversity, specificity and difference within a monistic frame. It foregrounds nomadic difference as a process of differential modulations by organisms that define themselves by mutual relations within a common matter. By extension it allows us to rethink political and ethical interaction on the basis of a materially grounded understanding of subject-formation. Becoming subject is an embedded and embodied, relational and ethical process framed by multiple encounters with both human and non-human factors and agents.

In order to conceptualize this vision, the best theoretical allies are the ontologically pacifist theorists, inspired by critical Spinozism, like Deleuze (1988b; 1992a). A monistic philosophy allows us to theorize organic processes of collaborative growth,

inserting complexity at the heart of philosophical thought. In this context, the maternal-placental-fetal assemblage can be understood as a figuration of affirmative relationality and multiple becomings. The placenta functions as an interface of multiple particles and components that jointly sustain the dynamic process of forming new organisms. This living process enacts a complex dynamics and expresses an affirmative vision of life as a cooperative effort. Placenta politics so defined expresses the vital force of the multiple agents and forces that co-exist through transformative encounters. Thus it is not only the case that the bio-political and the thanato-political relations exist in a continuum – in keeping with Foucault’s original insight – but also that they are constituted by heterogeneous assemblages of diverse components. Placenta politics can be fully situated within the contemporary posthuman landscape.

This has a number of implications also for contemporary posthuman feminist politics (Braidotti 2016a). Firstly, knowing that contemporary nomadic or ‘dividual’ posthuman subjects are constituted through processes of mutual specification and differential modulation, we can define sexual difference as one of the motors of multiple differing within a common matter. The binary gender system is just a mechanism to capture this sexed multiplicity, which aims at reducing and disciplining the infinite modulations and the ‘thousand little sexes’ (Deleuze and Guattari 1988: 277), which constitute our virtual embodied and embedded, affective and relational structure.

Secondly, we need to consider the high level of technological mediation – both bio-genetic and informational – that surrounds sexuality and reproduction today. Contemporary bodies are shaped by a complex interaction of social and bio-

genetic elements, including the multiple hormonally loaded, contraceptive-pill driven, technologically mediated extended mother-machines (Roberts 2016). The toxic pharmacological aspects of contemporary reproduction (Preciado 2013) expose the gender system as a machinery that is currently multiplied, pulped, upheld, hacked, re-constructed and abolished on a daily basis. Both gene-editing and gender-editing have become part of our vocabulary and our social as well as technological practices.

It follows that we need more studies of placenta politics and the immunological paradigm within the feminist framework of bodily neo-materialist posthuman thought. By extension, it is also important to re-frame the maternal body. Where placenta politics offers a new line of thought for bio-politics and thereby a new possibility for critical reflection on both relational ethics and reproductive labour, the category of the pregnant posthuman (see *Pregnant Posthuman*) posits the maternal body as a subject, which supplies us with a figure as a starting point for critique, for re-thinking itself, and for developing and defending a different, sexuete ethics.

Cyberfeminism and Xenofeminism argue that the maternal body – technically female (see *Xenofeminsim*) – is not one. The myriad of technologically mediated practices and socially differentiated modes of mothering, ranging from surrogacy to the recently approved three-parent family, are the result of the pervasive impact of the apparatus of reproductive technologies and socio-economic practices. The explosion of the alleged linearity of the reproductive process also introduces new actors, from external donors to internal gene-editing practices, all of them reliant on technological mediation. Placenta politics respects this complexity while foregrounding the

specificity of the maternal-placental-fetal assemblage.

A posthuman theory of the subject emerges therefore as an empirical project that aims at experimenting with what contemporary, bio-technologically mediated bodies are capable of doing. These non-profit experiments with contemporary subjectivity actualize the virtual possibilities of an expanded, relational self that functions in a nature-culture continuum and is technologically mediated. Not surprisingly, this non-profit, experimental approach to different practices of subjectivity runs against the spirit of contemporary capitalism. The perversity of this system, and its undeniable success, consists in re-attaching the potential for experimentation with new subject formations, back to an overinflated notion of possessive individualism (Macpherson 1962), fuelled by a quantitative range of consumers' choices. This is precisely the opposite direction from the non-profit experimentations with intensity, which I defend in my theory of posthuman subjectivity.

A neo-materialist nomadic approach allows us to analyse and re-think this posthuman 'exploded maternal body' thoroughly and to situate 'feminicity' (see Feminicity) in an ethically accountable framework. The impact of the fast-progressing reproductive technologies upon the complex maternal assemblage is best addressed within a neo-materialist nomadic philosophy of becoming geared to an affirmative relational ethics. The emphasis on monism casts a new light on explorations of the shifting boundaries between life and death and on the ethical and political implications for posthuman thought. Placenta politics expresses not only a new immunological paradigm, but also the posthuman politics of affirmation of life as radical immanence.

See also Pill, the; Pregnant Posthuman; Joy; Bios; Material Feminisms; Feminist Posthumanities; Trans-corporeality; Trans*; Feminicity.

Rosi Braidotti

PLANETARY

The planetary can be taken as a critique of the profit-minded logic of globalization. The image of the 'blue planet', in particular the photo taken of the Earth rising above the Moon by the Apollo 8 crew in 1968, along with the ultimate 'blue marble' photo taken four years later, allowed the planet to be perceived visually for the first time in its entirety. Looking in on our world from the cosmic 'outside' represented a new stage in human self-consciousness. It functioned like a Lacanian mirroring – both fragmented and harmonious – that brought awareness of the unity but also the finitude of the Earth. At a time in which the world was riven by the ideological divides of the Cold War and living in fear of nuclear catastrophe, the image projected both a reassuring vision of harmony and a presentiment of environmental risk. With its associations of a sublime, interconnected and fragile biosphere, the symbolism of the blue planet countered the utilitarian, technological and economic logic of the global, with which planetary consciousness has been forced to compete since the outset.

The meteoric rise of economic globalization in the wake of the signing of world trade deals in the post-Cold War era created a major obstacle to efforts to tackle climate change on a global scale, while unprecedented levels of economic growth have further fuelled carbon emissions. The legal and policy framework enforced by the WTO guaranteed the rights of multi-national

corporations to escape social regulation, take advantage of cheap labour and negotiate major tax breaks. It also created a political constituency that has successfully blocked measures to come up with an effective international response to global warming. The rationale of globalization, which views the Earth as a resource to be competitively exploited for maximum profit, can be contrasted with the planetary ideals expressed in Bolivia's 2010 Law of Mother Earth, which granted nature equal rights to humans and defined the Earth as 'a unique, indivisible, self-regulating community of interrelated beings'.

Tension between the ethos of the planetary and the globalized mindset can also be felt in theoretical spheres. Writing on the accelerating 'planetary crisis of climate change' in 2009, historian Dipesh Chakrabarty made the significant admission that two decades of studying 'theories of globalization, Marxist analysis of capital, subaltern studies, and postcolonial criticism' had not prepared him for the 'planetary conjuncture within which humanity finds itself today'. In a world transfigured by ecological crisis, on the brink of mass extinction and facing irreversible changes to oceans and atmosphere, critical theory is also in the midst of a paradigm shift. The general neglect within historical critical theory of environmental issues, symbolized by Michel Foucault's infamous expression of his 'detestation of nature' by literally turning his back on the landscape, was based on the rejection of attempts to see the world as an ecological totality as irretrievably essentialist and denial of the existence of nature as anything other than a self-referential linguistic category. By contrast, signs of an incipient planetary turn can be recognized in materialist positions of Speculative Realism and object-oriented ontology, as well as in the wider theorization of the posthuman.

Responding to the crisis of anthropocentric criticism, Gayatri Spivak in *Death of a Discipline* raised the question of what it would mean to 'imagine ourselves as planetary subjects rather than global agents' (2003). For Spivak, the critical potential of planetarity lies primarily in offering a mode of identification that does not define itself in opposition to the Other, and only obliquely in the ecological sense of being 'custodians of our very own planet'. As a strategic choice of terminology, the notion of the planetary allows us to sidestep the impasse between advocates of a cosmopolitan identity as an alternative to ethnicity and nation-based forms of collective belonging, and those in favour of retooling national identity as a mode of resistance to the economic imperialism of globalization. From the point of view of the current sense of urgency regarding the need for a collective response to ecological crisis, however, Spivak's original question could be reformulated more assertively to ask what it would mean to see ourselves as 'planetary agents', acting on behalf and in the name of the planet, rather than as 'global subjects', passively accepting the rules of the game of globalization.

While the global features both as a timeless abstraction and as a delimiter of a discrete period of human history, whose beginnings are traced back either several decades to the communications revolution or centuries to the medieval roots of world trade, the planetary inhabits a more extended temporality that both exceeds the human and has its own specific historicity. It implicitly acknowledges the fact that during the 'deep time' reaching back millions of years before the advent of humanity, the Earth had its own history that was as eventful and unpredictable as human history. Attention to the deep history of the Earth contextualizes the activities of our species, reminding us of

the contingent nature of anthropocentric assumptions and making it possible to imagine 'the Earth after us'. The momentous of the changes made by humans to the life of the planet is in fact condensed in the realization that long after we are gone the effects of anthropogenic climate change will still be felt through the likely suppression of the next two geological ice ages, due fifty and a hundred thousand years from now.

A self-contained version of planetary thinking, criticized for its maverick science but influential for the environmental imagination, can be found in James Lovelock's Gaia hypothesis. Formulated in the 1960s and 1970s, Gaia is based on the claim that there is an all-encompassing, non-human agency operating on the level of the planet and directed towards the maintenance of equilibrium through self-regulating changes to the oceans and atmosphere. Like the notion of deep time, the Gaia hypothesis removes humans from the centre of the story, relegating our species somewhere below microbes on the scale of importance to the Earth's processes. Lovelock was convinced that although technological developments might eventually prove fatal for the human species, their chances of endangering the life of Gaia as a whole were 'very weak indeed'. Today, awareness of the scale of anthropogenic changes to the planet raises the spectre of humans overpowering even the mighty Earth goddess Gaia, crashing her self-regulating cybernetic system to reach a point of no return to equilibrium.

As a nascent political project, the appeal to the planetary responds to the obligation in an age of ecological crisis to transcend the uniquely human concerns of the global. It is an attempt to conceive of the consciousness of the planet as a whole, where a planetary geopolitics reflects not the global

dominance of one ideology or system over another, but rather articulates a political agenda in which the Earth's inhabitants are connected by a planetary ecosystem that surpasses man-made borders. To speak of the planetary automatically includes both non-Western cultures and the non-human inhabitants of the earth, but also the materiality of the biosphere, from the atmosphere and oceans to the planetary crust, life forms and phenomena that are unreflectingly omitted from the global. A vision of planetary citizenship, based on what Ursula K. Heise describes as 'the environmental imagination of the global' (2008), also holds out the prospect of sidestepping the impasse between nationalism and cosmopolitanism that characterized the era of globalization, and points towards a geopolitical project based on the values of interspecies solidarity and environmental justice.

See also Anthropocene; Cosmopolitics; Earth; Ecosophy; Object-Oriented Ontology.

Maja and Reuben Fowkes

PLASTICITY

As used in the work the French philosopher Catherine Malabou, the word 'plasticity' derives from the Greek *plassein*, which has a dual meaning: 1) to receive form (like clay is plastic); and 2) to give form (like surgery can be plastic). Malabou adds a third meaning, which is especially suited to philosophical use: 3) plastic in reference to the annihilation of form (as in plastic explosives).

Strictly speaking, this versatile notion of plasticity is put forward in line with contemporary interpretations of G. W. F. Hegel, which try to elaborate a Hegelianism

that is up to the task to carry out progressive socio-political analysis (this attempt naturally allies Malabou with Slavoj Žižek, Judith Butler and Adrian Johnston). Ultimately, Malabou seeks to develop a materialism that functions as the basis of a new philosophy of spirit. (Malabou 2012b: 212) Since her dissertation, *The Future of Hegel*, Malabou has been concerned with a Hegelianism that is able to have a sense for the future, despite Martin Heidegger's claims to the contrary (Malabou 2004: 5). In order to address this question, she adapts the Hegelian concept of plasticity, in a strategy which, following a classically deconstructionist methodology, accords a relatively insignificant element of Hegel's argumentation a power which is able to, *avant la lettre*, deal with latter-day Heideggerian concerns regarding time. Where Malabou resolutely differs from her dissertation supervisor Jacques Derrida is in the fact that she aims to use this concept to vindicate the use of dialectics as a method of philosophical and social analysis, rather than completely destabilize it. Although Hegel did not intend the third meaning of plasticity (explosive plasticity), it is an essential part of Malabou's project to read back into Hegel this explosive side of subjectivity, which she believes Hegel anticipated in some respects (Malabou 2009a: 9).

In terms of her central problematic, Malabou professes a fascination with notions which allow for an amplification of their ontological scope (such as time in Heidegger and writing in Derrida) (Malabou 2009a: 13). She believes that it is a certain historical tendency that enables these notions to come forth in their respective epochs. In her insistence on this historicity, all the while still clinging to the meta-applicability of her own notion of plasticity, it becomes abundantly clear that Hegelianism really lies at the core of

Malabou's thought. In the attempt to adhere to a plastic 'absolute', she impregnates Hegel's two senses of plasticity with a third: a plasticity of destruction or deconstruction.

While it can be said that Malabou's notion of plasticity is to some degree a return to Hegel, she also believes that her own version of the concept is uniquely of our own time in two key fields: in terms of philosophy it is able to overcome the key concepts of the previous epochs, thus placing philosophy in a position of (once again) being uniquely of its time, and in terms of science plasticity offers, in Malabou's view, the best account of neurobiology, which opens up the possibility of a new materialism. She believes that plasticity is the 'dominant formal motif of interpretation and the most productive exegetical and heuristic tool of our time' (Malabou 2009a: 57). It is with regard to this claim that Malabou finds an expression of her own notion of plasticity in the capacity of brain damage to completely destroy someone's personality, while retaining the option for a new personality to emerge (through the other senses of plasticity). She then points towards the fact that this kind of capacity, that is inherent to the brain synapses, lies radically outside of the psychoanalytic mode of explanation (although Freud localizes this externality in the possibility of trauma, in the epitomic 'beyond' of the pleasure principle) (Malabou 2007: 79). Since the psychoanalytic ability to explain is, like its idealist and phenomenological predecessors, strictly dependent on what psychic reality allows us access to, Malabou attempts to develop the topology of the brain wound as a plastic way of relating to a realm of materiality that is independent of the subjectivism involved in avenues of research which are dependent on a psychic reality (recent research in biology and neurology also

speaks of plasticity in topological models). In Malabou's view, plasticity provides a 'deconstruction of the real', which 'organizes the real after metaphysics' (Malabou 2009a: 57), which thus engenders a new materialism that allows us to 'momentarily characterize the material organization of thought and being' (ibid.: 61).

The characterization of the brain as plastic allows Malabou to leave behind the discussions on the determinism brought up in connection with neurological descriptions of the brain. Since the brain is plastic, can be moulded and is continually changing in response to our experiences, it is instead fundamentally free (Malabou 2009b: 11, 21). In part, 'our brain is what we do with it' (ibid.: 30) and as such, Malabou is attempting to stimulate a culture of 'neuronal liberation' rather than a biological determinism (ibid.) She thus objects to models of the brain as centralized machines or simple computers, because these do not capture the plasticity of the brain, especially in the sense of the capacity for destruction and subsequent reformation (33–5). However, Malabou warns that plasticity should not be considered to be completely coterminous with freedom and should not be confused with the ability to act (48). Offering some social critique, Malabou objects to the ideology of flexibility that is currently prevalent in management of labour, which leads to the belief that those who are not deemed flexible, or rather 'immobile', are relegated to poverty (51). According to Malabou, this ideology has also penetrated into mental health care, ensuring that mental illness will be treated solely with the aim of the restoration of flexibility, in the terms dictated by flexible labour, under the auspices of returning the patient to society (medication being one of the means employed by this ideology of 'restoring action') (51–2). An essential part

of Malabou's argument is the fact that the popular conception of neurobiology is articulated solely in terms of flexibility, thus creating the impression amongst those subscribing to the ideology of flexibility that they are merely bringing the management of labour and mental health-care in line with the scientific facts regarding our neurological needs.

The obvious implication of Malabou's line of reasoning here is that we have, no doubt with the best of intentions, manufactured a new normalcy, which reproduces all the old models of exclusion along the vectors of mental illness and poverty. Against flexibility, Malabou maintains that we must increase our consciousness of the brain, in the service of emancipatory political understanding (53). Evidently, although she does not articulate why, Malabou believes that this type of consciousness is more effective than what philosophers typically advocate; the education of the people through unrestricted conceptual thought, which in this case would typically start from the fact of inequality. What Malabou advocates instead is to start public awareness from the notion of the plasticity of our brain in relation to our individual and social potential. In essence she proposes a redefinition of the self, in which brain plasticity functions as universal in terms of a potential that is radically differentiated at the individual level. This reopens the door to psychoanalysis, which stresses the fact that, although we may all be radically different, we share some initial structures at the start of our personal histories (in the form of childhood) which can be treated in a universal way. It is indeed on this ubiquitous filial structure that Malabou proposes that a general theory of trauma should be built (2012b: xix). From this perspective, the event of cerebral trauma, an accident leading to a wound, presents a

unique type of trauma, which provides a special insight into the destructive aspect of cerebral plasticity, much in the same way as filial trauma provides insight into its developmental aspects (*ibid.*: 11). Finally, Malabou draws parallels between brain trauma and social trauma (terrorist attacks, sexual abuse, oppression and slavery) in terms of the destructive aspect of plasticity; in both cases, a violence cuts the subject off from its accumulated memories (213).

There is then a resolutely normative component to the study of brain plasticity, because Malabou seeks to determine what we should do with our brain, instead of what we are doing with our brain. She does not simply present a thesis about radical subjectivity, but rather a reflective concern about the way our understanding of the brain has been utilized by capitalism, in the form of the ideology of flexibility, which obfuscates our consciousness of the plasticity of our brain (2009b: 12, 33). For Malabou, any study of our cerebral powers immediately implies a political dimension, since it aims to define what we can and cannot do (*ibid.*: 32). Where Malabou departs from (and attempts to correct) both the ideology of flexibility and the accounts provided by neurologists is in the fact that she maintains that destruction is an essential part of cerebral plasticity, which restores its dialectical nature: 'if we didn't destroy ourselves a bit, we could not live' (74).

The notion of plasticity has deeper and more surprising roots than Malabou propounds. Although she frequently claims that Hegel's use of the term in 1807 was unique, it is likely that he adopted the notion from F. W. J. Schelling, who often used it as a way to describe nature (out of which subjectivity emerges). J. W. Goethe referred to the plastic nature of man and, in the seventeenth century, the alchemist

F. M. van Helmont described Leibniz's monads as 'vis plastica'. William Harvey used 'vis plastica' to describe epigenesis, and his work was in turn used for a popular explanation of fossils, as the spontaneous results of the plastic latency of the earth. This long tradition of plasticity curiously shows the interconnection of plasticity and nature, which Malabou ultimately re-inserts into Hegel's notion. In a certain sense, Malabou restores the original spiritual materialism of the term.

See also Critical Posthuman Theory; Neo/New Materialism; Neuronal Aesthetics.

Tom Giesbers

POLITICAL AFFECT

The 'affective turn', by reacting against the previous 'linguistic turn', has brought bodies to the attention of cultural studies, humanities and social science scholars, not merely as sites for the inscription of power relations by transcendent institutions, but as sites whose immanent potentials allow for relations with other bodies that participate in fluctuating power relations. With the affective turn, bodies have thus moved from a blank slate to living beings, from clay to be moulded to creatures feeling their way through ever-changing worlds. The affective turn has two modes: a neurological one to which the name Sylvan Tomkis (thanks mostly to Sedgwick and Frank 1995) is attached, and a Deleuzean-Spinozist one, exemplified by Brian Massumi (2002). While Tomkins posited nine neurobiologically hardwired and recombinant affects, affect for the Deleuzo-Spinozists is twofold: the change in the material relations of an affected body and the concomitant change in the interactive potentials of that body (its 'power'). Intertwined with Deleuze's

virtual/actual distinction, this scheme enables affect to be 'an entire, vital, and modulating field of myriad becomings across human and nonhuman' (Gregg and Seigworth, 2010: 6). The embodied, biological, drive mode (Tomkins) and the boundary-crossing, assemblage-producing transversal mode (Deleuze-Spinoza) do not exhaust the affective turn, however. Gregg and Seigworth see a number of other approaches in contemporary affect theory: various elements of bodily scaffolding with technological objects, as in 'extended mind' discourses; cybernetics; 'processual incorporeality' or Spinozism; bio-cultural interweavings or socialized desire; investigations of the felt and lived experience of marginalized peoples; the biological, neurological and cognitive sciences; sociological and philosophical work on the emotions; and science studies (Gregg and Seigworth 2010: 6-8).

Political affect (Protevi 2009) is a rough-and-ready connection of the Tomkins and Deleuze-Spinoza modes – an acknowledgement of the bio-cultural reality of human nature, the way in which our biology is such to be open to our culture, our nature is to be open to nurture. We are hard-wired with regard to the patterns of basic affects, but their triggers and thresholds are experientially formed as we move in and out of bio-social-technical assemblages. All in all, it's a roughly Nietzschean outlook: our consciousness is shaped by our (inter-)corporeal natures, which make themselves known in affective pushes and pulls, highs and lows. Political affect also takes account of Jonathan Haidt's prominent article, 'The Emotional Dog and Its Rational Tail' (2001). For Haidt, moral judgement mostly follows intuition, the sudden appearance in consciousness of an awareness of what is the right thing to do in a situation. Such intuitions are affect-laden, and insofar as

the production of affect-laden intuition is dependent on the state of one's body at any one time (Haidt briefly refers to Damasio's 'somatic marker theory' (Damasio 1995) at this point in his essay), we see something of the same basic insight as affect theory, a general relegation of cold, rational consciousness to a subordinate or perhaps even fully epiphenomenal status, the limit case of a cooling of affect to its minimal intensity.

Political affect is among several formulations of affective theory that are criticized by Linda Zerilli in a recent article (2015). Zerilli takes up the deflationary account of conceptual/propositional knowledge developed by Jason Stanley (Stanley and Krakauer 2013; Stanley 2011) in which propositional knowledge need not be linguistically articulable to count as knowledge. This deflationary account is then set up as a third option to supposedly non-conceptual affect and what Zerilli sees as the hyper-intellectualist account of conceptual/propositional knowledge that would require linguistic articulability. The deflationary account would then avoid the binary set up between the intellectualists and the affective non-conceptualists such as Dreyfusian phenomenologists, Deleuzian/Spinozist affect theorists, and Damasio, Panksepp, LeDoux and other affective neuroscientists. For Zerilli, the affective schools are caught in a mirror-image binarism with their hyper-intellectualist opponents with whom they share a 'layer-cake' ontology (linguistically articulable knowledge resting on a not-just linguistically articulated but thoroughly non-conceptual layer of engaged coping, virtual feeling, or neurological firings). Zerilli's challenge is to avoid a position that would 'turn judgment into a kind of post hoc rationalization of primed responses'.

Political affect avoids the hyper-intellectualist conceptuality versus

non-cognitive affect opposition Zerilli posits by its incorporation of the notion of 'affective cognition'. This takes both elements all the way down, in keeping with Evan Thompson's 'enactivism' position in his *Mind in Life* (2007). Enactivism holds to a notion of sense-making, which is found even in single-celled organisms. So political affect does not hold to a layer-cake ontology: affect and cognition are partners all the way down. It's certainly true that almost-completely-desubjectifying experiences of rage and panic exist, but they are rare episodes of approaching a limit that activates 'affect programs' (Griffiths 1997). Affect provides salience (draws cognitive attention) but doesn't overwhelm/undermine cognition, though when we get close to the limit of desubjectification our qualitative analyses should change.

To pick up the positive formulation of political affect as sense-making, the differential relation in the sense-making of bodies politic is that between potentials for becomings or assemblage formations which vary as the members of the encounter make a 'move' in the social game, moves in which someone offers, commands, cajoles, persuades, pleads and so on. The possible moves of a situation are the moves allowed by embodied competences. But these possible moves are themselves taken up in relations of change: what Deleuze and Guattari call 'de-territorialization' (leading to what would be unexpected, because changing the allowable patterns of the game) and 're-territorialization' (settling back into an old game, or setting forth the potentials of the new game) (Massumi 2002: 71-80).

Political affect is the feeling for this variation; it is the intensive as opening up access to the virtual, to the differential field, idea, or multiplicity of the situation. As Massumi puts it: 'Affect is the virtual as point of view, provided the visual meta-

phor is used guardedly' (2002: 35; italics in original). It is the feeling of change in the relation of bodies politic: the feeling of the change in the first-order body politic in the encounter with another body politic (thus not an introspective perception of an isolated body, but a feeling of the body in relation), and the feeling of how the present feeling might vary in relation to what might happen next in a variety of futures. Affect then is a resolution of a complex differential field, relating changes in bodies politic, or more precisely, the changes in the relations among changing first- and second-order bodies politic. Now in some cases, situations are 'well in hand', and affects collapse into emotions having something of a representative function: they show us how things actually are and how they will evolve. But this is emotion as subjective capture of affect. In some other cases, the situation exceeds our ability to make sense of it; affect extends beyond the body's ability to emotionally represent the situation; we are overwhelmed and thrown out of kilter.

Here we are at the limit of faculty of sensibility: these situations cannot be sensed from an actualized point of view of recognition and common sense ('it makes no sense'), but can only be felt, that is, 'sensed', as pointing to a differential field beyond 'normal' sense-making as recognition, as conceptual-emotional capture and processing. In other words, an intensive encounter outside normal/actual affective cognition habits (modelled as a move outside the basin of attraction, or better, outside the normal attractor layout as habitual response capacities), provides access to the virtual. This access is experienced as a strange feeling, a feeling of being out of step with your normal habits; in this strangeness lies the potential to open an adaptive response as creative event throwing up a new attractor layout,

giving new options to the system. Finally, and quite simply, adopting a direction for action is actualization, the selection of a path from the options laid out by signification; such a decision is modelled as falling into a basin of attraction.

See also Bodies Politic; Affective Turn; Networked Affect; Insurgent Posthumanism; Precognition.

John Protevi

POST INTERNET

And the Space Formerly Known as Offline

Post Internet incorporates many histories, but the term first emerged around 2008 (Olson (2006) in Connor 2013), to describe a discrete, critical artistic enquiry into the ‘impacts of the Internet on culture at large’ (Olsen 2008). The practice began through the sharing, re-working, production and display of the images, text, activities and economies that were found online. Subsequently, following the particularities of a highly heterogeneous set of art practices – from the sculptural theatres of Ryan Trecartin to the image networks of Kari Altman to the mutated corporatism of Timur Si-Qin (for instance) – the term has become more nebulous, referring adjectively to a broad ‘cultural condition’ (Archey 2012). Understood in art through the experience and appearances of the user-focused interfaces of Web 2.0, these critical artistic enquiries showed the internet to be far from an autonomous site of user-agency. The term’s usage as a ‘cultural condition’ indicates how the surface layer is increasingly seen through the non-linear and protocol-defined set of relations and affects (Galloway and Thacker 2007). These are in turn the

expression of the gendered, and racially and geographically grounded infrastructures, rare-materials and subjectivities at work on the internet (Nakamura and Chow-White 2012; Sanderson 2013). Thus, critical attention to all these factors brings to the fore the attendant radical redefinition of the geopolitics (Bratton 2016) and the economies that sustain and structure them. This ongoing ‘cultural condition’ tessellates with historic models of the posthuman, which stressed theories of embodiment so as to counter the growing abstraction of information (Hayles 1999). It also contains, however, important implications for recent theorizations of a post-anthropocentric sensibility and the necessity of an evolution of ethical awareness under advanced capitalism (Braidotti 2011a).

Since the early millennium, artists associated with Post Internet engaged in a partially coherent, often fragmentary artistic dialogue that examined, appropriated, re-performed and re-distributed the images and objects of social media, advertising and corporate culture: often through the platform-specific spaces and communities (on Tumblr for example) it took to be its subjects. This Post Internet approach was characterized by a focus on questions about the construction of subjectivity; the performance of (multiple) identities online; the corporatization of the internet; the reproduction of labour in the digital economy; its relationship to emergent forms of materialism, image circulation; and theories of locality, nationality and geographic drift. Distinguishing itself from earlier subversive concepts such as ‘cyber-space’, ‘the virtual’ or ‘Net art’ (though these distinctions have, of course, always been contested), a relatively closed network of participants worked transversally across what was known as ‘online’ and ‘offline’. From documentation (in place of the ‘actual’ artwork), to the use of shared, low-cost or

'poor' images (Steyerl 2009, 2012), to networks or systems of art-making that necessarily comprise both online and offline elements (Vickers in Scrimgeour 2014), what is central to Post Internet art's initial assembly of definable works was its challenge to the established canons of art, internet discourse and, crucially, to the primacy of the physical gallery space and original artwork (Vierkant 2010). In part, eliding distinctions between real and virtual reclaimed the formation of subjectivity from the sort of Cartesian dualism that had separated the mind from 'meatspace' (as in John Perry Barlow's 'Declaration of the Independence of Cyberspace' (1996; Berry 1998), but it also posed the embedding of the internet in the everyday as a given (Novitskova 2010; McHugh 2011).

While a difference in degree – being on/offline – constituted the core difference in kind for Post Internet art, the Internet has by now become so dissolute, more cloud than web, that it dissolves any particular traction or rupture that the notion of Post the internet once may have had. As artist Jesse Darling put it, 'every artist working today is a Post Internet artist' (2014). Further, the fluid and evasive techno-politics of the internet, meshing war and surveillance with the technologies of vision and image (Braidotti 2013: 8; Schuppli 2014a; Steyerl 2009, 2012), and the hybrid sovereignty of data, users and their participation with the 'necropolitics of the cloud' (Hu 2015), can be said to have been eclipsed by Post Internet art in a machinic-social continuum that bends Post Internet around the posthuman condition. Uneven, yet ideologically universal connections between devices, social media profiles, (in/non/human) users and conceptually integrated stacks of interfaces, protocols and architectures (Srnicsek 2012; Galloway 2012; Bratton 2016) come together to diversify,

complexify and further enmesh Post Internet with the social, as the social. Through mobile, Wi-Fi and cloud computing, the processes of sensory embodiment (how these technologies help users experience their environment) erase previous distinctions such as those between producer, consumer and distributor (Farman 2012; Hu 2015; Easterling 2014) – blurring these into the increasingly homolingual figure of the user (Wright 2013): a user who, as bots, the internet of things, and composite Post Internet artworks attest to, is no longer necessarily human. This rebirth as a condition defines a quantitative shift in the ontological treatment of digital-non-digital technological hybrids on both sides of the posthuman ambivalence. This includes interleaving with, and de-centring, difference through connections to previously out of reach global otherness on the one hand (Nakamura and Chow-White 2012), and the use and reproduction of dominant, standardized distribution, production platforms and protocols which redefine much of the space formerly known as offline (Galloway and Thacker 2007; Abreu 2015), on the other.

The term Post Internet's generational specificity and genesis among the institutions of art (Archey 2012) remains nonetheless of great importance. Condensing varied practices into a discrete movement (Vickers 2013; Chan 2014), Post Internet art came to be criticized for its apparent complicity with a globalized art market, and inability to negate the privilege of the gallery (Vickers 2013; Droitcour 2014a, 2014b; Vickers in Scrimgeour 2014);¹ and ultimately for being unable to separate itself from the discursive and structural privileges (leisure-time, master's-level art education and access to expensive technologies) it often relied on (resistances to these privileges and structural conditions notwithstanding) (Quaintance 2015;

Chan 2014). Yet, articulated in the aftermath of the financial crisis of 2008 the bifurcation of Post Internet art as cultural condition became paired with the generative effects of the same information that sparked that crisis in the first place. This situation speaks of an entanglement that goes beyond the capacity of Post Internet art to remain autonomous.

As Suhail Malik has argued, systems such as computational finance, contemporary art – and I would add social media and Post Internet art – are comparable insofar as they operationalize a notion of information as an event – one that updates what was ‘known’ before it (Chun 2011a), what cyberneticist Gregory Bateson would call a ‘difference which makes a difference’ (Malik 2014). No longer fixed to the aggregation of knowledge, here additional information instead updates the current picture, rendering the existing one redundant and useless. In contemporary art producing such difference pluralizes history or the social – converting them into subjectively and experientially different events (views) or objects (artworks). While in contemporary art this difference might aim to puncture the hegemony of the canons, institutions and narratives of (westernized) modernity that preceded and haunted it, it also more generally creates a risk that can be gambled against (Malik 2014). Whether we take the finance industry – or for instance the speculative planning and rhetoric of health, economic or migration policy (Mitropoulos 2012) – the scope, scale, granularity, social or political weight (etc.) of the disruptive event of information made possible by the distributed computational infrastructures of the Post Internet condition, has converted this very event into a structural relation in itself (Wark 2015a). Thus in this sense, the essentially postmodern strategies of contemporary art – appropriation, repeti-

tion, re-circulation and performance, which produce the generative events of information – do not separate it from an economy in which the circulation and regulation of new information is control (Dean 2005; Malik 2014), but rather bring contemporary art closer to it.

The proximity of Post Internet art to Web 2.0 had enabled it to proceed with the authority of speaking from, and not for the internet; and as a condition Post Internet has come to be increasingly suggestive of the overlapping entanglements of state, post-state and technological interfaces with the figures of the non/in/post/human. Yet as fewer artists mobilized the term as a point of reference, and Post Internet started taking on more of contemporary art’s post-modern characteristics and physicality (Archey 2012), things changed. Indicated by a sort of ‘torsion’ occurring at the heart of Post Internet art, the Post Internet as condition could be said to re-shape itself – Janus-like – as a challenge to a liberal, autonomously grounded presentation of the posthuman condition. This brief (and partial) look at Post Internet art, and the flows of information it sought to represent and (in varying degrees) to resist (Kinsey 2014), therefore allow us to identify three contradictions that structure the messy proximity to and complicity of Post Internet with the posthuman as networked predicament. The first is the implicit and deliberate failure to disassociate itself from the structural conditions that enable it; the second is the development of an aesthetic style that characterized this condition as given; and the third is the synthesis of Post Internet with a wider malaise of contemporary art (Malik 2015), which equates the market with information that is, if not entirely freed from, at least not completely fixed to bodies.

The extent to which Post Internet art remains situated at the structural and

conceptual boundaries of the Post Internet condition cannot but illustrate and intensify the contradictions that mark such a messy position. Viewed from the perspective of the effects of this situation upon the subjects and objects involved (rather than focusing only on the agency it might or might not afford them) however, the Post Internet condition maps art onto the overlapping conjunctions that connect subjectivity, infrastructures and linguistic modes around each 'user'.² Hence, the affirmative, critical position to be drawn for art practices that maintain a grounded and situated critique of the internet, whether intended or not, concerns how the entanglements of the posthuman 'nill' (willing in the negative sense) the torsions of Post Internet as a critical navigational tool of the posthuman predicament.

As an ambivalent case study for the posthuman, therefore, Post Internet art might also then lay the ground for art's engagement with the posthuman predicament 'non-representationally'. As Wendy Chun comments in reference to Frederic Jameson's notion of cognitive mapping: 'Could it be that rather than resort to maps, we need to immerse ourselves in networked flows?' (Chun 2011b). Tangled as it is in the posthuman predicament qua the Internet, the troubled entanglements of Post Internet art could also be thought of as the pre-figuration of an alternative infrastructure in the circulation of 'information as the social'. In its inadequacies, there has 'always already' been a social and political remainder with Post Internet art's constituent relation to being on and offline, and this trans-platform trace continues. Taking this forward, thinking of artworks as underlying, but not reducible to, a critical or transformative practice, it might be possible to think of the art-infrastructures produced by post-Internet practices as an additive and capacious framework through

which de-centred narratives, knowledges, languages and subjectivities are brought into dialogue with each other so as to redistribute and destabilize the narrow and recursive origin-narratives (Haraway 1986) and the economic parameters implied by the false unity of being post the Internet.³

See also Art; Capitalocene and Chthulucene; Hypersocial; Metadata Society; Metamodernism; Networked Affect.

Notes

1. Interesting examples of this move 'back' into the economy materiality of contemporary art include the Paddle8 auctions, 89+ project and 2015 New Museum Triennale 'Surround Audience', not to mention gallery representation for many Post Internet Artists and much art historical writing on these practices from alongside and among those networks: this kind of text included.
2. A point made by many of those who chose to exit it was that, as indicated in the first contradiction, Post Internet art missed, erased or normalized the highly contingent construction of this mapping.
3. Thank you to Cadence Kinsey and Eleanor Ivory Weber.

Tom Clark

POSTANIMALISM

In discussing the relationship between man and animal, Gilbert Simondon states:

From Aristotle to Descartes, from Descartes to contemporary notions of instinct, biological notions of instinct, there is truly a relationship between thesis, antithesis and synthesis: Cartesianism constituting the antithesis of the theory of Antiquity, according to which human

reality and animal reality are in continuity. Descartes affirms they are not in continuity. Finally, the contemporary thesis once again reaffirms they are in continuity, not merely by the reversal of Cartesianism, but in saying what is true about the animal and what is true about man.

2004: 59

It is remarkable that Simondon, in two classes he gave as part of a general introduction to psychology – he offered this to (first year!) students until 1967 – gives us an overview of the Grand History of what we call Animal Studies today, where the last phase he distinguishes, the phase in which the animal is released from (or emancipated from) its anthropocentric rule, marks the way in which animal studies so vividly enters all parts of the humanities at the start of the twenty-first century. Or to phrase this differently: what is true for man today exceeds our modern idea of the human whereas what is true for the animal, maybe even more urgently, exceeds the idea of the animal as it has been dominated, domesticated (*d'homme-esticated*, as Lacan would put it) by modern man. Cartesianism had been dominant in thinking the animal during the nineteenth and twentieth century through this very simple formula: the animal is part of the *res extensa* (corporeal substance) whereas man's existence (which has 'doubt' as its essence), can only be defined as *res cogitans* (mental substance). This dualist opposition, which marks what we can refer to as Modern thinking, was not of importance in Antiquity and lies at the heart of how Animal Studies today is emancipating the animal from our anthropocentric viewpoint. Simondon's overview reminds us that our posthumanist endeavours (see *Posthumanism*) must always already be accompanied by a postanimalism, as only together – in continuity with one another – can these new areas of thought release us

from Cartesianism and propose new ways of thinking man, animal, and above all their relationship.

Believing that the animal essentially exists as a series of mechanical procedures that in their togetherness create a type of behaviour (see also *Technoanimalism*), Descartes opposed the dominant ideas on the animal of Antiquity, yet at the same time built upon a long tradition that more or less started with Plato's idea that man is a superior animal, with the important addition that the human superiority, as we find it in Platonism and especially in Christianity, turns into a human exceptionalism with Descartes. Think of the earliest Apologists (around AD 300) and the Church fathers that followed, many of whom at least anticipated a dualism in which the animal turned into a (human) myth since animals did not have a direct recognition of God, as humans did (Simondon 2004: 66). Interestingly enough, this form of human/Humanist exceptionalism did not exist in Presocratic thought, and when Simondon talks of Antiquity he particularly draws our attention to Presocratic thinkers like Pythagoras and Empedocles, who work with the ancient doctrine of metempsychosis, which claims that the soul is not so much attached to matter, but rather traverses it, 'lives it' and moves on. Empedocles beautifully captures this idea with the phrase: 'I was in other times a boy and a girl, a bush and a bird, a silent fish in the sea' (Simondon 2004: 33, note 2).

As early as Lucretius (in his epic *de Rerum Natura* written in the first century after Christ) Pythagorean Metempsychosis is severely critiqued and replaced with an idea that all souls are as mortal as those bodies that give rise to them (an idea that only returned to academia after the Renaissance – when his text was rediscovered – and lived on in the writings of Montaigne, Shakespeare, Bruno and

Spinoza). The domination of Christianity (transcendental Platonism) and Cartesian dualism, however, made sure that the animal only up until very recently received serious attention from the History of Thought. Metempsychosis itself only knew a short revival in nineteenth century (it has been discussed in the writings of Melville, Joyce, Pynchon and Proust, among others), where it was experimented with but more often ridiculed.

Simondon is right when he uses dialectics to analyse this history of man and animal, but contrary to the traditional Hegelian use of the term (dialectics), which is concerned with a positive development, a more fragmented dialectical analysis would make more sense. And this especially concerns the synthetic position which, as Simondon himself noted above, cannot be seen as a grand conclusion, but concerns a much more modest search for the possibilities of animal (and human) life. Thus, like posthumanist theories of today, post-animalism too has a speculative nature.

For postanimalism this means that thinking in terms of 'kinds' and of qualities ascribed to these kinds, is long left behind. Thus, postanimalism is in particular concerned with the revitalization of the long history of human-and-animal/animal-and-human relationships as it has been developed in the minor *non-Christian* histories (and folk tales), that have survived modernity, as they had survived Christianity. Rediscovering these strong but often neglected traditions in the reality of today, and thus rewriting them into the Grand History that had no place for them before, the micropolitics of postanimalism doesn't synthesize the History of Man and Animal at all; it excavates it, hollows it out, replacing Major History with a series of situated narratives.

It is interesting to find out that quite a few of these non-Christian (pagan, animist,

vitalist) traditions (rarely discussed in the Christian and modern literature on the animal), appear to have long and fascinating histories. The practice of 'mumming', for instance, coming from the Greek *mummo* (denoting a child's bugbear, or a frightening mask), was a folk tradition absorbed in Italian masquerade (and hence in other courtly entertainment known as masque) from the sixteenth century, but has a much longer history (stretching out until today) outside of Christian High Culture. Originally, mummers were bands of masked persons who during winter festivals in Europe paraded the streets and entered houses to dance or play dice in silence.

In relatively new fields like Nordic Studies, there is particular interest in how local traditions and customs survived at the margins of Christianity, in particular on those remote islands where the *res extensa* of mythology and magic was less under pressure. Terry Gunnell stresses the importance of mumming in these communities, as it stressed the powers of the seasons, of the environment (the sea especially), revealing them what Muensterberger famously called their 'semi-human reality' (Gunnell 2007: 28). The extensive use of masks, of cross-dressing, in many ways practices an idea of humanity that is far from modern, that does not position itself as opposed to the animal and to the world but that seems to be in search for situating a series of bonds, knots and connections between all of the things that matter in the here and now.

As one of the core founders and part of the curatorial team I've set up the *Papay Gyro Nights Art Festival* (co-founded and co-curated with Ivanov), organized every year in the heart of the dark and cold winter on the remote island of Papa Westray (locally known as Papay), in the far north of Scotland. The aim of this festival was to create a stage where this discovery and rediscovery of the strong postanimal and

posthuman (*id est*, post-Cartesian) revival in the contemporary arts and in thought, could be experienced/experimented with. The name of the festival captures these interests: Gyro (aka *Gryla* and *grýlur*) – is the name of a threatening female orgress figure; a giant-ess, who is well known throughout the region. The Gyro is a mumming figure that during wintertime comes from the sea, is dressed in seaweed and demands offerings (food but also little children) before she returns to the sea again. Known under different names throughout the North Atlantic (from the Orkney Islands to the Shetland Islands, the Faroe Islands and Iceland), the Gyro also appears in many different forms. In our days the Gyro lives on the island again when Hong Kong's well-known performance artist Frog King roams the island in his *objet trouvé* coat (with froggy eyes). Famous for his solo exhibition at the 2011 Venice Biennale (entitled *Frogtopia, Hong-Kornucopia*) where one pavilion contained over nine million of his artworks, his un-human performance was all about littering the island, and the capitalist and humanist sentiments that rule it, with an overwhelming earthly wit. But the Gyro also returns in the sound art installations of Signe Lidén (played by the strong winds that always haunt the island), in the cinematic chaosmotic reflections (of the northern light) by Japanese avant-garde film-maker Takashi Makino and in the ancient folk tales that for instance tell us about the love of selkies for the girls of the island (as told by Orkney storyteller Tom Muir).

Asking ourselves what forms of life the island (and the sea), at full moon in February, allows for, what kind of new creatures it creates, is at the core of what this festival (and many other small cultural festivals that are increasingly popular in the art worlds today). It is especially about the bringing together of local storytellers, archaeologists, philosophers and artists

(performance art, cinema, installation) that realizes a site-specific thinking, creatively putting the relations between post-human, postanimal and perhaps even post-environmental entities at stake. What they synthesize, to come back to Simondon again, is then not so much the History of the Animal or of the Human. On the contrary, what this realizes is a multiplicity of minor histories, coming to us (through speculation) from the future, from an animal, a human and an earth that is not here yet. And thus these festivals have a very strong and powerful political message that extends well beyond the doctrine of metempsychosis; they situate what it is like to be a boy and a girl, a bush and a bird, a silent fish in the sea, in the here and now.¹

See also Animal; Animacies; Animism (Limulus); Bios; Food; Technoanimalism.

Note

1. The author acknowledges the assistance of Ivanov, Director of the Papay Gyro Nights Art Festival.

Tsz Man Chan

POSTDISCIPLINARITY

While the concepts of multi- and interdisciplinarity are often used to signify cross-disciplinary activities that thrive even in universities with disciplinary hegemonies, postdisciplinarity implies more radical transformations of current knowledge production. Multi- and interdisciplinarity signifies collaborations across disciplines on problems or issues of common concern, basically addressed by theoretical and methodological approaches, developed within the framework of disciplines which enter into new synergetic relationships

with each other. However, in multi- and interdisciplinary knowledge production, the disciplines perform as prerequisites and taken-for-granted points of departure for the cross-disciplinary work. By contrast, the concept, postdisciplinarity, refers to more transgressive ways of producing academic knowledge which destabilize, deconstruct and disrupt the hegemony of distinct disciplines and the classic academic divides between human, social, technical, medical and natural sciences. Scholars gathering under the banner of posthumanities, engaging with the figurations of the posthuman, defend different kinds of postdisciplinarity, oftentimes also reflected under the umbrella term transdisciplinarity.

Scholars of posthumanities have academic trajectories in a diversity of disciplines as well as interdisciplines or 'studies' such as for example feminist studies, postcolonial studies, queer studies, critical dis/ability studies, science and technology studies, environmental studies, cultural studies, animal studies etc. But across this diversity, shared grounds are often found in disidentificatory relations to the disciplining forces of the classic academic divides and the compartmentalization of knowledge production into distinct disciplines, each holding on to their canons. Most scholars of posthumanities today have to recognize their points of departure in disciplines or interdisciplines as far as formal credentials in terms of degrees and affiliations are concerned. But still they tend often to disidentify with the mainstream of their disciplines or interdisciplines due to critical stances vis-à-vis the onto-epistemologies, on which the disciplining and compartmentalizing dynamics of modern academic knowledge production are commonly founded. Many of these scholars criticize the academic divides and disciplinary structures as inappropriate compartmentalizations in favour

of transversal conversations and transgressions of current academic boundaries between production of knowledge on the 'human', the 'social', the 'natural', the 'technical' and the 'medical' worlds.

Postdisciplinarity transgressions of humanities and natural sciences are for example a methodological corollary, when Karen Barad (2007) argues for entanglements of space-time-mattering and meaning making, when Donna Haraway (2008) encourages us to look at naturecultures, when Rosi Braidotti (2006a) calls for an ethics founded in the inhuman dynamics of zoe, or when Stacy Alaimo (Alaimo and Hekman 2008) draws attention to the transcorporeal. Scholars of somatechnics (Sullivan and Murray 2009) explore how the somatical and the technical are implicated in each other, while science and technology studies scholars investigate material-semiotic co-constructions (Haraway 1992a). These are examples among many. They illustrate how posthumanist conceptual frameworks make postdisciplinarity transgressions of disciplinary boundaries necessary. None of the issues addressed here can be contained within conceptual boundaries that separate the 'human' and 'social' from the 'natural', 'medical' and 'technical' world.

Postdisciplinarity requires new modes of organizing as well as new methodological tools. Transgressive and transformative methodological frameworks are not created out of nothing. They need to unfold in transversal conversations between different approaches to matters of common concern, defined through what Barad conceptualizes as provisional and momentary – non-universal – cuts between subject and object (Barad 2007). To establish such transversal conversations beyond disciplinary boundaries, postdisciplinarity collaborative spaces are needed, i.e. spaces where collaborative efforts between differently situated researchers can unfold without any

discipline having an exclusive, taken-for-granted right to set the academic agenda and police the borders of the specific kinds of knowledge production to be set in motion. Collaboration is important in postdisciplinary work, since all knowledge production is considered partial, and no one therefore can have a full overview, i.e. play 'the godtrick' (Haraway 1991: 191).

Conceptual tools which can perform as helpful thinking technologies in terms of establishing transversal postdisciplinary conversations have been developed by different scholars of posthumanities. An example is Haraway's and Barad's suggestions about using the optical phenomenon of diffraction as a metaphor for a critical thinking technology, which makes up an alternative to the more conventional metaphor of reflection. A reflexive methodology uses the mirror as a critical tool, Haraway notes (1997: 268), pinpointing that this analytical strategy has its limitations when it comes to making a difference. The mirror as critical tool does not bring us beyond the static logic of the Same. In a mirror image, foreground and background remain the same. By contrast, diffraction is a dynamic and complex process, implying a continuous 'production of difference patterns in the world, not just of the same reflected – displaced – elsewhere' (ibid.).

The methodology of what along these lines has been termed 'diffractive reading' can be illustrated by Barad's reading of quantum physicist Niels Bohr's onto-epistemological theorizing of the apparatus for deciding on the phenomenon of light (as particle or wave) through Judith Butler's theorizing of the performativity of language and discourse, and vice versa, resulting in a new discursive-material framework of posthumanist performativity (Barad 2003). A diffractive reading implies that the conceptual-technological apparatus of

production of the phenomena under scrutiny as well as the potential interference patterns, transformations and possibilities for mutually troubling or enriching ontologizing gestures and worlding practices of these performative apparatus are taken into account. It should be noticed that diffractive readings are not to be collapsed with readings creating a Hegelian synthesis from binary oppositions. The purpose is neither to iron out differences, troubling clashes or tensions between theoretical stances and worlding practices, nor to end up in a stalemate between opposing binary claims, competing for a hegemonic position in the analysis. The point is to undertake well-prepared moves beyond the comfort zones of differing theoretical stances, and to bring these stances into productive, mutually enriching and open-ended and world-making conversations.

Other examples of thinking technologies, used by posthumanist scholars, to establish postdisciplinary conversations which blur, disrupt and deconstruct disciplinary boundaries and hegemonies are methodologies, conceived along the lines of Deleuzian philosophy such as nomadism and rhizomatics. Methodological consequences of nomadic rhizomatic approaches are for example carved out by Rosi Braidotti, who underlines the importance of analytically 'going in between different discursive fields, passing through diverse spheres of intellectual discourse' and be aware of how 'theory today happens "in transit", moving on, passing through, creating connections where things were previously disconnected or seemed unrelated, where there seemed to be "nothing else to see"' (2002: 173). Brought to bear on postdisciplinary work, this pinpointing of transit and movement can be read as an encouragement never to rest in a disciplinary comfort zone. As discussed by Rebecca Coleman and Jessica Ringrose (2013), this

approach is more and more being taken to bear on empirical research, including social research. Here it implies that conceptual frameworks should not be applied as disciplinarily canonized grids to be imposed on the material. While methodologies are considered as performative and world-making (Coleman and Ringrose 2013: 1), the material should be approached in such open-ended ways that what Deleuze calls 'non-preexistent concepts' (Deleuze 1987: vii) can be extracted from it (Coleman and Ringrose 2013: 10).

In terms of conceptual genealogies, postdisciplinarity has been less commonly used than transdisciplinarity. However, some feminist scholars have, for example, found it appropriate to signify a wished-for transformation of the disciplinary university with the concept of postdisciplinarity. I have argued for feminist studies as a post-discipline due to its radical claims to deconstruct all disciplinary canons

from critical feminist perspectives and work beyond them. I have also suggested a distinction between post- and transdisciplinarity (Lykke 2010, 2011), based on the ways in which the two terms have been used in some scholarly contexts. While transdisciplinarity often signifies modes of working with knowledge production, postdisciplinarity more often refers to modes of organizing this production. Sue-Ellen Case provides an example here, when she uses the notion of postdisciplinarity to suggest 'that the organizing structures of disciplines themselves will not hold' (Case 2001: 150), comparing the discipline-disruptive potentials of intersections of feminist theory and performance studies.

See also Diffraction; Feminist Post-humanities; In/human; Naturecultures.

Nina Lykke



Thoughts reconfigure to engage the changing ecology.
Subatlantic, Ursula Biemann, 2015, video still

POSTGLACIAL

Annotated video script of *Subatlantic*

Westerly winds determine the climate on the Island. Fog seeps into the mind's corridors and the sea enters every fissure. She is in charge of measuring fluctuations and sending the data to the lab on the coast. Logging the freezing and melting, she minutely records her encounters with difference. All seems to follow a dynamic order: The winds, the streams, the birds, the sky.

The faintness of change made it hard to detect, but the rocks witnessed a steady rise of the Sea until one day all technical equipment had to be moved further inland. The coast sank into the Ocean for a thousand years. The lab now lies submerged at the bottom a hundred yards deep, together with other dwellings of the Islanders. To do her science, she had to become a diver, measuring a sinking contracting world. Only the Oceans are expanding.

She makes efforts to attune her eyes to see underwater and fuse with the swarming Sea where the tiniest of microbes operate on an inter-oceanic scale.

(1) The science fictional video narration of *Subatlantic* (2015) follows a she-scientist who is making instrumental observations about a changing environment around the time of the last glacial melts 12,000 years ago, when the oceans rose 100 meters, through to the present thawing of the Greenland ice sheets. The scientific figure inhabits multiple temporalities spanning across eons. Spoken off-camera from a sub-Atlantic position, the post-glacial, pre-modern narrative unfolds across the Subatlantic, the latest climatic phase of the Holocene we are currently experiencing. The posthuman condition reconnects us to infinitely larger, untameable forces that animate extra-historical dimensions, plunging us humans into deep time where we have to index ourselves anew.



Underwater passages accumulate impersonal intelligence.
Subatlantic, Ursula Biemann, 2015, video still

Ocean currents gather in the Caribbean swirling eastward and upward. The warm streams plunge Northern Europe into mild winters. Reaching the Arctic Sea, the dense salty water sinks to the deep-ocean floor where it flows back to tropical regions. This process animates the global Ocean streams. Circulation is dense in the submarine rivers, and thick with nutrients.

The massive influx of arctic meltwater dilutes the salinity and impedes the sink to the Sea floor. First, the Ocean streams will slow down before they stop altogether. Will England's climate resemble Labrador's? There is questioning in the water.

(2) Widely dispersed locations filmed on the Shetland Islands, Greenland's Disco Bay and a tiny Caribbean Island are connected through the invisible Ocean streams, which determine the temperatures in the North Atlantic, sea and land. The magnitude and sensitive correlation of these planetary processes are hard to grasp, all the more so as the most signific-

ant processes are occurring between locations and invisible to our eyes. They reference what Timothy Morton calls hyperobjects – very large diffused objects that are permanently present but not localized in a material sense (global warming, financial markets). Since hyper-objects occur in much vaster temporalities, they phase in and out of the shorter human timeframe of perception and withdraw from our visibility. They only exist in unrepresentable dimensions, both mathematically and allegorically. And yet they urgently need to enter the collective imaginary. The imaginary capacity is experiencing a significant expansion in posthumanism. Along those lines, the she-scientist's examination is directed not only to the physical world and atmosphere that is engulfing her, but also to the thoughts that are formed, reconfigured or released under the changing conditions. Excursions into the fold of these entangled landscapes produces a critical location that puts thought and imagination in movement.



Ideas rush by like weather events.
Subatlantic, Ursula Biemann, 2015, video still

On board *Explorer II* she joins the bio-prospecting team in search of marine genetic resources. She brings in the directives for inter-species communication. The International Seabed Authority is keen to bring within the Oceanic Constitution any new genetic materials extracted from deep below. Particularly these extreme methane-eating organisms.

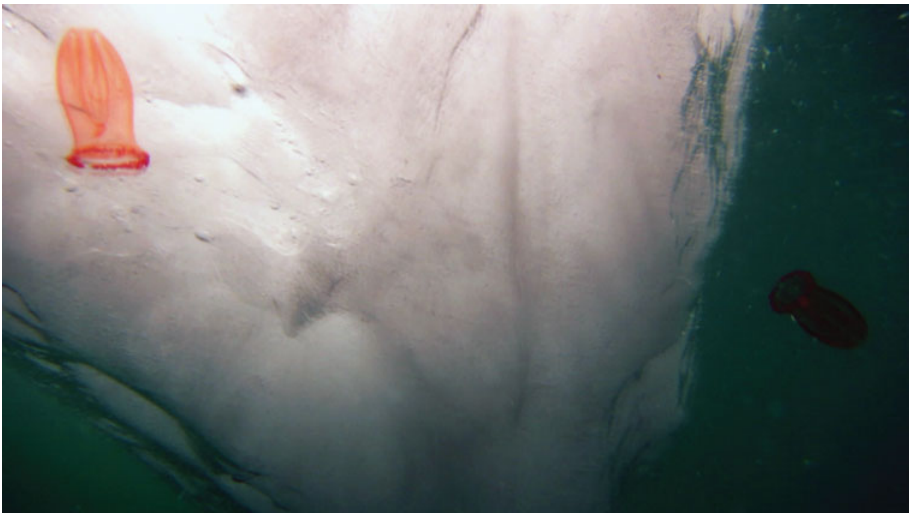
She practises a science of intensities. Out in the weather, she studies the self-organizing flows of matter and energy and the thresholds at which sudden phase transitions occur in physical systems, for instance from a solid to a liquid state. This process involves divers, videographers and metaphysicians.

(3) Here in the vicinity of Manuel DeLanda, the scientific analysis of the actual and the virtual introduces us to the idea of moving between a multiplicity of states that adhere to different models of thought. Whereas the actual is extended in metric space and linear time, the virtual is intensive and formless. Out of convenience, science has long focused on and

solidified an understanding of an absolute, measurable materiality. A science of the virtual, however, must be a science of intensities, as practised by the she-scientist who explores the quality of energies, waves, temperatures and pressures. The posthuman condition with its volatile atmospheric climate is no longer firmly placed in absolute matter; it flows along formless virtual planes arising from unmeasurable, exhalable and constantly reconfiguring qualities.

Masses of microorganisms have been trapped in the polar ice sheets for longer than human time. Locked in frozen layers, a universe of ancient creatures awaits another chance at life. Some are 400,000 years old and still alive. Rumours say they have been involved in some lateral trans-genetic activities, and are now floating outside of history.

From the dissolving icescape, tons of microbes make their way back into the liquid environment, reshaping the chemistry of the oceans and the atmosphere. The meltwater bears new genetic material



Incubating ideas are finally released from the binding force of the pack.
Subatlantic, Ursula Biemann, 2015, video still

that the world hasn't seen. Released from the deep-freeze, they begin to assemble genetic futures. Apprehension flushes into the cold water and blends with new matter, intensely communicating with fragile marine systems.

(4) With the melting of the Arctic ice comes the steady release of massive new genetic materials with which humanity is not acquainted. The ice allows microbes to enjoy a sort of immortality, allowing creatures that have long disappeared from the planet to someday return. With the Earth's sixth mass extinction under way, the logic of this evolutionary strategy becomes comprehensible: preserving genetic blueprints by storing them in deep-freeze for a future re-entry. Evolutionary biologists estimate that the total biomass of the microorganisms in and beneath the ice sheet may amount to be a thousand times that of all the humans on Earth. To be posthuman increasingly means to relocate in a new genetic planetary milieu. Rather speculative than predictive, the she-scientist – become diver, videographer and metaphysician – engages in the inevitable transformation of the chemical and genetic composition of the earth by reconfiguring its historical terms, reworking its tempi, resetting its landmarks, and rerouting its premises.

See also Animism (Limulus); Ecosophy; Naturecultures; Hypersea; Planetary; Speculative Posthumanism; Vertigo Sea.

Ursula Biemann

POSTHUMAN CRITICAL THEORY

Posthuman critical theory unfolds at the intersection between post-humanism on the one hand and post-anthropocentrism on the other. The former proposes the

philosophical critique of the Western Humanist ideal of 'Man' as the allegedly universal measure of all things, whereas the latter rests on the rejection of species hierarchy and human exceptionalism. They are equally relevant discourses, but they refer to different theoretical and philosophical genealogies and engender different political stances. Their convergence in posthuman critical thought produces a chain of theoretical, social and political effects that is more than the sum of its parts and points to a qualitative leap in new conceptual directions (Braidotti 2013).

The relevance of posthuman critical theory is enhanced by the contextual urgency of the Anthropocene condition, which, read in the light of Felix Guattari's *Three Ecologies* (2000), becomes an environmental, social-economical, as well as affective and psychical phenomenon of unprecedented proportions. The combination of fast technological advances on the one hand and growing economic and social inequalities on the other makes for a conflict-ridden landscape marked by violent and inhumane power relations.

There are many challenges for posthuman critical theory: the first one is to acknowledge that subjectivity is not the exclusive prerogative of *Anthropos*. This means that it is not linked to transcendental reason and that it is unhinged from the dialectics of recognition. Secondly, the challenge is to develop a dynamic and sustainable notion of vitalist materialism that encompasses non-human agents, ranging from plants and animals to technological artefacts. Thirdly, it means to enlarge the frame and scope of ethical accountability along the transversal lines of post-anthropocentric relations. In other words, the challenge is to create assemblages of human and non-human actors.

To meet these manifold challenges posthuman critical theory draws from

two sources: feminist theory and Deleuze and Guattari's neo-materialist philosophy. The combination of feminist and neo-materialist philosophies allows for an anti-humanist and post-anthropocentric stance, which can innovate and invigorate discussions of naturalism, the environment, ecological justice and the shifting status of the human. This results in the rejection of dualism. It is important here to emphasize the feminist notion of embodied and embedded locations, which I take as the original manifestation of the concept of radical immanence. The encounter of feminist theory with neo-materialist philosophy (sometimes called neo-Spinozist materialism) results in the reappraisal of the notion of immanence, as opposed to transcendental universalism (Deleuze 1988b; 1990; Braidotti 1991, 1994; Gatens and Lloyd 1999). Posthuman critical theory can thus be described as vital-materialist, embodied and embedded, and immanent. Elsewhere, I have described this way of thinking as 'nomadic' (Braidotti 2011a, 2011b).

The defining features of posthuman critical theory are then that it rests on a neo-materialist philosophy of immanence, which assumes that all matter is one (monism); that matter is intelligent and self-organizing (autopoiesis); that the subject is not unitary but nomadic; and that subjectivity includes relations to a multitude of non-human 'others'. In this framework 'life' is not only defined as *bios*, but also as a *zoe*-centred, non-human process (Braidotti 2006b). Posthuman critical theory celebrates the diversity of life – as *zoe* – as non-hierarchical matter, which recognizes the respective degrees of intelligence and creativity of all organisms. This implies that thinking is *not* the prerogative of humans alone, which allows for a form of relational and collaborative ethics.

Posthuman critical theory consequently embraces the eco-sophical co-creation of the world – our terrestrial, grounded location – by recognizing the specific abilities and capacities of anthropomorphic and non-anthropomorphic beings alike. The expanded definition of life also allows for the inclusion of and interaction with technological artefacts and thus accounts for technological mediation ('machinic autopoiesis'). This idea discards the nature-culture divide and replaces it with a philosophy of relationality and multiple interconnections. The embrace of the technological realm resists the over-coding of technology by the financial profit principle, which is the axiom of advanced capitalism.

If it is a challenge to acknowledge that subjectivity is not the exclusive prerogative of the human, then a posthuman theory of the subject emerges as an empirical project of experimenting with what contemporary, bio-technologically mediated bodies are capable of 'becoming'. The pursuit of one's freedom to become is framed by a neo-Spinozist ethics of joy or affirmation, which indexes the processes of becoming onto a relational bond to a multiplicity of others whose well-being affect one's own. Posthuman critical theory supports the composition of nomadic subjectivities whose relational capacities are multifold and open to non-anthropomorphic elements. The ethics of the posthuman subject is *zoe*-centred egalitarianism, based on respect for the non-human, as the vital force that cuts across previously segregated species, categories and domains. Neo-materialist immanence requires a collaborative morality in the sense of ethical accountability for the sustainability of these relational assemblages or nomadic compositions of posthuman subjectivity (Braidotti 2002, 2006a). The non-profit experiments with intensive modes of posthuman

subjectivity actualize the virtual possibilities of a nomadic, relational self that functions in a nature–culture continuum and is technologically mediated. Not surprisingly, this non-profit, experimental approach to different practices of subjectivity runs against the spirit of contemporary capitalism, fuelled by a notion of possessive individualism based on quantitative options (Macpherson 1962). The theory of posthuman subjectivity runs precisely in the opposite direction towards non-profit experimentations with intensity.

As a consequence, the task of critical thought is defined as both critical and creative. The *critical* side is operationalized through cartographies of the power (*potestas*) relations at work in the production of discourses and social practices, with special emphasis on their effects upon subject-formation. The *creative* side enlists the resources of the imagination and proposes a new alliance of critique with creativity, philosophy with the arts, for the purpose of learning to think differently, inventing new concepts and actualizing alternatives to the dominant humanistic vision of the subject.

Neo-materialist nomadic thought proposes the parallelism of philosophy, art and the sciences, by arguing that thinking is the counterpart of the embodied subject's ability to enter into multiple modes of relation. 'Thought' is consequently the expression of ontological relationality, that is to say of the power (*potentia*) to affect and be affected (Deleuze and Guattari 1994). Furthermore, thinking is about the creation of new concepts in that it pursues the actualization of intensive or virtual relations. Posthuman critical thought can thus be understood as a multi-directional philosophy of relational ethics. In other words, posthuman critical theory foregrounds a relational ethics of joy and a politics of affirmation.

Methodologically, posthuman critical theory rejects any form of nostalgia for humanism, that is to say the vision of the human as the enlightened 'Man of reason' (Lloyd 1984). Both in Deleuze's philosophy and in feminist epistemology, the non-nostalgic approach is cultivated through the method and the pedagogical tactic of anti-oedipal de-familiarization. This entails unlearning old habits of thought, and the forms of masculinist and Eurocentric representations they sustain. Such a methodological process goes hand-in-hand with the analysis of power relations, through the cartographic politics of location mentioned above. The point of cartographies is to account for and learn to relinquish unearned privileges and implicit power privileges. The method of dis-identification from the familiar is one of the most productive points of contact between neo-materialism and feminist theory (Braidotti 2016a). Keeping firmly in mind the nomadic aim of speaking truth to power and of de-territorializing philosophy from the despotic machine that has coded it over time, posthuman critical theory emphasizes the importance of learning to think differently about what we are in the process of becoming.

The meta-methodological angle is crucial to posthuman critical theory which, being a practical philosophy, pays special attention to the criteria needed to set up experiments with both virtual and concrete applications. The general concepts get operationalized in a series of methodological guidelines. The first guideline is a practical, problem-oriented approach to philosophical thinking, which is open to non-human agents and factors, including technological mediation. Secondly, we need non-linearity or nomadic thinking which entails both putting the creative powers of the imagination to work and the strategy of de-familiarization (Braidotti 2013). Thirdly, a trans- and

supra-disciplinary approach to the production of knowledge is necessary. Such an approach is nomadic in relation to disciplinary power and devoted to experimentation rather than the repetition of tradition. Fourth comes cartographic accuracy, with the corollary of ethical accountability. Finally, **posthuman critical theory embraces the combination of critique with creativity, including a flair for paradoxes and the recognition of the specificity of art practices.**

Politically speaking, posthuman critical theory is a practical philosophy that aims at composing a 'missing people', that is to say it creates a plane of encounter for subjects who share concerns and desires. Critical thinking needs to construct its community around the shared affects and concepts of collectively drawn cartographies of power. The plane of composition of 'we' – a community of nomadic and accountable scholars – constitutes the shareable workbench of critical posthuman scholars. It expresses the affirmative, ethical dimension of becoming-posthuman as a gesture of collective self-styling. It actualizes a community that is not bound negatively by shared vulnerability, the guilt of ancestral communal violence, or the melancholia of unpayable ontological debts, but rather by a collaborative ethics of becoming. Posthuman critical thinkers are bonded by the compassionate acknowledgment of their interdependence with multiple, human and non-human, others.

See also Critical Posthumanism; Anthropocene; Transhumanism/Posthumanism; Insurgent Posthumanism Feminist Posthumanities; In-human; the Joy; Monster/the Unhuman; Neo/New Materialism; Process Ontologies.

Rosi Braidotti

POSTHUMAN DISABILITY AND DISHUMAN STUDIES

In a recent paper by Goodley, Lawthom and Runswick-Cole (2014) we asked: what does it mean to be human in the twenty-first century and in what ways does disability enhance these meanings? In addressing these questions we found ourselves working through the entanglements of nature, society, technology, medicine, biopower and culture, particularly inspired by Rosi Braidotti's work on the posthuman condition (Braidotti 2003, 2006b, 2013). But how does disability speak to the posthuman (and vice versa)? We understand disability as a political category, an identity and a moment of relational ethics. Our community of scholars and activists – critical disability studies – are, we believe, perfectly at ease with the posthuman because disability has *always* contravened the traditional classical humanist conception of what it means to be human (see Goodley, Lawthom and Runswick-Cole 2014). But, we argue, disability also invites a critical analysis of the posthuman (and for that matter humanism). We draw on one of Braidotti's posthuman themes developed in her 2013 text: *life beyond the self*. We illustrate the ways in which disability epitomizes a posthuman enhancement of the self while, simultaneously, demanding recognition of the self in the humanist register. This leads us neatly to our recent work in which we have started to develop a theory of *DisHuman Studies* (see Goodley et al. 2014; Goodley, Runswick-Cole and Liddiard, 2016) which, we contend, simultaneously acknowledges the possibilities offered by disability to trouble, reshape and re-fashion the human (crip and posthuman ambitions) while at the same time asserting disabled people's humanity (normative and humanistic desires).

Humanism and the Posthuman Condition

The human is a self-aggrandizing, abstract ideal and symbol of classical humanity that was born in Europe ‘predicated on eighteenth and nineteenth-century renditions of classical Antiquity and Italian Renaissance ideals’ (Braidotti 2013: 13) and shaped, more recently, through modernist and capitalist mouldings. ‘Humanity’, Braidotti notes, ‘is very much a male of the species: it is a he’ (ibid.: 24). Moreover, ‘he is white, European, handsome and able-bodied’ (ibid.), ‘an ideal of bodily perfection’ (ibid.: 13), ‘implicitly assumed to be masculine, white, urbanized, speaking a standard language, heterosexually inscribed in a reproductive unit and a full citizen of a recognised polity’ (65), ‘a rational animal endowed with language’ (141). And to this we would add, the valued human of our times is a neoliberal-ableist citizen, able and willing to work (Goodley 2014). This narrow humanist conception of the human has historically excluded many. For the postcolonial writer Sylvia Wynter (2003: 260) this category of excluded Other includes refugees, economic migrants, the criminalized majority of Black and dark-skinned Latino inner-city males and the ever-expanding global, transracial category of the homeless and jobless. To Wynter’s list of outsiders we would add disabled people. Wynter argues that the human category, forged as it is in the industries and foundries of Western modernity, is actually a ‘central over-representation’ that ‘enables the interests, reality, and well-being of *the empirical human world* to continue to be imperatively subordinated to those of the now globally hegemonic ethnoclass world of ‘Man’, (2003: 262, italics added). This leads Wynter to describe *the struggle* of our new millennium as the ‘one between the ongoing imperative of securing the well-

being of our present ethno-class (i.e. Western bourgeois) conception of the human, Man, which over-represents itself as if it were the human itself, and that of securing the well-being, and therefore the full cognitive and behavioral autonomy of the human species itself/ourselves’ (ibid.: 260). We read Wynter’s response here as deliberately humanistic and in concert with the new humanism that Frantz Fanon (1993) had in mind: an expansionist reclaiming of the category of the human. A political and practical response to this over-representation has involved excluded others of the empirical human world seeking recognition through the normative legal frameworks that respect the right to live as a human being and pan-national declarations cherishing this phenomenon called the human. We could cite here, for example, the opportunities for humanist recognition offered by the United Nations Convention on the Rights of Persons with Disabilities. We agree with Braidotti (2013) that these frameworks continue to offer powerful forms of recognition and apparatus for agitation for many people who understandably seek to be included in the humanist human category.

Posthuman analyses appear to intervene in rather different ways in response to the dominance of humanism. One character trait of posthuman analyses is the rejection of the human category as an old-fashioned, elitist and narrow phenomenon and, in its place, an opening up of new forms of subjectivity, relationality and sociality associated, for example, with post-human conceptions such as the cyborg (Haraway), rhizomes (Deleuze and Guattari), animal-human fusions (Chen), and non-human monsters and chimeras (Shildrick). Similar responses can be found in the disability community. The developments of crip theory, activism, art, community and politics (see McRuer 2006) celebrate the

disruptive anti-humanist potential of disability to create new ways of living, loving and labouring. Disability is reconceived as a place – and a crip space – to contemplate the ways in which the human being is being reshaped through processes of culture, technology, politics and globalization. Disability is a quintessentially posthuman condition because of its crip potential.

It would appear that the politics of disability enjoys a complex relationship with humanism and the posthuman. We have come across this tension before. We are struck by (and share) the ambivalence that Braidotti's posthuman positionality demonstrates in relation to the humanist human. In her 2006 paper (2006b) and 2013 book she necessarily, we believe, leaves a space for claiming the humanist human (for example, the power of human rights discourse as a framework of recognition) whilst always celebrating our posthuman qualities (for example, the merging of human, animal and environmental politics as a post-social imperative). We view this as a disavowal of the humanist human – in the classic psychoanalytic sense – of simultaneously desiring and rejecting the human. This act of disavowal resonates with those of us in the critical disability studies and disability politics.

A Posthuman Theme: Life Beyond the Self

In *The Posthuman*, Braidotti (2013) develops the first of a number of posthuman themes. The first, *life beyond the self*, seeks to develop a new theory of the human subject that 'takes stock of the posthuman turn and hence acknowledges the decline of Humanism' (2013: 51). This decline should be celebrated because it opens up

the self as an extended, distributed, interconnected and relational entity 'embodied and embedded' (ibid.). A posthuman subject embraces 'affirmative politics' which combine 'critique with creativity' in the pursuit of alternative ways of living with one another (ibid.). This notion of the extended self recalls Braidotti's (2006b) *process ontology*. Rather than conceptualizing ontology as an internalized phenomenon of an individual subject, we are asked to think of the kinds of connection between and within one another that create a *relational ontology*. Such connections can be found in the disability movement, where disabled activists have developed their own disability communities and forms of resistance that have created new posthuman assemblages of crip collectivity, identity and resistance. Similarly, people with the label of intellectual disabilities (who would previously have been labelled as mentally retarded) explode this pathological label through their collective politics of self-advocacy that contests their marginalization and problematizes professional and institutional deficit knowledge. The global self-advocacy movement captures an emerging posthuman assemblage of disability politics – a political commons that stretches across national borders – forming a global multitude (Hardt and Negri 2000, 2004). Just as the self is extended so too the self is desired. The British organization of disabled people – Disabled People Against the Cuts (DPAC) – appeal in their campaigns against the human rights violations of the British government's austerity policies. Disabled activists have fundamentally shifted, shaped and changed the policy landscape in the UK to ensure that anti-discriminatory legislation is in place. These examples of activism draw upon humanist discourses of universal rights and self in search of recognition. Indeed, thinking back to the

politics of self-advocacy of people with intellectual disabilities, many groups adopt the moniker of People First, which is a very humanistic title. Disability politics work the edges of posthuman and humanist politics.

Conclusion: A DisHuman Manifesto

Posthuman disability studies seek to capture the disruptive and affirmative interventions of disability. Our sense is that the conditions of disability and the posthuman necessarily share a disavowal of the human. This has led us to develop *DisHuman Studies* which, we contend, simultaneously acknowledges the possibilities offered by disability to trouble, reshape and re-fashion the human (crip and posthuman ambitions) while at the same time asserting disabled people’s humanity (normative and humanistic desires). We finish, therefore, with our DisHuman manifesto, which we hope captures the potential of a posthuman disability studies. DisHuman studies:

- unpacks and troubles dominant notions of what it means to be human;
- celebrates the disruptive potential of disability to trouble these dominant notions;
- acknowledges that being recognized as a regular normal human being is desirable, especially for those people who have been denied access to the category of the human;
- recognizes disability’s intersectional relationship with other identities that have been considered less than human (associated with class, gender, sexuality, ethnicity, age);
- aims to develop theory, research, art and activism that push at the boundaries of what it means to be human and disabled;

- keeps in mind the pernicious and stifling impacts of ableism, which we define as a discriminatory processes that idealize a narrow version of humanness and reject more diverse forms of humanity;
- seeks to promote transdisciplinary forms of empirical and theoretical enquiry that breaks disciplinary orthodoxies, dominances and boundaries;
- foregrounds dis/ability as the complex for interrogating oppression and furthering a posthuman politics of affirmation.

To join our assemblage, please visit www.dishuman.com.

See also Joy; Process Ontologies; Non-Human Agency

Dan Goodley, Rebecca Lawthom, Kirsty Liddiard and Katherine Runswick-Cole

POSTHUMAN ETHICS

Posthuman Ethics develops from a stream of philosophy along the trajectory of Spinoza’s ethics, Nietzsche’s concept of will as liberative freedom from institutes of power and poststructural continental philosophy’s expansion of these theorists. The basic premise, from Spinoza, sees the world, expansive into the entire cosmos, as interconnected. Individuality is understood as dividuality where each entity exerts force or expression that affects other entities and is simultaneously affected by the expressivity of other entities. The nature of these forces of expression and affection is not known in advance. This emphasizes that each entity is entirely unique to itself based on the quality of its specific expressions and

the reception of these is a comingling of the expression's uniqueness with the absorbency and capacity for and nature of affectation of the other. This always happens within a mesh so is neither monodirectional nor oppositional between only two entities but is always multiple and multidirectional. Similarly an entity may be part of a whole, a whole or a collection of individuals. Relations, phenomena and thus 'life' occurs not based on the ontological definition of what a thing is, nor what its value is within an arboreal hierarchical structure of 'living things', which the *humanities* and life sciences seek to empirically and exhaustively know, but occurs between things as an event of relations. Via Deleuze's work on Spinoza, Guattari's work on *ecosophies* and Serres' work on nature, posthuman ethics disavows the fetishization of technology and cyborgism, which overvalue human life as a concept over lived realities of all earth occupants, seen in *transhumanism*. Posthuman ethics explores and exploits the radical manifestations of difference already (and possibly always) manifested within all lives, human, animal, vegetal and ultimately cosmic in that each interaction between entities is absolutely specific and has concrete effects on both the formation of lived reality and its future expressions. For this reason posthuman ethics does not differentiate between discourse and materiality as the powers of expression of both are actualized in the lives of all, human and non-human. Towards an ethical posthumanism, activism and actions which seek to open access for the other to express freely are sought, which address and allow to flourish the difference between entities. This refuses the tendency in human discourse to allow freedom through equivalence, subsumation, comparison or fetishization of difference. In this regard posthuman ethics begins with drawing together minoritarian political movements such as femin-

ism, anti-racism, queer theory, diffability theory and animal abolition theory, among others, which is currently known as intersectional politics. However, ultimately posthuman ethics seeks relations based on imperceptible and infinite difference, that is, not based on anything in advance and based on all possible expressions and affects. Posthuman ethics knows only difference and differentiation so both the human template for life and human discourse's capacity for measuring life are made redundant. In this sense it is also an ahuman project as it refutes the privilege of humanity and like ahuman theory advocates for human extinction and abolition of use of non-humans. However, unlike many uses of the word posthuman and ahuman, posthuman ethics is not a temporal project toward a future, be it dystopic or utopic. It also seeks to address the past as a collective of minoritarian memories in tandem with monolithic majoritarian history to evince that we have always been confronted with the capacity for posthuman ethical interactions in relation to dominance and difference. Posthuman ethics can be applied, in seeking activist modes of interaction, to both immediate, historically passed and projected futures in constant experimentation with alternate ways of relation that allow us to rethink memory and futures. This experimentation is crucial to the project in that posthuman ethics are creative, imaginative and require a certain kind of frightening and hopeful good faith as definite outcomes and so also power driven hypotheses are not viable as they presume the nature of relations and their involved entities in advance.

See also Ecosophy; Feminist Posthumanities; Planetary; Posthuman Critical Theory; Posthumanism.

Patricia MacCormack

POSTHUMAN LITERATURE AND CRITICISM

The posthuman condition is marked by rampant outsourced, offshore exploitation of labour, invisible ecological degradation that unravels over decades and even centuries in lands distant from most of the consumers of extracted natural resources, and a growing number of displaced persons and diasporic populations. The rippling repercussions of these pressing challenges are of a planetary scale. This puts into question the adequacy and relevance of humanist representational and structural conventions in literature and criticism.

Posthuman literary criticism (Taylor 2013; Clarke 2008; Thomsen 2013; Badmington 2011; Lee 2014; Sheehan 2015; Dinello 2005) is an exercise in trans-disciplinarity. It introduces to critical inquiry monistic vitalism that celebrates the act of thinking as a creation of new concepts. The interspersing of disciplines depends on de-familiarization with accustomed habits of thought under the current disciplinary split in the humanist academy. Literature is crucial in this joining of disciplines as it complements scientific inquiry less prone or open to processes of becoming or differentiation in a Deleuzian monistic ontology.

In posthuman literary criticism, creativity and critique is a concurrent, dynamic practice that activates, de-territorializes stable identities, and forms affirmative and alternative subjects. It rejects linearity and questions the existence of Truth and centrality of Man in the text. Linearity in the form of blind deference to the authority of established narratives of the past prevents the creation of new conceptual personae and figurations. This calls for a non-linear vision of memory as imagination, creation as becoming.

The idea of memory as creation understands literature as an agent of conceiving new conceptual personae defined by their relationality and outward-bound interconnections, in particular with non-human others, including the species-other (McHugh 2011), nature (Mentz 2015b), and landscape (Allewaert 2013). Given the particularity of our location and knowledge production, our understanding of literature is always partial and limited. Universalism and liberal individualism promoted by a canonical, humanist tradition of literary arts therefore do not stand. As the subject is now understood in terms of its relation with multiple others, it involves uplifting the once stable and complacent subject from the familiar in a process of dis-identification. Dis-identification refers to an active distancing from familiar, conventional ways of thinking and representation. It also calls for a revision of normative values, such as sexual and racial differences stipulated and enforced by dominant institutions. Dis-identification can be a painful process of fear, insecurity and nostalgia as it involves the ridding of cherished habits of thought and representation. But it can be productive in the spirit of endurance and creation in affirmative ethics.

In the tradition of Barthes' poststructuralist thought, the task of criticism is to go beyond flat repetition and slavish fidelity to the text in the search for its 'Truth' (Barthes 1975). Rather, criticism should enact processes of subject formation through strategies of dis-identification and defamiliarization. This differs from criticism of power locations in the tradition of negative dialectics. Critique and creativity becomes praxis that actualizes the formation and realization of alternative, affirmative figurations that counter dominant, majoritarian representations of the subject.

Posthuman literary criticism engages strands of critical inquiry in New Humanities as a response to the interconnected global challenges of ecological crises, gender and racial inequality, and contentious findings and experimentations in life sciences, biomedicine, energy sciences and digital technology. The growing body of scholarship in the theorization (Nixon 2011; Huggan and Tiffan 2015; Feder 2014; Westling 2013) and practice of ecocriticism (Buell 2009; Heise 2011; Thornber 2012) responds to the current ecological crisis aggravated by neoliberal capitalism. It also examines literary works (Atwood 2013; O. Butler 1993; Ozeki 2004) that depart from anthropomorphism to develop imminent forms of identification of becoming-earth or becoming-imperceptible. Moreover, it studies fictional works that explore the ethics of interaction between humans and non-human others (Coetzee 2004; Martel 2003; Graham 2009). The posthuman subject is then a collective assemblage of multiple figurations in the spirit of collective endurance in times of global environmental devastation.

Under the framework of posthuman critical theory, feminist and postcolonial literary criticism of the poststructuralist tradition are updated (Ponzanesi and Merolla 2005; Minh-ha 2012; Franklin 2014) especially in relation to the rise of global, digital citizenship in the financial, algorithmic and technologically mediated capitalism today (Eggers 2013; McCarthy 2015). A posthuman variant of feminist and postcolonial criticism studies literary works that reflect on how technology prompts or hinders subject revision and formation, and the extent to which it encourages radical dis-engagement from dominant gender and racial assemblages and categorical differences (Okorafor 2015; Adichie 2013; Shteyngart 2010; Diaz 2008; Cole 2012).

To Deleuze, the majoritarian view of the scientist remains confined in the outmoded model of the 'Man of Reason' in the Enlightenment tradition of 'Royal science.' In first-world Western nations, this prototype doubles as the characteristic of the quintessential citizen. The formation of a new vision of subjectivity is thus an issue of generational responsibility and accountability that answers to the challenges of social injustice in the posthuman age of technological capitalism. Ultimately, it involves the revision of the role of the scientist and his practice, and the public perception and reception of his work.

Deleuze and Guattari delineate the differences of 'Royal' and 'minor' science as methodology in *A Thousand Plateaus*:

In the field of interaction of the two sciences, the ambulant sciences confine themselves to inviting problems whose solution is tied to a whole set of collective, nonscientific activities but whose scientific solution depends, on the contrary, on royal science in the way it has transformed the problem by introducing it into this theorematc apparatus and its organization of work.

1987: 413

Posthuman literary criticism proposes a feminist, postcolonial, third-world 'minor science' (Chen 2010; Harding 2008; Tsing 2011) as an ethically transformative inquiry which is not bound to economic imperatives or coercions of advanced capitalism and its cognitive market interventions into living matter. The concept of 'minor science' can be borrowed to read works of fiction (Ghosh 2001; Ondaatje 2001; Kincaid 2001; Kingsolver 2008) that reflect on imperialist and patriarchal implications of majoritarian science. Such fictional works (Thayil 2012; Ishiguro 2006; Barnes 2007) also propose new definitions and delineations of the normal

and pathological, and the reconfiguration and imagination of the human body.

See also Joy; Earth; Ecohorror; (Material) Ecocriticism; Neocolonial; Literature of Liberation.

Carolyn Lau

POSTHUMAN MUSEUM PRACTICES

In a more-than human world, museums as custodians of cultural memory and as trusted information sources are ideally placed to concretely re-work human subject positions and frame and promote posthuman theories and practices of life (Cameron 2015) through curatorial practice. Natural history and history museums for example frame specific subject positions and relations between humans, human others, non-humans and technology through exhibition and collections work that enact particular ways of conceptualizing and acting in the world. While these patterns and practices are reconstituted over time as different ontologies mix and merge, object concepts, modes of collecting, ordering and exhibiting are principally understood in terms of human subject/object relations (with the exception of Indigenous collections as a consequence of Indigenous curatorial agency).

Social history collections, for example when placed within museological frameworks, advance human-centred interpretive approaches that focus on the social, ideological and cultural constructions of the human subject (identity, cultural significance, historical events and social biographies; Felder, Duineveld and Van Assche 2015). Collections, however, are much more than just products of the

human imagination; they are also the emergent effects of contingent and heterogeneous enactments, and performances comprising both human and non-human actants (see Hodder 2012). To illustrate the potential for the re-framing of human subject approaches and their translation into ontological and posthuman curatorial frameworks, I use by way of example a green plastic bucket, an item from Museum Victoria's Black Saturday bushfire collection to eloquently perform this task (Hansen and Griffiths 2012). The Black Saturday bushfires in Victoria on 7 February 2009 were Australia's worst natural disaster.

The green bucket is framed around Bill Putt's autobiographical accounts of survival where the bucket is used to recall and recite his last-ditch attempts to save his house from the impending furnace. The collection record describes the object as a 'green plastic garden bucket, melted on one side and missing the handle. The spout is still visible. Traces of dried mud adhere to the surface.' While the bucket's curatorial interpretation acknowledges the subjectivities of this event and its description gestures towards its materiality and form, these human subject-orientated frames promote the bucket as a static representation in service of the human social. In doing so its curatorial framing denies the other material, discursive, technological, biological and non-human aspects of the green bucket agential status. When we begin to see our world differently as entangled with other people and animate, inanimate things, these human subject/object-based museum practices appear incongruous, even deceptive.

Untying human subject-based understandings of the bucket as a bounded 'object' and as 'artefact' requires its re-ascription in posthuman terms as 'thingness' and as 'composition'. The attribution of thingness



Bucket – Strathewen, 7 February 2009 (Bushfire Damaged). COPYRIGHT MUSEUM VICTORIA/CC BY (LICENSED AS ATTRIBUTION 4.0 INTERNATIONAL).¹

is reminiscent of Heidegger's (1971) proposition that our being in the world is of a thingly nature where things are not separate from us, rather things all function in relation to each other (Hodder 2012: 28). I, however, re-work Heidegger's thingly world, to that of 'thingness' to refer to the object as an extended and dispersed spatial and temporal thing made up of conative and ontologically diverse vital elements that includes the non-human. I also reframe the object as 'composition' to refer to its distributed performativity incorporating material,

discursive, social, scientific, human, non-human, natural and cultural factors (see Barad 2007). The first task in its ontological refashioning is to re-work the humanisms that hold the bucket's objecthood and interpretation in place. Disrupting these normative humanisms and the agential relations organized around Bill, his experiences and actions that currently underlie our understanding of the green plastic bucket necessitates the disassembling of these relations and their reconstitution into and through a metanomically diverse list that represents

the bundles of material, technical, conceptual, ecological, social and emotional components that make up its distributed assemblage. This assortment of conative things comprises not only human bodies and the human subject, Bill Putt, his bodily actions and his stories; but also its other multifarious elements: the bucket's processes of production, its geographical location, its extended histories from the deep past to its museological ascription, and its material and non-human features and form. To this end, the list comprises plastic, carbon, hydrogen, oil, coal, polymers, mud, fire, moulds, digital code, climate change, temperature, wind speed, Strathewen, Victoria, 7 February 2009, mud brick house, failed water pump, curators, collection managers, documentation procedures and so forth, some of whom were previously invisible in its formal object description. From this ontologically diverse list of conative elements, Bill and his subjectivities therefore become just one of many actants that intermingle with the other components of the composition. In doing so I draw inspiration from the argument of Olsen et al. (2012) that people, objects, materiality and the discursive do not operate in ontologically distinctive realms.

The list also operates as a mechanism for re-ascribing each of its components as 'actants' (vital subjects). This task re-works agency away from the human to acknowledge the bucket's multiple agencies including its materialities, physical form and multifarious discursive and affective framing (i.e. scientific, historical, cultural, ideological, thoughts, desires).

In order to attribute agencies and affordances to each of the bucket's elements (for example biological, elemental, ecological processes, technical and technological processes, human actions, thoughts, desires), I draw on literature in the post-humanities (Braidotti 2013; Hodder 2012),

new materialisms (Bennett 2010) and relevant technical, scientific and historical information. The plastic of which the bucket is made comprises a series of tight interdependences from its historical genealogy in respect to the development of plastic, its human actants such as civil engineers, and its sequences of production from its materials (carbon, oil, polymer) to molten plastic, pressure and injection moulding. By gathering together the actants that make up the 'composition' and re-assembling them in new types of relations we can consider the performative effects of their interdependencies and affordances overall as a distributive agency (see Bennett 2010: viii). With the primary agency of fire, for example, its affordances, including its physical and chemical properties, refer to a series of tight interdependences that exhibit different temporalities, clusterings, tautness and enabling effects that cohere in certain ways around the bucket. For example, temperatures above 40 degrees Celsius, climate change as an agency afforded by humans, interacted with other affordances such as wind speed and the rapid oxidation of the Australian bush in the exothermic chemical process of combustion, releasing heat, light and smoke that enabled the Kilmore East fire to emerge and converge on Bill Putt's property and the bucket. This sequence is locked into a series of other folded, entangled and embedded relations (organic and non-organic vitalities, discourses and materialities), a failed water pump, the bucket's form and spout as an affordance to hold and pour water, the chemical composition of plastic combined with radiant heat and its molten effects, Bill's fear of loss, dying livestock, burning buildings and the act of running. As a 'composition' the green bucket is no longer a static thing; rather it emerges through multiple locations, and as the effect of its distribution across many

diverse actants as part of more diverse, dynamic social collectives and extended networks (cf. Hodder 2012). Its solidity acts as a stand-in for its distributed actants and the agencies that make up the bucket (cf. Bennett 2010; Coole and Frost 2010). In considering the bucket as 'thingness' and as 'composition', and the description of its elements, materials and stories attributed to it as 'actants' and as 'agency', and the term 'performativity' to describe the interaction of the actants as part of the extended, networked composition, allows us to move beyond the social construction of the 'object', 'artefact' and 'collection'. Where conventional terms promoted a sole focus on social and cultural conventions of language, describing, naming and narrating histories and personal accounts as bounded objects, these new terms gesture towards their relational re-configuration that take account of the active and entangled life of all its components.

The shift of social subjectivity from the human to include the non-human world through the attribution of each of the objects' elements as actants, and the many ways these relational subjects are entangled and folded together, better illustrate the agentic or animated relationships we have to life in general. The interaction of these multiple relational subjects also constitutes collective forms of social agency which will promote new understandings of history as emergent from within these more-than-human collectives. The composition also promotes new forms of human civic life and sociality to include animate and inanimate things comprising, variously, technology, materiality, trees, climatic systems, humans and discourses, each as relational subjects and together as collective forms of agency. This more inclusive vision of a shared world has the potential to promote and enhance respect and ethical concern for diversity of both

animate and inanimate things (Braidotti 2013), nourish new forms of interspecies connections and intercultural relations, and other modes of thought and concepts in ways that more closely approximate the complexities of life itself.

New posthuman collections research and documentation procedures have the potential to support the analysis and description of objects as thingness and as socio-material compositions. These practices therefore involve: (1) the detailing of actants that make up the extended composition in the field; (2) their multiple agencies, sequences, independences, entanglements, interactions, spatial and temporal dimensions; and (3) the cartographic mapping of the movement of these actants as representative of their performativity as emergent processes.

Bill did indeed save his house and his life, but he lost livestock and several outbuildings on his property to the fire.

See also Art in the Anthropocene; Critical Posthumanism; Non-Human Agency; Ontological Turn; Posthumanist Performativity.

Note

1. Museums Victoria Collections, <http://collections.museumvictoria.com.au/items/1712046> [accessed 9 November 2016].

Fiona R. Cameron

POSTHUMAN RIGHTS, A MICROPOLITICS OF

In this entry I examine the possibility of a micropolitics of posthuman rights which subverts the majoritarian model of human rights, figured as a certain kind of thinking

of the human (constructed as a white neoliberal male). Such a contestatory micropolitics of rights is one which is practised by embodied beings who act to reshape their position in relation to both law and biopower. Such legal and political challenges are initiated by assemblages of individuals acting in concert to use rights discourse in a manner which would empower them. Such a creative bottom-up employment of rights as political weapons allows us to glimpse what Gilles Deleuze called the creative and collective praxis of jurisprudence. For Deleuze it is jurisprudence 'that truly creates law/right' (Deleuze 1997a: 169).

Jurisprudence for Deleuze is not the abstract conceptualization of law or legal theory but rather an active mode of resisting established legal concepts and changing and troubling the law through the collective action of singularities. For Deleuze, it is not 'established and codified rights that count, but everything that currently creates problems for the law and that threatens to call what is established into question' (Deleuze, 1995: 153). In reflecting on Deleuze's thinking on and about law and human rights, Paul Patton observes that for Deleuze:

jurisprudence was always a matter of politics, in the broad sense in which he understood the term ... Jurisprudence involves the creation of new laws but also the creation of the rights that are expressed in these laws ... in so far as jurisprudence is also a matter of politics, it involves the processes through which new ways of acting or being acted towards become established (or old ways disestablished),

Patton 2012: 20-1

As such our posthuman version of rights is similar to what Patton terms a 'non-transcendent, immanent conception of rights' (ibid.: 15).

From Human Rights to Post-Human Rights

In her book *Transpositions* Rosi Braidotti critiques Peter Singer's utilitarian liberal model of animal rights. This critique allows us to open up a minoritarian thinking of rights as posthuman. In her argument, she notes that Singer's model of animal rights is tantamount to a becoming-human of animals (Braidotti 2006a: 107). According to Braidotti, Singer's model contains the same flaws as those of the traditional liberal model of rights as applied to humans, i.e. it is a majoritarian model of rights informed by a notion of social relations which valorizes male power and capitalist social organization. In such a model animals can only hope to have rights if they become human or almost human. This becoming human of animals fails to recognize the singularity of animals as such, just as the liberal rights model, more generally, fails to see the singularity and differential nature of human beings. Thus, in order to be included within the protective clothing of liberal rights protection one must first divest oneself of one's singularity and become human, where human is figured as the abstract and always already male subject. The alternative model proposed by Braidotti is premised on philosophical nomadism and holds that 'no qualitative becoming can be generated by or at the centre, or in a dominant position. Man is a dead static core of ego-indexed negativity' (ibid.). It is the becoming animal of the human, rather than the becoming human of animals that helps us to move beyond the trap of making rights discourse another form of subjection under the guise of emancipation. Braidotti's model assists us in transforming the default setting of liberal rights discourse into a relational notion of rights which takes account of our relation to other citizens, animals and the environment.

In seeking 'a micro-politics of becoming and an ethics' (Braidotti 2006a: 142), Braidotti's nomadic ethics bears relation to what William Connolly calls an 'ethos of engagement' with existing social givens, which may bring about unexpected consequences or transformations. Connolly calls this 'an ambiguous *politics of becoming* by which a new entity is propelled into being out of injury, energy and difference' (Connolly 1999: 160). Connolly argues that rights cannot be created by a top down 'molarpolitics of public officials' (ibid.: 147), but comes instead from a mobilization of self-styling selves, 'the molecular movements of micro-politics' (149). This *molarpolitics* blocks the dialogic political process and creates stasis.

In discussing the concept of *micropolitics*, Connolly uses the analogy of how an individual in working out her position on bioethical issues is confronted with differing views both outside and within oneself. He gives the example of the right to die and of an individual who believes that death must only come when either God or nature brings it (Connolly 1999: 146). This person is shocked by movements who call for a right to doctor-assisted death for those in severe pain as the result of a terminal illness. However, once the initial shock of this claim dissipates, the person begins to think of the suffering of terminally ill individuals in a world of high tech medical care. In such a case, Connolly claims, '*one part of your subjectivity now begins to work on other parts*. In this case your concern for those who writhe in agony as they approach death may work on contestable assumptions about divinity or nature already burnt into your being' (ibid., emphasis in original). Connolly highlights the uncertainties and tension within the individual self on the issue of a right to die, after such an individual starts to weigh up

the many competing interests involved. Indeed, having worked on the self:

You continue to affirm ... a teleological conception of nature in which the meaning of death is set, but now you acknowledge how this judgment may be more contestable than you had previously appreciated ... What was heretofore non-negotiable may now gradually become rethinkable. You now register more actively the importance of giving presumptive respect to the judgment of the sufferer in this domain, even when the cultivation of critical responsiveness to them disturbs your own conception of nature, death, or divinity.

Connolly 1999: 147

Connolly's notion of *micropolitics* allows us to rethink the relation between rights and bioethics. It allows us to focus on the actual desires and interests of the individual who claims a right in the biomedical context. Similar to Braidotti's nomadic ethics this critical responsiveness leads to a transformation, thinking about how rights may emerge in such instances and their relation to individual freedom and to community. Connolly's notion of an ambiguous politics of becoming assists us in bringing Braidotti's nomadic ethics to bear on a reimagining of rights, figured as posthuman rights, that is, an active mode of using rights discourse in a subversive manner to undo accepted models of subjectivity, community, identity, law and politics.

Conclusion

Such a praxis of rights as posthuman celebrates the creation of a new thinking and praxis of rights, one which is cut loose from the ordered and majoritarian thinking of rights in neoliberal modernity. Posthuman rights embody the claims of

transversal assemblages of individuals who do not see a binary cut between thought and action, life and death, environment and humanity, or animality and humanity. This is a similar process to what Braidotti terms the practice of 'defamiliarization' in which 'the knowing subject disengages itself from the dominant normative vision he or she had become accustomed to, to evolve towards a post-human frame of reference' (Braidotti 2013: 167). This allows us to think of a micropolitics of life as *zoe* (as material embodied singularity) which contests the ordering molarpolitics of Life as *bios* (understood as transcendental and always already male). This micropolitical encounter with the law undoes the imposition of a biopolitical ordering on individuals and allows them, through their own continuous intervention in the domains of law and politics, to perform an active and contestatory form of citizenship.

See also Bodies Politic; Geo-Hydro-Solar-Bio-Techno-Politics; Posthuman Critical Theory; Critical Posthumanism; (Un) Documented Citizenship; Posthuman Disability and DisHuman Studies.

Patrick Hanafin

POSTHUMAN SEXUALITY

It is not sufficient to liberate sexuality; it is also necessary to liberate ourselves from the notion of sexuality itself.

Foucault 2000: 245

Posthuman sexuality questions the utility of the very concept of sexuality itself and for this reason ranges across a disparate number of terrains including feminism, LGBTQIA theory, therian and becoming-fabulated subjectivity among others. These terrains overlap in the extent to which

sexuality is more or less relevant to the politico-aesthetic subject identities (in flux or as a standpoint identity) and the extent to which posthuman identities and their relationship with sex and sexuality, and indeed their very definition of 'sex', is contested. After Foucault's deconstruction of sexuality as a social genealogical project of social control of bodies and pleasure, feminism took up sexuality as isomorphically annexed to male pleasure and the phallus, both projects showing there has never been anything biological or natural about sex. Foucault forsook the term for 'pleasure', Deleuze and Guattari for 'desire' and feminists such as Irigaray and Kristeva for 'jouissance'. All three share a configuration of a designified and deregulated body where no part of the body stands as the dominant signifier of either sex or gender (formerly the phallus but also the proscribed licit and illicit sexual operations of all body parts in relation with each other). They also share a refusal of act producing subject so the overarching binary of heteronormativity and homosexuality and its modern history from criminal aberration to equal normalized subject position is defunct. Salient to this, posthuman sexuality is entirely extricated from reproduction's relationship with sex; because it renormalizes gendered roles within reproduction, because it is antagonistic to posthumanism's celebration of the hybrid and hybrids are sterile, and due to the ahuman's advocacy of human extinction in the face of overpopulation. Posthuman sexuality values connectivity between entities which could be two, or two parts within one, or two assemblages, to create imaginative flows of desire, and two simply marks the overthrow of the dominant singularity of the phallus, but posthuman sexuality is not limited to two. In this sense 'two' simply indicates more than and less than one, a position to which the

so-called castrated female has been relegated in psychoanalysis. Posthuman sexuality also values the space between the two as an ethical site of desire, what Irigaray calls the ‘mucosal’, whereby the model of the vulva as two sets of two lips shows self-touching, desire without binaries of mastery and submission, and proliferative parts indicate both the limitless nature of sexuality and, as lips, the discursive regulation the speaking of sexuality operates. This is why Foucault and Lotringer both claim we speak too much about sexuality. Our society is saturated with sexuality but actual bodies, pleasures, intensities and what constitutes the sexual have been largely annihilated due to the overemphasis on description and the commodification and marketability of sexuality as a concept abstracted from bodies and pleasure in the training of docile consumers. Both theorists advocate silence as a response to the question of sexuality, while feminists often utilize play with language (via poetry and art) to reflect the playful experimentation posthuman sexuality advocates.

Posthuman sexuality raises an ethical conundrum, however. Subjectivity has mistakenly collapsed gender and sexuality (whether due to dimorphism creating gender division or both as corporeal regulated sexual systems). This means there is a history and present need for activism involving minoritarian subjects, particularly women but also those addressed under the acronym LGBTQIA (lesbian, gay, bisexual, trans-, queer, intersex, asexual), itself an acronym which indiscriminately collapses sexuality with gendered identity. Similarly the contemporary debate between some trans persons and so-called ‘terfs’ (trans exclusionary radical feminists) is in one sense more about the debate between whether we should have gendered categories at all.

Queer theory attempted this address – in its post-USA incarnations via Continental philosophy queer went further than sexual alterity to become a refusal of heteronormative gendering and sexuality and subjective categories entirely. However, the issue remains a contentious one and the activist question facing posthuman sexuality now is ‘if we have rid ourselves of all sex, gender and sexuality, how do we continue to fight against the oppression of what are still considered minoritarians based on their relationship with sex and gender?’ This is a question which continues to be addressed within posthuman sexuality.

See also Feminicity; Trans*; Feminist Posthumanities; Posthuman Ethics.

Patricia MacCormack

POSTHUMANISM

My work on this topic begins with an insistence on distinguishing between ‘the posthuman’ and ‘posthumanism’. Many of those who aspire to, or imagine the inevitability of, what is often called a ‘posthuman’ condition – I am thinking in particular of figures such as ‘transhumanist’ Ray Kurzweil (of *The Singularity is Near* fame) and philosopher Nick Bostrom – are, philosophically speaking, rather traditional humanists. Bostrom’s version of the posthuman derives, as he freely admits, from ideals of rational agency and human perfectibility drawn directly from Renaissance Humanism and the Enlightenment, and its guiding lights are (among other pillars of philosophical humanism) Isaac Newton, John Locke, Thomas Hobbes and Immanuel Kant.

This ‘humanist posthumanism’ (as I label it in *What Is Posthumanism?*) (Wolfe 2010) is problematic for at least a couple of reasons. First, it encourages us to think

that the full achievement of that thing we call 'human' must be predicated upon overcoming and finally transcending not just our 'animal' origins (in the name of a rational manipulation and optimization of the human condition) but also the fetters of materiality and embodiment altogether. The clearest symptom of this very old humanist philosophical desire is transhumanism's prediction that we will, someday soon, be able to overcome all diseases and infirmities, eventually achieving radically extended lifespans, and even immortality. Leaving aside the practical and pragmatic questions that accompany this claim, I merely wish to point out that the achievement of the fully 'human' condition by the killing off, transcendence, repression or overcoming of the 'animal' body is a very old and very familiar hallmark of humanism – and, historically speaking, a very dangerous one, as recent work in biopolitical thought by Michel Foucault, Judith Butler, Jacques Derrida, Donna Haraway, Giorgio Agamben and others has made clear. The introduction of such an ontological hierarchy between the 'human' and the 'animal' (and the animality of the human) has been, as these thinkers remind us, one of the key discursive technologies for rendering not just animal populations, but various *human* populations, 'killable but not murderable'.

A second reason that this 'humanist posthumanism' is problematic is that even when it does not indulge in such familiar strategies – indeed, even when it opposes them – the humanist mode of thought in which such opposition is mounted undercuts what may be quite admirable ethical, political or other impulses that we share with humanism. For example, animal rights philosophy as articulated by its two most important founding philosophers – Tom Regan and Peter Singer – is certainly posthumanist in the sense that it opposes

the ontological hierarchy just outlined. It is posthumanist, that is to say, in its opposition to anthropocentrism and to the assumption that the subject worthy of ethical recognition, in any way coincides, *prima facie*, with the taxonomic designation 'human'. But it is humanist, and in a debilitating way, in *how* it mounts this argument philosophically. Whether in Regan's neo-Kantian version or Singer's utilitarian version, what secures ethical standing for the animal is a set of characteristics, qualities and potentialities that ends up looking an awful lot like *us*. And so animals are accorded standing because they embody, in diminished form, some normative concept of the 'human'. And that would seem to be at odds with the ethical commitment that got the whole enterprise of animal rights philosophy up and running in the first place – namely, the desire to recognize the ethical value of different, non-human ways of being in the world.

What all of this means is that the nature of thought itself, and not just the *object* of thought, must change if it is to be posthumanist. More precisely, the 'human' can no longer be considered either the origin or the end of thought, and in at least two senses. First, the 'human' is not an *explanans* but an *explanandum*, not an explanation but that which needs to be explained. To put it another way, the most philosophically complex and pragmatically robust accounts of what constitutes the specificity of this thing we call 'human' are accounts in which the idea of the 'human' as we've inherited it from the Western philosophical tradition actually does no heavy lifting. For example, many people would argue that part of what makes humans 'human' is a unique relationship between language and cognition. But to really understand what is going on in that relationship – to really explore the relationship between the neurophysiological

wetware of the brain, the symbolic processes that shape that wetware, and the evolutionary processes in and through which both have co-evolved – we have at our disposal all sorts of conceptual tools not available to Descartes or Kant or Aristotle, tools that allow us to explain how the ‘human’ is the *product* of processes that are, strictly speaking, inhuman and ahuman. How do we know? Because we now know that the very same processes produce similar products in non-human beings as well, as well-known experiments with great apes (such as those conducted by scientist Sue Savage-Rumbaugh with the bonobo, Kanzi) have shown (see Savage-Rumbaugh and Lewin 1996).

Moreover – and more radically – not only is the line between human and non-human impossible to definitively draw with regard to the binding together of neurophysiology, cognitive states and symbolic behaviours, the line between ‘inside’ and ‘outside’, ‘brain’ and ‘mind’, is also impossible to draw definitively. For the ‘human’, what makes us ‘us’ – whether we are talking about cultural and anthropological inheritances, tool use and technologies, archives and prosthetic devices, or semiotic systems of all kinds – is always already on the scene before we arrive, providing the very antecedent conditions of possibility for our *becoming* ‘human’. In a fundamental sense, then, what makes us ‘us’ is precisely *not* us; it is not even ‘human’ – a fact that is particularly clear in the various prosthetic technologies that human beings use to offload and exteriorize memory and communication, which in turn reshape the anatomy and physiology of the brain. And what is true of those technologies is true of all semiotic systems and codes, of even the most rudimentary type. In short, dating back thousands of years to the advent of tool use and, later, symbolic systems of communication,

human beings are *prosthetic* beings. What we call ‘we’ is in fact a multiplicity of relations between ‘us’ and ‘not us’, ‘inside’ and ‘outside’, organic and non-organic, things ‘present’ and things ‘absent’.

What all this means is that posthumanism distances itself from the transhumanism discussed above most decisively by reconceiving the relationship between what we call ‘the human’ and the question of *finitude* – not just the finitude that obtains in our being bound to other forms of embodied life that live and die as we do, that are shaped by the same processes that shape us, but also the finitude of our relationship to the tools, languages, codes, maps and semiotic systems that make the world cognitively available to us in the first place. If ‘the map is not the territory’ (as Gregory Bateson (1988) once put it, borrowing a phrase from Alfred Korzybski), then this means that the very maps that make the world available to us also make the world, at the same time, *unavailable* to us. While this may sound paradoxical, it is in fact common-sensical. For example, were we to seek the most empirically, scientifically exhaustive description of a particular piece of land, we would find ourselves, very quickly, consulting a host of experts in various fields: geologists, hydrologists, botanists, zoologists and so on. And what we would find is that the more we empirically scrutinize the object of analysis, deploying all the forms of expertise and types of knowledge that we can possibly muster, the more complex and multi-dimensional that object becomes. From this vantage, the ‘territory’ being studied becomes a ‘virtual’ space, but for this new mode of thought called ‘posthumanism’, ‘virtual’ here doesn’t mean ‘less real’, it means *more* real.

Now all of this might seem merely a matter of taste, but if we believe sociologist Niklas Luhmann (1995), this new form of

thought, this constitutively paradoxical form of reason, is in fact a hallmark of modernization and of modernity itself, understood as a process of 'functional differentiation' of society into discrete autopoietic social systems, each with its own governing codes of knowledge and communication (what is sometimes called, more moralistically, 'fragmentation' or 'specialization'), each struggling to manage and reduce the increasing complexity of a larger environment that they themselves help to produce, in fact, in deploying their own specialized discourses. From this vantage, the contingency of the various codes and 'maps' that we use to make sense of the world around us is in fact a reservoir of the very complexity those codes and maps attempt to reduce. Posthumanist thought, in this sense, is both an index and an agent of complexity.

See also Anthropism/Immanent Humanism; Posthuman Critical Theory; Critical Posthumanism; Insurgent Posthumanism; Ontological Turn.

Cary Wolfe

POSTHUMANIST PERFORMATIVITY

Theories of scientific knowledge and liberal social theories owe much to the representationalist belief that there is perfect correspondence and, consequently, ontological distinction between linguistic descriptions and reality. Representationalism, in particular, postulates that that which is represented is held to be independent of all practices of representing. This system of representation is often theorized as a tripartite arrangement that places the (human) knower in a relation of absolute externality to nature and the world, medi-

ated only by scientific knowledge in its multiple representational forms. This model is so entrenched within Western culture that it has taken on a common-sense appeal. And with it, the inertness of nature as a timeless and ahistorical entity awaiting/inviting representation goes now mostly undebated (Barad 2003).

The taken-for-granted ontological gap between words and things upon which modern Western science rests has generated questions around the accuracy of representations, especially among feminist, poststructuralist, postcolonial critics and queer theorists (Butler 1993; Foucault 1973, 1972, 1977, 1980; Haraway 1991, 1992a, 1997; Latour 1991). Their search for alternatives to the static relationality model proposed by representationalism has brought forward performative understandings of the nature of scientific practices that shift the focus from linguistic representations to discursive practices, i.e. from questions of correspondence between descriptions and reality to matters of practice/doings/actions.

Michel Foucault was the first to theorize discursive practices as the local sociohistorical material conditions that enable and constrain disciplinary knowledge practices, and produce – rather than merely describe – the 'subjects' and 'objects' of knowledge practices. More recently, queer theorist Judith Butler (1993) drew on Foucault's suggestion that the repetition of regulatory bodily practices produces a specified materialization of the body to link her notion of gender performativity to the materialization of sexed bodies. As a result of these and other efforts towards a performative understanding of identity, matter loses its traditional connotation as passive blank slate of culture to emerge as 'a process of materialization that stabilizes over time to produce the effect of boundary, fixity, and surface we call matter' (Butler 1993: 9).

However, feminist new materialist scholar Karen Barad (2003, 2007) argues that, despite these important elaborations, performativity theories fail to give an account of the body's historicity that succeeds in bringing the discursive and the material in closer proximity. In her view, the active role of the body's materiality in the workings of power is left untheorized, which leaves questions about the material nature of discursive practices hanging in the air, and implicitly re-inscribes matter as passive substance or end product of the 'social'. This failure to recognize matter's dynamism defrauds it of its capacity as an active factor in further materializations and thus reinstates the supremacy of culture and language as productive forces. What is needed to understand power in the fullness of its materiality is to account for the ways in which matter and discourse entwine and co-participate in the definition and materialization of the human and its others, so as to account for non-human forms agency and matter's implication in its ongoing historicity.

Barad's contribution towards the development of a posthumanist understanding of performativity is based on a philosophical account that she has defined 'agential realism', an epistemological and ontological framework that proposes a materialist and posthumanist reworking of familiar notions such as performativity, discursive practices, materialization, agency and causality among others. Agential realism takes quantum physicist Niels Bohr's philosophy-physics as an apt starting point for thinking the natural and the social worlds together, and gaining some important clues about how to theorize the nature of the relationship between them.

Bohr's epistemological framework calls into question Cartesian epistemology and its representationalist triadic structure of words, knowers and things by asserting

that measurement processes are given by the meeting of the 'social' and the 'natural' – they are an instance where matter and meaning meet in the literal sense. This relationalist ontology refuses the representationalist fixation for 'words' and 'things' as separate entities by putting emphasis on the inseparability and co-constitutiveness of materiality and meaning. Building upon this performative metaphysics, Barad's agential realism proposes a posthumanist account of performativity that poses matter as ongoing historicity, a congealing of agency that she defines as 'intra-action' – i.e. 'causally constraining nondeterministic enactments through which matter-in-the-process-of-becoming is sedimented out and enfolded in further materializations' (2003: 823). Hence, within this framework, matter is not just 'a kind of citationality' (Butler 1993: 15), but rather an active 'agent' in its ongoing materialization.

Barad's agential realism and its notion of posthumanist performativity provide a useful framework to grapple with the inseparability of matter and meaning, and 'the material-discursive nature of constraints, conditions and practices' (2007: 152). This makes agential realism an 'onto-epistem-ology' (Barad 2003: 829), a practice-of-knowing-in-being capable to account for the ways in which bodies come to matter. By evidentiating the red-thread of ethicality that keeps the world together, agential realism takes a step towards 'a more ecological sensibility' (Bennett 2010: 10), and embraces a diverse politics of agency capable of distributing value more generously and fostering ethical and wiser interventions into such renewed ecology.

See also 'It'; Quantum Anthropology; Non-Human Agency.

Elisa Fiore

POSTIMAGE

Digitalization has brought a new dimension to the ‘photographic paradigm of the image’ (Hoelzl and Marie 2015) which was forged in the fifteenth century with the invention of linear perspective and resulted in the forced convergence of vision and representation based on the hypothesis of their commensurability. On today’s digital screens, that is, on the level of visual perception, the photographic paradigm seems to remain intact, but behind the screen, on the computational level, the powerful algorithms that underlie today’s image processing and display – such as the ones used to smoothly navigate distant Google Street View panoramas or the ubiquitous JPEG decompression codec – impose a new, ‘algorithmic paradigm of the image’ (ibid.).

Behind the on-screen illusion of a ‘hardimage’ – a solid representation of a solid world – the algorithmic image that I call ‘softimage’ is not only malleable, i.e. infinitely recomputable, but is itself program (or part of a program). In fact, the algorithmic paradigm brings with it the scattering of both image and vision into a multiplicity of data. This becomes evident in the current developments of machine vision, where imaging is necessary to carry out an action (think of assembly robots, drones, self-driving cars, automatic border controls etc.) and where video cameras are associated to other sensors. These sensors furnish various data (visuals, sound, heat, movement, biometrics etc.) that need to be processed, correlated, fused and matched with a database, before human controllers (or the control program of autonomous machines/systems) can take a decision/action. Likewise, in current neuroscientific research, human vision is modelled as a process taking place along specialized cortical areas, with each area computing

specific data related to, for instance, motion, form or color (Jenkin and Harris 2009). If the cortical areas are overlapping/interacting, at no point of this computation of visual data are there ‘stable visual entities’.

With the concept of ‘image’ dissolving under the assault of neuroscientific discoveries and advances in machine vision, there are only two possible responses by image theory: either to abandon the concept (and thus the discipline) or to radically enlarge its definition/scope. Consider the second option and a very large definition of the image as the relation of data and of algorithms that are engaged in an operation, which involves visual data or data visualization. Let us examine this new definition of the image in the light of robot vision. Robots, remotely controlled or autonomous, make use of images and imaging at many levels: at the level of orientation/navigation, at the level of survey and mapping, and at the level of data integration and visualization. SLAM (Simultaneous Localization and Mapping), for instance, allows the generation of a map of unknown territory using odometry (position estimation using motion sensors), laser scanning and sonar sensors. Hyperspectral Imaging captures a much larger visual spectrum than traditional optical instruments; it allows the building of an image constituted of as many layers as frequency bands and thus, the characterization/classification of the objects in the scene based on their spectral properties. Multisensor Data Fusion allows the merging of data captured by different sensors or agents of a given system, and Distributed Consensus Algorithms enable decisions to be reached among collaborating vehicles operating on the ground, in the air, on the water, underwater or even in space.

In short: the robot’s eye is a complex interplay of sensors, sensor data, control

algorithms, actuators, vehicles and, until fully autonomous systems are operative, pilots, payload operators and image analysts, controllers and commanders (Chamayou 2015; Gregory 2011). The image, then, is not only the relation between data and algorithms in an operation involving visual data or data visualization, but also the relation between human and non-human agents of a process involving an element of 'vision'.

But, given the rush towards autonomy of machines we will be more and more, as Rosi Braidotti has put it, 'confronted with a new situation, which makes human intervention rather peripheral if not completely irrelevant' (2013: 43–4). The total autonomy of robots endowed with sensing/imaging capacities brings into question the fate of the image as a fundamental component of humanity. Moreover, the passage from human vision assisted by robots to fully autonomous robotic vision is at the core of what has been called a 'robolution' or the replacement of man by machines. 'Vision machines', as Paul Virilio calls them, will not only be endowed with vision, but also with cognition, discernment, decision, and action. They will thus be intelligent and autonomous beings, similar to humans. Eventually, vision machines will function as 'a kind of mechanized imaginary from which, this time, we would be totally excluded' (1994: 66).

Yet there is another, more optimistic way of envisioning the future of the image, a future that I will call the postimage and that can be formulated only in the framework of posthuman(ist) theory where humans, technologies and nature are no longer seen as separate (or even antagonistic) but as co-evolving.¹ With regard to the development of autonomous robots towards collaboration, I posit that the postimage is (or will be) not an objective (photographic) or subjective (human-centred) image, but a collaborative image. With gregarious animals,

sensing is distributed yet coordinated (*consensus*) within a given swarm, pack, herd (Elkins and Fiorentini 2017; Haraway 2015a). Posthuman vision, on the contrary, is a collaborative vision distributed *across species*, that is, between machines/robots and humans/animals and any intermediary forms (cyborgs, biomachines etc.) and the postimage comes to be defined as the collaboration of *visioning* humans/animals, data/algorithms and, increasingly, autonomous machines.

See also Algorithm; AI (Artificial Intelligence); Art; Computational Turn; Critical Posthuman Theory; Non-Human Agency; Robophilosophy; Digital Philosophy.

Note

1. Of particular relevance here is Rosi Braidotti's new materialist posthumanism focusing on post-anthropocentrism (becoming animal/ earth/ machine) and her neovitalist concept of *zoe* as 'life in its nonhuman aspects' (2013: 66) which encompasses even death. Also relevant are Donna Haraway's (2008) and Brian Massumi's (2015a) investigations of affect and animality as transversal to the animal/human, Bernard Stiegler's concept of 'trans-individuation' (2007), which he borrows from George Simondon (2005), and Simondon's (1958) theory of the image as acquiring autonomous agency as it is transmitted from one individual to the other.

Ingrid Hoelzl

POSTMEDIEVAL

In 1995, the international conference 'Cultural Frictions: Medieval Cultural Studies in Post-modern Contexts' was held

at Georgetown University in Washington DC. The event was devoted to exploring the ways in which medieval literary studies were being reconceived and redefined via the models for social and cultural history developed in contemporary work on cultural studies and postmodern theory. One of the main aims of this conference was, in fact, to understand what cultural studies could offer medieval studies and, more importantly, what medieval studies could offer cultural studies. This groundbreaking event was inspired by and also led to much significant work in medieval studies that collectively represented important forays into medieval cultural studies, such as Louise Fradenburg and Carla Freccero's *Premodern Sexualities* (1996), Fradenburg's *Sacrifice Your Love: Psychoanalysis, Historicism, Chaucer* (2001), Kathleen Biddick's *The Shock of Medievalism* (1998), Glenn Burger and Steven Kruger's *Queering the Middle Ages* (2001), Jeffrey Jerome Cohen's *Of Giants: Sex, Monsters, and the Middle Ages* (1999) and *The Postcolonial Middle Ages* (2000), Carolyn Dinshaw's *Getting Medieval: Sexualities and Communities, Pre- and Postmodern* (1999), Karma Lochrie's *Heterosyncracies: Female Sexuality Before Normal Wasn't* (2005), and Paul Strohm's *Theory and the Premodern Text* (2000).

Following, and wanting to build upon, the surge of works paving the way for the establishment of a newly interdisciplinary field of medieval cultural studies, the BABEL Working Group was founded in 2004. As a collective of scholars operating primarily in the fields of medieval and early modern studies, but also purposefully drawing in scholars from later periods and critical and cultural theory in North America, the UK, and Australia, they have since been working to develop new cross-disciplinary alliances between the humanities, sciences, social sciences and the arts

in order to formulate and practice new 'critical humanisms', as well as to develop a more present-minded premodern studies.

Medieval cultural studies – also known as studies in medievalism or medievalism studies – have been concerned, in fact, with the reception and representation of the Middle Ages across various periods, genres and media, as well as with all of the ways in which the Middle Ages have been *invented* and *constructed* by writers and scholars from the Renaissance forward, and with the genealogies of the professional *academic* discipline of medieval studies, which is often at pains to distinguish itself from a 'medievalism' believed to not be concerned enough with a so-called 'real' medieval history.

The question of the alterity of the medieval past is critical here because, for scholars working in the vein of traditional historicism, the Middle Ages is always 'other' to the present, whereas for some scholars working in studies in medievalism 'the medieval' (whatever that might ultimately mean) is always partly a function, product and *effect* of any particular present trying to grapple with the epistemologies of the Middle Ages as well as with its relation (or supposed non-relation) to the modern and postmodern (Joy 2009). Studies in medievalism thus demonstrate the always intersecting trajectories of the medieval, modern and postmodern and also reveal the ways in which the academic field of medieval studies is itself a form of medievalism, for in medieval studies it is always a representation of the Middle Ages that is being constructed, as opposed to delivering some sort of medieval presence.

It is in this vein that the BABEL Working Group and more specifically Eileen Joy founded *postmedieval: a journal of medieval cultural studies* in 2009. *postmedieval* is a cross-disciplinary, peer-reviewed journal in medieval studies that aims to bring the medieval and modern

into productive critical relation, so as to develop a present-minded medieval studies in which contemporary events, issues, ideas, problems, objects and texts serve as triggers for critical investigations of the Middle Ages. The new journal was conceived as an attempt to help to develop an inter-disciplinary, cross-temporal and socially interventionist – and therefore, also publicly intellectual – medieval cultural studies that would bring medieval studies into mutually beneficial critical relations with scholars working on a diverse array of post-medieval subjects, including critical theories that remain un- or under-historicized. Its concerted focus on the *question* of the relations between the medieval and modern in different times and places is seen as an opportunity to take better stock of the different roles that history and various processes of historicizing have played in the shaping of various presents and futures.

postmedieval takes as a given that cultural studies do not comprise a unified field of approaches and objects, but rather constitute an open field of inter- and multidisciplinary debate regarding the material, discursive and other relations between cultural objects, practices and institutions and the realms with which they come into contact: history, society, politics, commerce, religion, globalism, the body, subjectivity and the like. To develop and practise a *medieval* cultural studies is to ask not only what longer historical perspectives can provide to contemporary cultural theories, but also how the Middle Ages – its mentalities, social forms, culture, theology, political and legal structures, ethical values and so on – inflect contemporary life and thought. It also means understanding that placing ‘medieval’ and ‘cultural studies’ side by side is a continuous provocation that does much more than simply give cultural studies a diachronic

dimension or make the Middle Ages relevant to today (Evans, Fulton and Matthews 2006).

The BABEL Working Group has also established interesting connections with practitioners of posthumanism and posthumanities, which, despite the group’s continual evocation of the importance of history and historicism in their work, have the tendency to work primarily in the modern and postmodern periods – literary, historical, biological and otherwise – and rarely include in their projects the voices and thought of premodern studies. The first issue of *postmedieval* (2010) was in fact devoted to the question ‘When did We Become Post/Human?’ BABEL’s serious investment in demonstrating the important significance of the longest possible historical perspective to contemporary questions, issues and problems, especially those that circulate around the vexed terms *human*, *humanism* and the *humanities*, has produced interventions into contemporary theoretical debates where medieval studies is often not present. As Eileen Joy and Anna Klosowska write in their Introduction to BABEL’s essay volume, *Fragments for a History of a Vanishing Humanism* (Seaman and Joy 2016), the group ‘insists on the always provisional and contingent formations of the human, and of various humanisms, over time, while also aiming to demonstrate the different ways these formations emerge (and also disappear) in different times and places, from the most ancient past to the most contemporary present’. Further, BABEL does not believe there can ever be a ‘total history’ of either the human or the post/human as they play themselves out in differing historical contexts. At the same time, defining what the human (or post/human) is has always been an ongoing, never finished cultural project.

Through *postmedieval*, as well as a special issue of the *Journal of Narrative Theory* devoted to ‘Premodern to Modern Humanisms’ (Joy and Neufeld 2007), and also their most recent essay volume, *Fragments for a History of a Vanishing Humanism* (Seaman and Joy 2016), the members of BABEL are concerned with making new and provocative connections between histories, ideas, cultural artefacts, discourses and texts that have traditionally been perceived to be too disparate from each other to be brought into productive relation. By doing so, they engage with scholars working in all periods over the *question* of periodization itself and of the ways in which the production of disciplinary knowledges is bound up with historical chronologies and teleologies that have become sedimented *over time*. By problematizing these teleologies and working toward innovative modes of temporal thinking, *postmedieval* is promoting the production of new critical theories for better understanding the relations between past, present and future. For, as Eileen Joy and Craig Dionne note at the end of their Introduction to the first issue of the journal, ‘What might be at stake here is not only the future of the human itself, but also of the humanities’ (2010: 7). The cross-disciplinarity promoted by the BABEL Working Group through their *postmedieval* journal (and other publishing projects that take up the themes of the *postmedieval*) can ward off the current crisis of the humanities – with departments closed, combined or often impaired by reductions in hires, courses and faculty lines – that is threatening to lead to their near extinction.

See also Metamodernism; Postdisciplinarity; Critical Posthumanism.

Eileen A. Joy

PRECOGNITION

Precognition, also known as future/second sight or conscious cognitive awareness, refers to a type of extrasensory perception or parapsychological ability to see future events in the present. Precognition, or the anecdotal claim of ‘fortune telling’, has occurred throughout human history and is thought to elicit cognitive reasoning to interpret subjective sensory inputs (Honorton and Ferrari 1989). Here, the individual gains reception of sensory information through a trans-temporal operation of the mind, outside of recognized physical senses. In parapsychology circles, precognition is more than just time travel. It is considered the non-inferential prediction of future events.

It is interesting that parapsychology developed in the nineteenth century out of attempts to scientifically investigate the survival of consciousness after bodily death, as precognitive processes reside on the periphery of present lived experience by capturing unknowable futures, or the sublime, to put it in Kantian terms. In this regard, precognition is difficult to measure, because it is mostly defined by what it is not: a conclusive or scientifically verifiable phenomenon. Precognition, like other parapsychological events, lacks scientific theory or technique to support extrasensory occurrence, and as such is aligned with superstition, irrationality or a supernatural or speculative causality (Thalbourne and Storm 2012). Thalbourne and Storm argue that underlying precognition is a psychological trait known as *transliminality*, or the tendency for psychological material such as imagery, ideation, affect and perception to cross thresholds into or out of consciousness that makes one more sensitive to mystical experience. Transliminality, however, finds deeper resonances with the posthuman as it constitutes both unconscious and environmental material.

Nonetheless, Immanuel Kant, in his reflection 'An Answer to the Question: What is Enlightenment?', expresses disagreement with an 'inability to use one's own understanding without the guidance of another' (1991: 54). For Kant, anthropocentrism is central and to undertake an understanding of the environment as external to one's own intellect, or perceived duration, is to deny the systematic knowledge of nature and to circumvent the authority of reason. In this way, modes of superstition or mysticism are in line with a self-incurred *immaturity* that forecloses a more complete and fulfilled human experience. As with Kant, cognitive scientists position the contingency of the parapsychological as part of a larger ecology of scientific knowledge yet to be discovered.

Critics of parapsychology also argue that investigation into the relation between consciousness and reality is far more likely to result in insights when grounded in scientific theory. For instance, James Alcock (1987) writes that parapsychological activities are unsustainable in that there is no subject matter around which science can develop a clear and reasonable, and thus falsifiable, understanding. The author sees the 'anything goes' attitude of parapsychological activity as providing no further explanation of scientific insight than the search for nonmaterial aspects of human existence.

This may be the case if we are to accept that precognitive processes are not merely unexplained phenomena, but relate to conditions underlying their authenticity (or detection) (Honorton and Ferrari 1989). Yet, by relying on scientific limitation, the phenomena run counter to principles of causality that assume essential roles in making sense of the world around us. An uneasiness emerges here despite anecdotal evidence that suggests individuals have the ability to fold future events

onto present circumstances. However, as Aristotle reminds us, causality exists not only as such, but must also be rooted in a theory of causal relationships.

Following cognitive social psychology in its pursuit to access cognitive and affective processes, parapsychological study uses explicit methods, such as forced-choice guessing. This field also prefers more indirect and subliminal stimuli to measure psychological responses (see Radin 1997) and to expand beyond the boundaries of anthropocentric knowledge. Many parapsychological tests are modifications of well-established psychological effects, administered in reverse so that test subject responses are collected before rather than after the stimulus event. Instead of severing a link between cause and effect these tests pose new questions towards the methodological validity of non-repeatable outcomes (*ibid.*).

In this way, scientific investigation of precognition is complicated by the general claim of precognitive assumption: that subjective modes of duration are abstracted from the capacity of non-physical *residua*, as J. W. Dunne calls it, or, as he explains, of precognitive dreams: 'in every happening with which our sensory nerves as associated, we find, after we have abstracted therefrom every known or imaginable physical component, certain categorically non-physical *residua*. But these remnants are the most obtrusive things in our universe' (as quoted in Ikoniadou 2014: 72, emphasis in original).

Here, Dunne makes explicit the problem of anomalous phenomena, what he calls 'pre-cognitions', and the tensions that remain when the body is (dis)oriented by the nonlinearity of time and physics. Although these amplifications of perception are believed to exist at levels of cognition deeper than scientific enquiry will allow, the domain of the unknowable, or in

some cases the spiritual, is difficult to deny (Kennedy 2005). However, it would do us well to consider that the abstractions of our vast non-linear world are artefacts of discovery and interpretation in as much as they are not bound by physical laws, language, concept or limit. Instead, discovery is generalized as a type of transfer of sensation in the reordering of reality, not as validation of pre-constituted forms of existence. Precognition is the evaporation of past, present and future into new workable modes of understanding though the unknown.

More so, Daryl Bem (2011) argues that foreknowledge does not just note the process of reason, but is an anomalous process of information or energy transfer that is unexplained in terms of known physical or biological mechanisms. For this reason evidentiary modes of knowledge production should be extended into realms that are not *a priori* understood, but mediated through embodied experience. As Bem states, anticipation of future event, or knowing the unknowable, ‘would be evolutionarily advantageous for reproduction and survival if the organism could act instrumentally to approach erotic stimuli and avoid negative stimuli’ (2011: 6). Yet, despite the statistically significant production of Bem’s correlations, empirical theories of the precognitive do not extend far enough in terms of describing the embodied experience of abstraction.

In this way, precognition is not merely a sensation at the level of the mental in terms of human thought but resembles a synaesthesia against commonly held divisions between human mind and body or body and non-human externality (Bishop 2011). What remains is an experimentation in the senses, and in the way we relate to how we see the world through spatio-temporal sensitivities. After all, believing in the world is ultimately believing in the body (Hughes

2011). What precognition demands of the body is an a-temporality, a quantum existence within two simultaneous points in time. This distributed body at once seems separated from nature into the removed depths of cognition, situating the body simultaneously within the real and the abstract. The one is a positioning, an empirical field of vision, in contrast to the latter which resides in excess of cognition – similar to XXXXX’s reading of Descartes’ search for scientific consistency and his confrontation with the inability to distinguish dreams from reality, leaving much to cling onto in terms of the excess of substance or the residuals of subjective experience of consciousness (XXXXX 2006).

Following Descartes, the tension between these modes of existence and how we consider their relation with the future, past and present depends on the formulation of the problem of the real: if future feeling can be tested or replicated then it constitutes the real; and if the experience alludes scientific measure then it resides in the inconsequential. Within this framework the future becomes something empirically commanded or grasped. However, what remains is what Ryan Bishop (2011) terms a ‘confusion of the sensorium’, or the point at which the disorientation of Cartesian distinction between science and nature, mind and matter and so on converges into a strata of indistinguishable and incomprehensible relations that supersede the generalization of the real.

Nonetheless, Brian Massumi (2002) has fruitfully illustrated that the conventional meaning or the content of any intersubjective context is never neatly placed by the quality or intensity of that experience. There is no cohesion or consistency between the two, and if there is, as Massumi writes, ‘it is of another nature.’ Contrary to empirical assessments which require an orientation that is quantifiable as real, it

serves us well to consider a relationship with the parapsychotic as semantically or semiotically disordered. But this is not to lay a negative foundation on the unexplained, merely to state that the precognitive process does not fix distinction. It relies on its own displacement to draw future feeling into an amplification of present senses of reality. It connects the indistinguishable, the unknowable, with a relation to the embodied experience.

However, before collapsing that which exceeds measurement with a figuration of such embodiment we must first recognize the paradox immediately revealed through the separateness of cognition and foresight. For while the former captures sensory information, the latter enables a difference in perceived outcome. In this way, qualification or validation runs contrary to any conception of embodied independence from duration. The human body is temporally located within the gap of present and future (and past) only inasmuch as it is a sensation, a feedback, of generalizable information articulated as perceived cognitive outcome.

The residual, the real meaning, of this process of knowing is motivated by the precognitive, where a greater mode of existence draws upon the freedoms that lie within the power to decide what constitutes the problem of the real (Deleuze and Guattari 1991; Deleuze 2013). As Deleuze states, the essence of this problem is no longer reason, but thought, which is not restricted to human entities and itself is 'to think and create' (Hughes 2011: 90). Here, in extent of duration is an aspect of precognition that defines the real through doing, rescripting and becoming – a methodological tool of the subjective, captured but not predetermined. Philip K. Dick summarizes it best in *Minority Report* (2002: 15) during the interrogation of his precognitive proponent turned empirical victim, John Anderton: 'Were you hoping

to prove the system wrong? I've got an open mind, if you want to talk about it.'

See also Affective Turn; Multiverse; Sensing Practices.

Ramon Amaro

PREGNANT POSTHUMAN, THE

A New Philosophical Subject

We need new concepts of the subject to devise new ethical, social and discursive schemes in our time of profound transformation to be able to think new epistemologies and ontologies together. We need to follow the lines where specific situated subjects lead us in order to find new ways of being (post) human with the world (Braidotti 2013).

Here, the Pregnant Posthuman presents herself – she is a subject who intuitively and intimately understands change and becoming, one who captures the movements of matter and the borders of life within herself.

*

The bird in my chest may or may not be mine. Something feral led her to me. A bit of uncooked egg, perhaps, and now my body is never still . . . My sparrow's wings brush my belly, a message meant for the sky.

**Carol Guess and Kelly Magee,
With Animal**

The Pregnant Posthuman is the daughter of Donna Haraway's cyborg and Rosi Braidotti's posthuman, of Lyotard's 'she', the inhuman feminine philosopher, as well as Hannah Arendt's natal subject. Being a(n) (un)dutiful daughter of her mothers, she presents herself as an image, a fiction, a standpoint, a reality. She is a singular subject, but inside her subjectivity there is another subject growing, one that nobody can see yet. She is in a singular plural state and in intimate experience with the new,

the relational, plurality. She is the first philosophical subject capable of carrying, of giving birth.

With the presentation of this new subject, there is a change in focus from the natality of the individual human being, to the possibility of giving birth to another human being. More plainly, this could also be pointed out as a change of focus from the all too dominant masculine child to the mother. Birth is the forgotten or unconscious mark of the beginning of a linear individual life, while pregnancy, the upcoming event of birth and the possibility of giving birth, function as the foundation of the new life in the middle of a human life, in the body of a conscious subject. With this switch in focus, the subject becomes intersubjective, embedded and cyclical rather than linear, *Bildung* orientated and separated from its surroundings by its believed universality. If the human condition is one of natality, the posthuman condition is one of pregnancy.

The deep relationality of this state captures also, or foremost, the relation to the yet unknown, because the promise of engagement of the Pregnant Posthuman to what she is carrying is always made before birth. If the humanistic subject is about being a singular progressive rationality, then the Pregnant Posthuman is about being two unknown differences. After all, 'singularity does not hold life in unyielding devotion to it' (Wolfe 1929). It is about being repetition of the body, to make it anew again and again within the borders of one body and thus immanently transgress them, and this is where thought which is neither sheer rationality nor emotionality, nor only subject or object orientated, can emerge as the embodied and embedded fruit of the not-yet and the in-between.

* * *

I am neither fiction nor reality, neither meaning nor silence, neither universal nor

particular. I am an attempt at finding words for something plural, at finding meaning within a position that is still only producing silence, is still forgotten, unmasked. I am a reaching-out towards my reality and a trying-to-understand the world from my point of existence which I immanently exceed. I am the repression that inscribes me and the possibilities that I open up. I will be a site for critical reflection and, because my child is yet unknown, for radical imagination.

I am here productively, producing something other than myself, producing a stranger in myself, producing my in-human in myself, carefully, quietly, in a constant state of waiting, making room. But it is not my child who is my work, it is not this subjectivity (Nancy and Lacoue-Labarthe 1992) that I am that is my work, no, this is only 'before' the work, this is only the position that sets me to work, it is this state of not knowing what is catching my breath that urges me to think. I could never think without a body. Never without my pregnancy. I talk to my child. Nobody knows what I said – I know our dialogue exists, but do the words?

I have an unstoppable wish and duty to interpret every kick, every movement, every sign of growth. Pregnancy isn't a moment, it is waiting until something forms within me and while I am waiting my thinking evolves and changes around it. The growing matter determines my experience, my future, my life. Pregnancy is between an act and a state, it is conscious and unconscious within an intimate involvement with the world to come. *Being with* child is being with the always not-yet of the world. It is the search for the world after the promise of engagement, after the affirmative choice for the world.

According to the New Materialism of Karen Barad, Donna Haraway and Rosi Braidotti, matter or being is not only

subsumed to thinking, like it still is in the work of Bruno Latour or Michel Foucault, but epistemology and ontology are radically intertwined. It is the same with me; my circumstances do not only affectionate me, they are swimming into my belly, I am 'a folding in of external influences and a simultaneous unfolding outward of effects' (Braidotti 2013). From inside my uterus they change my body, my blood, my hormone levels, my thought, my being, sometimes carefully, suddenly. The dance with unfolding matter takes place inside of me. I am embedded, performative and being performed by. I expect, believe and affirm in a manner in which the classical subject of humanism is not able to – there is something that expects itself through me. There is a tree growing inside of me, a dragon, a whole city, global warming. Correlationism turned immanent and became my fertility.

I am not language yet, it has never bothered to capture my meaning. I will invent my words, my sentences, my discourse, in time. I am neither culture nor matter. I am a radical continuum of both. I rise from the alleys of humanism to claim my part. I am the radical other of philosophy (Irigaray 1985a). I am the subject who is related to everything that is uncanny in humanism. I am the abject of humanism, in my bloody materiality as well as in philosophical thought where I am only a fleshy origin and shadow. I will never be One or a whole, but always more, always too much, always fragmented. It is not my aim to be the centre of the world. Because of my pregnant state this seems not merely an illusion but a fundamental impossibility.

An animal is growing, or a tree, a lamp, an artwork, or just merely matter, somewhere so deep that I cannot reach it, so personal that it has become impersonal, something not or not-yet human. The inhuman is something in the structure of the human that stretches beyond itself.

Some have called it the sacred, the soul, but they don't force us to radically engage. They don't ask for care or carrying. They are not matter. They don't surpass classic correlationism and the anthropocentrism that comes with it; they confirm it. In my case, the in-human, the place where I exceed myself, is the growth of the world inside of me, it is the growth of my child whom I do not yet know but to whom I promise my whole being. This is the point in my subjectivity where I am absent, where there is only the presence of the other. It is exactly this part that doesn't belong to myself that makes me human. It is this carrying which enforces me to take responsibility over the future and engages me with the world-to-come in the depths of my being, in the darkness of my flesh. It is this which resists the absurd, the suicide, the existential fall.

With each child I produce, I sacrifice and constitute myself. I am the synthesis of difference and repetition, because my repetition, my being pregnant again, is always a differentiation of a new life. I am with ... child ... matter ... fish ... crisis ... failure ... unknown ... other ... not-yet. I capture the movement of new materialism right inside of me: the affectionate, intimate relation with matter, with objects that determine who I become, maybe even more than I am able to determine their becomings, I live inside their history as they live inside of me. It is this movement, this network, of trying to know and being, of knowing in being, that I present on the proud throne of my pelvis: genealogical, generational, gestational thought.

When I produce, I wait. When I produce another, I become. I am the infinite postponement of getting to know what I carry, of getting to know the matter *an sich*.

I am plural. I care because I carry. And I am pregnant only after world, only after desire, only after love.

See also Feminicity; Feminist Posthumanities; In-human, the; Joy; Mattering; Material Feminisms; Neo/New Materialism; Posthuman Critical Theory; Posthuman Ethics; Placenta Politics; Posthumanist Performativity; Pill, the; Posthuman Sexuality.

Rodante van der Waal

PROCESS ONTOLOGIES

Process ontologies deny the priority of being over becoming, the priority of unchanging substance over change. They claim that reality is process rather than static existence and they claim that substances should give way to events. Process ontologies also deny the real existence of isolated individuals and they replace them with multiplicities of processes. Static beings are therefore redefined as illusions imposed over dynamic events and transformations. For example, for process ontologies a substance defined as a stable identity over time is really an event defined as the coming together of many transformations.

As opposed to philosophies of transcendence, where existence is divided into different realms with one ruling over the other, process ontologies favour the idea of immanence, where all events share the same realm. For process ontology, all real processes interact with one another on the same complex plane and there are no beings or processes that can claim independence from that plane, or special dominion over it. Process ontology is concrete rather than idealist ontology, if by idealism we understand belief in an independent sphere for ideas. This does not mean that ideas are denied, but rather that they function as processes rather than as abstract entities.

Immanence in process ontology must not be confused with uniformity. Process ontologies are pluralist, but not through a number of discrete individuals or categories or classes or essences. Instead, process ontology is a differential pluralism, that is, a pluralism of changing degrees or intensities among many connected processes of becoming. For instance, different intensities of feeling allow Whitehead to distinguish events from one another without treating them as separate substances. Instead of a reality constituted by many independent things, distributed according to essences, substances and species, process ontology describes a reality of interlinked processes that cross boundaries between categories.

Process ontologies are a minor line in the history of philosophy, where the major line is represented by the search for stable and self-identical substances rather than flux. The archetypal thinker for the substance line is Aristotle and the most influential recent philosopher of process is Whitehead. In the following pairs of thinkers, the first represent different kinds of process philosophy, the second different kinds of substance and identity philosophy: Heraclitus–Parmenides; Leibniz–Descartes; Hume–Kant; Bergson–Russell; Deleuze–Quine.

Differences between these lines are philosophical and logical, based around the argument that there must be some kind of enduring substance as support for judgements, properties and actions. Whitehead called this argument the fallacy of misplaced concreteness, because it mistakenly attributed causal efficiency to substance, when in fact processes were the correct explanation for change. The opposition also plays out according to different views of physics, chemistry and biology, around whether the sciences confirm the existence of individual entities such as

atoms, or processes such as emergence. For example, John Dupré's process philosophy of biology focuses on biological processes of stabilization and destabilization at the microbial level, rather than on fixed identities of substances, species or individuals.

American pragmatism can be included in the list of process ontologies and Peirce, Dewey and James have been associated with more familiar thinkers of process such as Bergson. Bergson introduced the concepts of multiplicity and duration into process ontology. Multiplicity is a definition of qualitative pluralism such that things are many due to differences of intensity (more, less) rather than differences between countable quantities (one, two). Duration is the definition of time as continuous multiplicity rather than discrete extension. When time is divided into parts, it is no longer the same as when it is considered as a continuous duration. There is therefore a parallel in process ontologies between the opposition of beings and processes and the opposition of continuous multiplicities and discrete parts.

Though there are many versions of humanism, the movement can be defined generally as based upon stable and finite human individuals sharing a common idea, essence, destiny, goal, reflective self-consciousness or form. Humanism cannot therefore be deduced from process ontological principles. This is because the commonness required to identify the human is replaced by changing and variable multiplicities of becoming across complex societies of interconnected transformations. Process ontologies are therefore important for ideas of the posthuman. For example, for her study of the posthuman, Rosi Braidotti develops process concepts such as the 'assemblage' from Deleuze and Guattari and Isabelle Stengers develops her posthumanist constructivism following Whitehead, Deleuze and Guattari.

In humanisms, boundaries are described between human and animal, or human and plant life, or human and inert technology, in order to preserve the special status of humanity. Process ontologies discard these boundaries and emphasize the shared events that make for human–animal and human–technology assemblages. There are different intensities of processes across the human and animal. They work together such that an exclusive humanism cannot be entertained. For example, Donna Haraway describes the relation of human and animal as 'a knot of species co-shaping one another in layers of reciprocating complexity' (Haraway 2008: 42).

Since stability is only ever relative for process ontologies, the idea of an independent and stable human life is not consistent with the view of interrelated processes. The idea of human finitude, important for existentialist ideas of death and human specialness, is replaced by many processes extending beyond the limits of an individual human life, body or mind. Many lives and processes continue beyond each human death, extending in ways that refute theories of proper limits for human lives. Judith A. Jones describes this Whiteheadian view of life in terms of intensity and connection: 'A creative cosmos of vibratory intensities is a perpetual manifold of felt connectivity in an ever-changing array of worlds, and of potential contrasts where such worlds may be made one and rendered part of the perpetual many' (1998: 211–12).

For process ontologies, 'posthuman' does not necessarily imply the abandonment of human values or a focus on human bodies and minds for ethics. Ideas such as feeling in Whitehead or intuition in Bergson allow for attention to the human body or consciousness as processes extending outwards, but without claiming an essential superiority or independence

for them. Process ontologies can be very close to the ethics and politics of some kinds of humanism, where positive values are associated with some qualities exhibited by actual humans as they extend into the world. This idea of extension draws process ontology close to theories in the philosophy of mind drawing variously on Clark, Varela and Thompson and describe mind as extended, embedded, embodied and enacted.

The humanism of the great poet, engaged political activist, committed reformer and investigator into humankind are not closed off from process ontology. Yet process ontology will also remove the illusory basis for a strong humanism, where the commonly defined and represented abstract human being is the general foundation for exclusive and bounded values. Process ontology can lead to a pragmatic anthropocentrism, though it will always be opposed to an idealist humanism and sensitive to shared processes with animals, plants and technology.

When reflecting on process ontology, Nicholas Rescher, whose work combines American pragmatism and process philosophy, explains why the ground of strong humanism is taken away: 'Based on a process-oriented approach, the self or ego ... is simply a megaprocess – a structured system of processes, a cohesive and (relat-

ively) stable center of agency' (2000: 15). In Rescher's ontology, the individual human consciousness, soul, identity, mind and body disappear as independent entities in favour of extended processes.

Simple observations allow us to understand the extent and variability of relative stability as megaprocess in process ontologies. Take the air as it sustains you with oxygen, yet also introduces harmful pollutants; the much-filtered water you drink; the ambient temperature keeping you alive; the clothes made thousands of miles away; the language you use, developed by the speech of millions over thousands of years; the microbes in your gut keeping you healthy; the technologies of glass, silicon, threads, management, distribution, drugs and prosthetics. All are vital aspects of a relatively stable megaprocess which extends your illusory human boundaries of body, mind, character and soul. You are dissolved into the multiplicity of the non-human, just as those non-human processes reach out and dissolve into you.

See also Commutation Ontology; Econtology; Metastability; Ontological Turn; Vibrant Matter.

James Williams

Q

QUANTUM ANTHROPOLOGY

This notion is elaborated in *Quantum Anthropologies: Life at Large* (Kirby 2011). As the title of the book suggests, this collection of essays explores the relationship between scientific themes and the interpretive enterprise in the humanities and social sciences. The sciences are said to enjoy a successful degree of access to material reality; its objects and processes. In comparison, the humanities acknowledge that ‘reality’ is in inverted commas because it is a second order construct, a subjective and culturally inflected process of interpretation that inevitably mediates nature as such. The common-sense belief that sustains this opposition is that nature is universal, enduring and relatively constant, whereas the object that culture discovers is perceived through the hermeneutics of representation that are inevitably mobile and contested.

What is in question is the opposition between nature and culture, as well as the cognate associations that appear to explain and justify their difference. The division is a political hierarchy that equates nature with original deficiency and culture with a later and more evolved complexity. This same logic is at work in the body/mind division and its sexual and gender alignments, in the racial discriminations of black (ignorance) versus white (enlightenment), and even in the most foundational assumptions that identify and segregate materiality from ideation. Importantly, the

cross-chatter of these oppositions tends to entrench and essentialize their meanings into a political hierarchy of difference.

Quantum Anthropologies interrogates this opposition through a counter-intuitive strategy. I read the work of philosopher, Jacques Derrida, in a way that radically resituates deconstruction’s implications and relevance. Best known for his signature aphorism ‘*il n’y a pas de hors-texte*’ – ‘there is no outside-text’ (1976: 158), Derrida’s assertion appears to endorse the hermeticism of cultural constructionism, allowing us no way out. However, Derrida consistently railed against linguisticism as it is commonly conceived: ‘The concept of text or of context which guides me embraces and does not exclude the world, reality, history ... [T]he text is not the book, it is not confined in a volume itself confined to the library. It does not suspend reference ... *Différance* is a reference and vice versa’ (1988: 137). In Derrida’s hands, ‘language’, ‘general writing’ and ‘text’ evoke the workings of an open system, and yet one whose apparent exteriority, or what it appears to access, remains internal to it.

My contribution is to rework and redirect the implications of this assertion in what could be described as a new materialist intervention. There are several steps in this strategy. First, we begin with writing, which is regarded as a cultural phenomenon because historically it arrives after speech. Unlike writing, we tend to assume that speech is a natural ability whose meanings are transparently available to us. In other

words, if we are present when someone is speaking we feel we have understood that person's meaning, whereas we concede a level of ambiguity to the written word. However, Derrida argues that speech is always/already writing (1976) because speech is as complex, as contextually alive and open to interpretation as writing.

Derrida's intervention is commonly interpreted as one that denaturalizes speech by describing it in terms of cultural complexity, a manoeuvre that sustains the binary with a category correction. However, building on Derrida's insistence that deconstruction does more than reverse a binary, I displace the opposition and its political agendas by arguing that writing was always/already nature (complex, systemically involved, entangled). In other words, by naturalizing writing, 'no outside-text' becomes 'no outside nature', and thus originary complexity becomes our departure point in a revised post-humanities.

If deconstruction is not a methodology whose only purpose is to muddle conceptual integrity and to underline the human condition's solipsism (culture), then we are invited to consider a meta-*physis* whose internal torsions have quantum implications. As particle physicist, feminist and philosopher of science, Karen Barad explains it: 'Concepts do not refer to the object of investigation. Rather, concepts in their material intra-activity enact the differentiated inseparability that *is* a phenomenon' (2010: 3). This way of thinking reconfigures the difference between ideation and materiality, culture and nature, and in such a way that nature, or reality, becomes articulate, agential, and

even cognizing, albeit in involved and often unanticipated ways. Indeed, in what might be described as a posthuman performativity, where the difference between subjects and objects are 'intra-actively' (Barad 2007: 168–72) blurred, the conventional co-ordinates of reference and location are profoundly disoriented and diffracted.

The resonance between aspects of critical theory, post-structuralism and deconstruction in particular, are envisioned as expressions of Life's literacies in *Quantum Anthropologies*. Importantly, this displacement of 'who' reads and 'who' authors discovers a more comprehensive sense of sociality whose intrication (writing) discover modes of being (ontology) with/in modes of knowing (epistemology). According to this view, 'textuality' is a systemic enfolding, always contemporary and productively alive because never closed off in a past that is behind us. Consequently, 'texts' are polymorphous, such that even seemingly primeval organisms, indeed, *all* organisms, as well as apparently inanimate and lifeless entities such as a photon, or the behaviour of lightning, become subjects of cognitive and agential entanglement and observational intention. Quantum anthropology explores this sense of a literate 'worlding', diffracting the author/reader and reconfiguring the difference between subject and object, human and non-human, even life and non-life, in the process.

See also Diffraction; Feminist Post-humanities; Neo/New Materialism; Posthumanist Performativity.

Vicki Kirby

R

RADICAL MEDIOCRITY

How mediocre have the lives and self-consciousness of Western individuals become? The suggestion that we live an average life full of boring routines is unbearable for most western individuals who are self-reflectively attuned to live autonomous, unique and creative lives. Yet, once we take the notion 'mediocrity' as literally as possible in order to upscale its meaning critically to a politico-economic level, it is hard to ignore this evident fact: in the third millennium our posthuman condition is radical mediocrity; that is, all kinds of media and means (*medium*) rule (Greek: *kratein* – crity) our lives and we are rooted (Latin: *radix, radices* – root) into the world via screens and displays. We think we know everything about supernovas, black holes, the genome, DNA, neurotransmitters, quarks and even the Higgs boson, but we only deduce this from screens that visualize statistics and diagrams. Kids nowadays are swiping screens for about ten hours a day. Twitter and Facebook connect everyone to everyone.

Life in the twenty-first century has become ecstatic: we have externalized our consciousness in computers. Twenty-first-century schizoid man lives in virtual times where the time range is a split second. He acts as if time and space are annihilated as a result of an unimaginable acceleration of processes. The economy has become speculative with algorithms mobilizing the stock exchange. By satnav we can travel to

wherever we want to go without having the faintest idea what or where it is. In games we can be whomever we want to be and do what we always dreamt of. Our lives have been immaterialized to a great extent. Within this mediatized context radical mediocrity is a state of mind and a state of being. Notwithstanding infrastructural immobilizations like traffic jams, terrorist threats, tsunamis or digital viruses, our mobility has become part of our selves. On a psychological level we live an 'automobilized' life. The very essence of global consumers is not freedom to think but freedom to move around: not autonomy but automobility. We have become Aristotle's *Demiurgos*: the ultimate self (Greek: *autos*) mover (Latin: *mobilis*).

The instinctive rejection of the qualification 'radical mediocre' is triggered by our deep-rooted modern self-perception. Philosophically this is in accord with the Kantian definition of the subject. In his *Critique of Pure Reason* (1781) the autonomous subject – the *cogito* in process that Kant names 'transcendental apperception' – is self-consciously equipped with an understanding that enables the subject to make truthful judgements about the world in order to act rationally. This self-consciousness is embedded in a culture that appreciates critical distance and autonomy. Modern education raises young people to become critical citizens. Yet instead of taking distance to reflect critically individuals nowadays are enmeshed, embedded in networks. A radical mediocre

person is a node in a network, knotted into a web. Being a subject is the result of continuous folding in and extending feedback loops. The concept of a rational subject that is able to make proper choices and responsible decisions is the very foundation of the modern emancipation of all those groups that were politically non-existent before the middle of the nineteenth century: craftsmen, labourers, their wives and all those racially and sexually marginalized groups that have gained civil rights in the past century.

Yet, exactly two centuries later post-modern, emancipated individuals have gone through a process of technological enlightenment that has raised their life standards to a – globally speaking – disproportionate height. The average footprint of north-west Europeans is nearly four times what the earth can produce. In the course of modernity interactions and transactions got speeded up. In 1981, two centuries after Kant's publication, the TGV for the first time transported people to their holiday resorts and business conferences in France by at a top speed of 381 km/h, the space shuttle *Columbia* encircled the earth, the *Voyager 2* arrived at Saturn, MTV started to broadcast video clips around the clock, and IBM launched its first personal computer. A year later, in 1982, the internet protocol suite (TCP/IP) was introduced as the standard networking protocol and a decade later the World Wide Web, web servers, and web browsers connect potentially everyone on Earth. Global connectivity, described in a rhizomatic sense by Gilles Deleuze and Félix Guattari in *A Thousand Plateaus* (1980), was a fact. By now every person has become a node in a network. Without realizing this transformation, because uncritically stuck in a modern, inadequate discourse, twenty-first-century schizoid man has become radically mediocre.

Why schizoid? This posthuman condition has a technological and a psychological aspect. Man and media are fully intertwined. Man is a techno-psychological being that by the second decade of the third millennium has internalized all these mediations, reorganizing his life according to the possibilities that these media produce. His basic needs are exponentially redefined into volatile preferences that are directed by the market. How does this second nature become first? In the western hemisphere life has become very comfortable. This comfortable life, acquired in the course of 150 years, has become first nature. An iPad or iPhone nowadays is a primary need, as is a credit card and a car. After the initial 'shock' that always accompanies the introduction of a new medium, end users learn to handle the medium. Gradually they start consuming the comfort, i.e. the affluence of 'their' media, internalizing it as a basic standard. For the next generation this comfort has become a basic disposition. That is why proposing to reduce automobility and disconnect from interactivity feels like being asked to mutilate oneself: it is a crippling, blinding or dumbing intervention. It is as if someone is asked to cut off a healthy leg or pierce a well-functioning eye or ear.

This psychological upgrading is the result of technological upscaling. New media always incorporate earlier developed media. A smartphone is neither a telephone nor a TV, let alone a library. It is a connected digital display that enables its users to be everywhere at every moment, writing, speaking, browsing and acting, choosing and making technologically predetermined decisions. Media produce unknown experiences, new lifestyles, and eventually new needs, albeit strictly in the terms of the format. The medium becomes an experience in itself. It is no longer a means to an end. As Marshall McLuhan

concluded in 1964: the medium is the message. Giorgio Agamben reflects on this specific state of mind as sheer communicability in *Means without End: Notes on Politics* (2000).

Mediological affluence constitutes the end-user's milieu. Lack and scarcity are abundantly produced in order to trigger collective desire. Once the affluence of new mediological conditions is internalized, needs up till then unknown are ontologized. These become primary needs. Autonomy has become automobility, freedom is experienced in speeded-up frictionless access. Owning the newest of the newest is imperative for being acknowledged by the others, i.e. being recognized as a subject. Being-in-world, the Heideggerian option, is now being-in-media, a medium being more than just an instrumental, kinetic connection between separate beings. Intention is articulated by its extensions, inner life by its prothetic explicitation. The private/public opposition no longer holds since every 'private' conversation is stored by the provider and talking to the world via a headset is a public performance. Uncritically being-in-media takes its users beyond history. It is at this crucial point that a medium can become a harmful routine or a bad habit, measured by a shared well-being.

The 'incorporated' media eventually become as invisible as they are indispensable. Yet just like a pacemaker regulating well-balanced lives, media produce – and by implication control – normality. How do we critically evaluate the post human condition of twenty-first-century schizoid man? Is he addicted to his media? Addiction is not a proper qualification for this interwoven state of being, because this concept too is deeply rooted in modern discourse. Neither is the Marxist's alienation an adequate term. We need to develop non-conventional analytical tools to

diagnose this uncritical state of mind in order to redirect agency and constitute new subjectivities. What is needed is a second enlightenment, as Horkheimer and Adorno proposed in *Dialectic of Enlightenment* (1944). I would propose to label this enlightenment not a rational, but a medial enlightenment, because twenty-first-century man has to readjust his proportional relation to 'his' media. What we need is a second emancipation: not an *ego*-emancipation but an *eco*-emancipation. What is needed in educative terms is what has been addressed in UNESCO programs for education in the twenty-first century as media literacy. This literacy needs to be enhanced by what Fritjof Capra described as ecoliteracy.

The critical philosophical tools to analyse this radical mediocrity in an affirmative sense in order to make this leap possible are provided by philosophies that focus on relations instead of identities. The deconstructivist critics of Hegelian dialectics are the first in line, because once the Hegelian sublation (*Aufhebung*) is chopped off, what is left are webs of relations. Thinkers of difference from Derrida to Jean-Luc Nancy all focus on the relations between (id)entities, articulating this in-between as 'inter'. Derrida proposed the term '*différance*' in order to understand the ongoing production of differences in discursive practices. Referring to Rousseau he already in *Of Grammatology* (1976) argued that the immediate is derived. Everything starts with the intermediary, although this is inconceivable for reason. If there is a primary principle which can be assigned of an ontological status, it is a productive '*voix moyenne*'. In order to clarify 'factuality' in Hegel: *The Restlessness of the Negative*, Nancy states that a factum as 'the thing that gives itself' manifests itself as a becoming: 'it is in relation' (2002: 33). This reminds us of his 'being-

in-common' in which Heidegger's notion 'MitDasein' is updated. But whatever thinker we take, what is needed to enlighten our present schizoid state of being is a philosophy of relations and an affirmative, yet critical approach of interconnectedness. The crucial notion in this affirmative approach is 'interesse' or 'interest'.

See also Interest/Interesse; Intermediality; Critical Posthumanism.

Henk Oosterling

RATIONALIST INHUMANISM

If the concept of *the human* has a fundamental feature that remains more or less constant from antiquity to the present day, it is the idea that humanity is something more than one species of animal amongst others. Western culture was founded upon myths that sever us from the animal order, reinforced by their formalization in philosophical and theological accounts of the natural order, and consolidated by their elaboration in classical humanism. This supplement is articulated in various ways within the Western tradition, but it is the perennial picture of 'Man' as the *rational animal* that unites them in distinguishing us from other animals. The traditional role of the humanities has been to preserve and refine the cultural self-understanding that has formed around this picture, supplying both descriptive and normative resources for individual and collective self-determination.

However, as Foucault has shown, even though classical humanism wrested the study of 'human nature' from its religious foundations, its understanding of this concept 'excluded any possibility of a Classical science of man' (Foucault 2002:

336). It is the reconfiguration of the human as the object of new 'human sciences' that constitutes the historical break between the classical and modern systems of knowledge. Though the classical rationalism of Descartes understood the world in terms of a knowing subject that had no place within it, it instigated an anthropological turn that, following Kant's critique of reason, implanted this subject in the modern concept of the human: 'a strange empirico-transcendental doublet ... a being such that knowledge will be attained in him of what renders all knowledge possible' (ibid.: 347). The most influential aspect of Foucault's analysis is its conclusion, which suggests that this doublet is coming undone in the same manner as the classical concept of human nature, and foresees that 'man [will] be erased, like a face drawn in the sand at the edge of the sea' (419–22).

This prophecy has been borne out by four interacting trends: (i) the natural sciences have progressively undermined the supposed *uniqueness* of our animality, by isolating empirical study of *homo sapiens* from our cultural understanding of the human; (ii) the humanities have aggressively critiqued the purported *universality* of our rationality, by exposing the illicit privileging of masculine, bourgeois and European forms of life implicit in the association of reason with Western civilization; (iii) technological advancement has begun to compound these theoretical trends, by modifying and even threatening to recreate our *cognitive capacities* in artificial forms; and (iv) environmental crisis has begun to catalyse the cultural consequences of these other trends, by confronting our societies with the *impermanence* of the natural order underlying the residual vestiges of the classical worldview. These trends have resulted in the emergence of several strands of posthumanism, which aim to supplant the

conceptual foundations of classical humanism and its anthropological variants.

Transhumanism is the oldest and most well developed of these, and is concerned principally with the capacity of emerging technologies to overcome the limitations of the 'human condition' as traditionally conceived (trend (iii)) and the normative implications thereof (More 2013). Critical posthumanism is an attempt to complete the auto-deconstruction of the humanities (trend (ii)) by bringing the resources of critical theory and philosophical anti-humanism to bear on the 'posthuman condition' as a whole (incorporating trends (i), (iii) and (iv)) (Braidotti 2013: 13–54). It accuses transhumanism of uncritically retaining central elements of classical humanism, including a cache of metaphysical distinctions such as mind/body and culture/nature, and a normative focus on self-determination (ibid.: 89–104). By contrast, speculative posthumanism takes the residual humanism of transhumanism to consist in underestimating the possible differences between humans and posthumans indicated by natural science and technological advancement (trends (i) and (iii)) (Roden 2015: 13–23). Importantly, it rejects the contention that posthuman intelligences are bound by the constraints of human rationality (ibid.: 58–82).

Rationalist inhumanism is an alternative to these positions that attempts to extract the normative core of humanism from its imbrication with the biological and historical contingencies of the human species (confronting trends (i) and (ii)), so as to explicitly articulate and defend aspects of the residual humanism that critical and speculative posthumanism locate in transhumanism (Wolfendale, forthcoming). It does this by exploring the connection between the explanatory programmes of Kantian critique and artificial general intelligence (AGI) (Adams et al. 2012),

on the one hand (embracing trend (iii)), and rejecting the theological equilibrium presupposed by every normative appeal to nature (Brassier 2014b: 485), on the other (embracing trend (iv)).

Its *rationalism* lies in its affirmation of those features of humanism that are consequences of the idea that humans are defined by their the capacity for rational agency: it understands the functional distinction between animal *sentience* and human *sapience* in terms of the difference between reliable differential response (e.g. uttering 'x is red' in the presence of red things) and conceptual competence (e.g. understanding that 'x is red' implies 'x is not green') (Brandom 2009: 200–6), or 'the capacity to engage in discursive practices' more generally (Negarestani 2014a: 429–38); and it understands the normative rift between nature and culture in terms of *autonomy*, or the capacity for individual and collective self-determination (Brassier 2014b).

Its *inhumanism* lies in its rejection of those features of humanism that are consequences of indexing these capacities to the biology, psychology, and cultural history of *homo sapiens*: it sees *reason* as an abstract protocol that has been functionally implemented by the techno-linguistic infrastructure of human culture (Negarestani 2014a: 452–60; Wolfendale, forthcoming); and it sees *freedom* as an 'insurrectionary force' that has bootstrapped itself out of evolutionary pre-adaptations and reformatted the human species as a suitable processing platform (Singleton 2014: 504–7; Wolfendale, forthcoming). It is this attempt to locate an alien vector *within* humanism which pushes it beyond itself that calls for the prefix *in-* rather than *anti-*, *post-*, or even *trans-*. It is worth examining how Negarestani invokes Foucault in order to describe this dynamic:

A universal wave that erases the self-portrait of man drawn in sand, inhumanism is a vector of revision. It relentlessly revises what it means to be human by removing its supposedly self-evident characteristics while preserving certain invariances.

Negarestani 2014a: 427

Insofar as the concept of the human articulates our cultural self-understanding it is not merely subject to passive change – as we have seen in the transitions between pre-classical, classical and modern eras – but open to active revision in accordance with the norm of collective self-determination. Inhumanism turns humanism's commitment to self-determination upon itself by elaborating the consequences of this radical revisability.

The theoretical consequence is the dissection of the empirico-transcendental doublet and a renewed *transcendentalism*: 'rejecting not only psychologism and historicism, but all concrete forms of the anthropological prejudice, we attempt to question afresh the limits of thought, and to renew contact in this way with the project for a general critique of reason' (Foucault 2002: 372). The 'invariances' that cannot be revised in the process of self-determination are precisely the conditions of possibility of revision and self-determination themselves. This dissection of 'Man' extracts the universal subject of classical rationalism from its empirical cladding, flaying the masculine, bourgeois and European specificities hidden behind its supposed otherworldliness from its abstract operational form, and leaving nothing but a set of functions that can be realized in diverse material substrates and divergent forms of life: humans, animals, aliens and machines alike can adopt the role of sapient subjects and autonomous agents, so long as they possess the corresponding capacities. The connection between Kantian critique and

AGI lies in their concern with providing the most *minimal* description of these capacities: a functional diagram of what something would have to do to be *generally* capable of thought and action (Deutsch 2012).

The practical consequence is a form of *prometheanism* commensurate with transhumanism: 'the project of re-engineering ourselves and our world on a more rational basis' (Brassier 2014b: 487). If inhumanism treats 'supposedly self-evident characteristics' of humanity – such as vocational sociality, dimorphic sexuality, or terrestrial domesticity – as conceptual determinations to be discarded in searching for minimal conditions for abstract autonomy, then prometheanism treats these same characteristics as empirical obstacles to be surmounted in achieving maximal conditions for concrete freedom. There are distinct promethean projects concerned with each obstacle just mentioned: accelerationism strives to turn the emancipatory tendencies of modernity against the oppressive sociality of capitalism (Srniczek and Williams 2014), xenofeminism aims to harness the artificiality of identity by rejecting the givenness of material conditions (sex) and social forms (gender) alike (Laboria Cuboniks 2015), and cosmism enjoins us 'to consider the earth a trap', treating gravity as one more constraint to be overcome by the 'generalised escapology' of design (Singleton 2014). The inhumanism of these projects lies in their embrace of *alienation* as a positive force, transforming our progressive exile from a series of edenic harmonies – be they economic, sociological or environmental – into an esoteric genealogy of freedom.

Ultimately, what differentiates critical and speculative posthumanism from rationalist inhumanism is that they overcome 'Man' by renewing metaphysics

rather than transcendentalism (Foucault 2002: 372). Critical posthumanism collapses the distinction between human and non-human by positing a universal vitality – *zoe* – in which both partake (Braidotti 2013: 131), whereas speculative posthumanism articulates the disconnect between human and posthuman by positing a category of functionally autonomous assemblages to which both belong (Roden 2015: 124–49). The choice between these paths can be framed in terms of the perinial picture from which we began: do we unbind animality from the *normative* constraints of rationality, or unbind rationality from the *metaphysical* constraints of animality?

See also In-Human; Transhumanism/Posthumanism; Speculative Posthumanism; Xenofeminism.

Peter Wolfendale

REAL COOL ETHICS

The heady days of the early twenty-first century, as marked by the western calendar, can be variously named: Anthropocene, Capitocene, neoliberalism, posthumanism and others. These various names share a profound sense of the impossibility of ethics – indeed, of living an ethical life. With a focus on the aspects that are tracked by naming this contemporary episteme ‘neoliberalism’, I respond to this pervasive *aporia* by animating an ethics of the real that must be, in turn, grounded in the complex phenomena of race.

The roots of this ethics of the real live in the work of Jacques Lacan, especially as inflected through queer theory. Described by Lacan as that which ‘lacks the lack of signification’, the real functions as a kind of repellent magnetic force that resists the

paucity of signification, including and perhaps especially that of capital. Radically depersonalizing, the real of Lacan’s *oeuvre* thwarts the dominant epistemological and ontological convictions of the modern, liberal episteme and its most treasured child, humanism. The real cannot be captured by traditional schemas of causality, grammar, temporality or the normative frameworks of subjectivity and objectivity that they subtend. It cannot be a proper object of our thought or action, nor the proper force of our will or desire. Not a transcendental, it is also not a possible site of authority, whether prescriptive or restrictive. To shake an ethics out of this strange animal is, at the least, a rather queer undertaking. But, even more queerly, it may also be a possibility that these neoliberal times are opening, ever so obliquely.

My route to such an ethics passes through the provocative work on the real in queer theory, especially that of Tim Dean. For Dean, as for most queer theorists engaged by psychoanalysis, sexuality is fundamentally chaotic, turbulent, disordered and disordering. It radically resists signification, undercutting any attempts to place a strict identity upon it. In Lacanian terms, sexuality only registers in consciousness through the trace that it leaves as the limit of the symbolic order. Formulations derived from such concepts as sexual difference and sexual object-choice disavow this turbulent, asignifying force. They domesticate sexuality into grids of intelligible identity. By reading these aspects of sexuality as a grounding in and cathecting to the real, Dean emphasizes the radically depersonalizing effects of sexuality. Not only does this undercut heteronormativity qua normativity, it also desubjectifies and even dehumanizes the effects of sexuality qua sexuality. Read as the real, sexuality never was and never can become a properly human phenomenon.

Sexuality, however, as we should know from the extensive work of black feminists of the 1970s and 1980s, is always already racialized. By reading queer theory's work on sexuality as the real in the specific geontology of racialization, I argue we must, in the neoliberal episteme, read race as the real. Moreover, I argue that doing so may be the most promising avenue towards a creating a meaningful ethics in these dizzying times.

In *Way Too Cool: Selling Out Race and Ethics* (2015) I argue that a neoliberal social rationality displaces the liberal subject of desire with a new form of subjectivity that, again in the Lacanian lexicon, can be aptly described as cruising the circuit of the drive. The drive, unlike desire and demand, does not aim at any object of satisfaction. Structurally ateleological, its circuitous form enlivens repetition, rather than arrival, as the form of pleasure. When read as cruising the circuit of the drive, neoliberal enterprising practices of consumerism are, in and of themselves, quite satisfying. Practices of self-fashioning become practices of pleasure and even freedom in neoliberalism. The infinity of the endless quest for cooler and cooler stuff – and cooler and cooler selves – is the field of subjectivity. For the neoliberal subject, the endless proliferation of interests stimulated by the market, writ quite large, is the site of pleasure, freedom and the self: the more you can intensify your interests, the more expansive, enterprising and interesting you are. And the more you can stuff your mouth!¹ This externally cathected, quintessentially post-modern subject who glories in her superficiality circulates happily in the neoliberal world of endless images and consumption: she is gloriously no longer *human*.

The neoliberal social rationality must feed this mouth, endlessly. Rather ingeniously, it finds perfect fodder in trans-

formed iterations of social difference: race, gender, sexuality, class, ability and the infamous *etcetera* all become cool accessories, little aestheticized nuggets scrubbed free of any nasty histories of violence. The metric of the market flattens the different forms of social difference into wholly fungible units. Commanded to 'celebrate diversity', neoliberal subjects can no longer discern the differences, for example, between the increasing elasticity of gender expression and intransigent anti-black racism. Classical liberalism's commitments to tolerance, energized by its disavowal of xenophobia, no longer cathect neoliberal subjects. The neoliberal episteme rewires our most fundamental modes of social cathexes from xenophobia to coolness: cruising the drive of difference, neoliberal subjects are swiftly becoming way too cool.

Bringing an ethics of the real to bear, I argue one social difference is strikingly unlike all others: race. Neoliberal subjects, especially in North America and Europe, are deeply confused, if not verging on a kind of madness, when it comes to matters of race. Whether uttered in mono- or multiracial settings, speech about race and racism sets off all kinds of psychosomatic, historically material and deeply suppressed dynamics that will spin most conversations into a twisted, carnivalesque funhouse. Despite the pure excess of material evidence that we are living in extraordinarily racist and violent cultures, we seem to have no language for it. It resists signification.

Consequently, it might be fruitful to understand the complex phenomena of neoliberal race, with its suppression of its roots in long violent histories of anti-black racism, as signalling and cathecting us to the real. Reading race as the real offers a profound caution against falling back into identity categories to conceptualize and talk about race. Unhinged from its location as the *objet a* of classical liberalism's core

fantasies of tolerance, the long, violent history of xenophobia that animates the concept of race is now precisely that which cannot enter signification in the neoliberal episteme. We cannot speak of it. We increasingly cannot even recognize it or its absence. And yet it produces a profound cultural anxiety: our anxiety about race blurs our cool.

If we understand this anxiety, again with Lacan, as a signalling of the real, then efforts to intensify our social cathexis to race precisely as a long history of violence with ongoing systemic effects may be a crucial route to becoming ethical. As Alenka Zupančič (2000) explains, an ethics of the real involves an ontological shift, iterated perhaps most saliently in subjectivity, that takes us far beyond the figure of the human. Elaborating an ethics of the real as a Lacanian spinning of Kantian ethics, Zupančič elegantly shows how this ethical subject is no longer attached to its pathos and thus does not fear losing it. This ethical subject does not experience the impossible commands of the classical categorical imperative as an ethics of asceticism and sacrifice. Undergoing a profound transformation in the anthropology that undergirds such concerns, this ethical subject is no longer animated by desire and its vortex of ego-centrism. As Zupančič puts it, 'We need have no fear that entry into the realm of the ethical will require us to sacrifice all the pleasures we hold so dear, since this will not even be experienced as a loss or sacrifice – "we" will not be the same person as before' (2000: 8).

Ironically, neoliberal subjects are already not the same person as before. The neoliberal subject may, therefore, be more obliquely prone to the kind of ethics-without-pathos that Kant-avec-Lacan articulates. Without pathos, neoliberal subjects cruise the circuit of the drive, where an ethics of the real erupts. Shunning

motivation and all its personalizing, internalizing effects, an ethics of the real may recathect neoliberal subjects back into a meaningful language of ethics. It may harbour sufficient force to rip through the aestheticizing social dynamics of neoliberal cultures.

This is not to smuggle the real back into the traditional schemas of causality and temporality: we cannot wilfully bring the real forward as an object of ethical action. By reading an ethics of the real as an ethics of (endemically sexualized) race, I understand a non-causal encounter with the real as articulating the kind of non-agential response to the long, intense history of sexualized racism that makes us vigilant about this violence without ascribing intentionality or the morality of accountability. It connotes a sustained and intensified attention to the vast histories of sexualized racism that litter our cultural psyches. It forces us to find our ways back through the debris of history – still, again. We might then reconceive ourselves precisely as posthuman so as to become attuned to the inevitable eruptions of the real, especially signalled as race, in these neoliberal times.

See also Afrofuturism; Decolonial Critique; In-Human; Necropolitics; Neocolonial; Posthuman Ethics; Socially Just Pedagogies

Note

1. The mouth, along with the ear and anus, are the somatic indices of the drive for Lacan due to their circular structures. As Lacan explains in *Four Fundamental Concepts*, 'Even when you stuff the mouth – the mouth that opens in the register of the drive – it is not the food that satisfies it, it is, as one says, the pleasure of the mouth' (1999: 167).

Shannon Winnubst

RESILIENCE

'Resilience' as a quality of 'complex adaptive systems' has flourished, moving far beyond its original applications in the environmental sciences to become the dominant discourse in contemporary practices of crisis management. Developed within the field of ecology in the 1970s, complex systems theory marked a shift from first to second order systems thinking and served to conceptualize the metastable or resilient dynamics of socio-ecological systems that were *always more than human*. The concept of resilience has in the recent past rapidly infiltrated vast areas of the social sciences, becoming a regular, if undertheorized, term of art in discussions of international finance and economic policy, in corporate risk analysis, the psychology of trauma, community and development policy, urban planning, public health and national security. Malleable and capacious enough to encompass the human and non-human within a single analytics of power, the concept of resilience is becoming a pervasive idiom of global governance.

The term 'resilience' originated in the work of the ecologist Crawford 'Buzz' Holling who in the 1970s did some of the most important work to modernize the classical systems model of ecological dynamics in terms of the new 'complexity science': away from mechanistic assertions of equilibrium typical of post-war cybernetics toward the contemporary 'complexity science' view of ecosystems. The key image of science that propelled the formalization of economics (in the 1870s) and ecology (in the 1950s) was of smooth and continuous returns to equilibrium after shock, an image derived from different vintages of classical mechanics and thermodynamics. Holling's widely cited paper 'Resilience and Stability of Ecological

Systems' (1973) represents the destabilization of the notion of 'equilibrium' as the core of the ecosystem concept and the normal terminus of ecosystem trajectory, and the beginning of a major shift among ecologists away from the notion that there exists a 'balance of nature' to which life will return eventually if left to self-repair. Having worked for years in the field as a resource manager and conservation ecologist, Holling began his classic 1973 paper on resilience by noting that:

traditions of analysis in theoretical and empirical ecology have been largely inherited from developments in classical physics and its applied variants ... there has been a tendency to emphasize the quantitative rather than the qualitative, for it is important in this tradition to know not just that a quantity is larger than another quantity, but precisely how much larger ... But this orientation may simply reflect an analytic approach developed in one because it was useful and then transferred to another where it may not be.

1973: 1

Holling goes on to distinguish between an existing notion that he calls 'engineering resilience' and his alternative, a properly 'ecological' resilience. Engineering resilience, associated with the reigning mathematical ecology (Odum 1969; Lewontin 1969; May, Levin and Sugihara 1973), is an abstract variable, simply the time (t) it takes a system to return to a stable maximum (or equilibrium position) after a disturbance. The return is simply assumed, and the equilibrium state is taken as equivalent to long-term persistence. What Holling seeks to define instead is a complex notion of resilience which can account for the ability of an ecosystem to remain cohesive even while undergoing extreme perturbations. If stability refers to the familiar notion of a return to equilibrium, 'ecological' resilience

designates the complex biotic interactions that determine 'the persistence of relationships within a system', thus resilience is 'a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist' (Holling 1973: 17).

Holling points to the dangers of the management theory of 'maximum sustained yield' (MSY), long dominant in industrial forestry and fisheries, with its claims to enumerate a fixed quantity of 'surplus' cod or spruce that can be harvested year in year out, without undermining the ability of the ecosystem to recuperate its own productivity. Holling's argument here (mirroring Hyman Minsky's post-Keynesian account of financial crises) is that the long-term expectation of stability may be inherently destabilizing. The ideal of a constant yield of productivity may fragilize a natural resource to such an extent that it undermines complex factors supporting the resilience of the system as a whole. 'The very approach . . . that assures a stable maximum sustained yield of a renewable resource might so change these deterministic conditions that the resilience is lost or reduced so that a chance and rare event that previously could be absorbed can trigger a sudden dramatic change and loss of structural integrity of the system' (Holling 1973: 21). Holling's perspective on resource management reflects the emerging critical voices which, in the early seventies, insisted that intensive methods in agriculture and resource management would at some point meet inherent limits to sustainability, resulting in mass extinctions and intolerable levels of pollution. For Holling, the equilibrium approach was dangerously self-sabotaging: glossing over the unknowably complex interdependencies of specific landscapes pressed into the conditions of maximized yield, it could all too easily accelerate the process of

fragilization, potentially leading to the irreversible loss of biodiversity. By contrast, Holling's perspective seeks to open up a management approach capable of sustaining productivity even under conditions of extreme instability. Its ability to adapt to and deflect from particular limits derives from the fact that it has abandoned long-term expectations and progressive growth horizons:

A management approach based on resilience . . . would emphasize the need to keep options open . . . and the need to emphasize heterogeneity. Flowing from this would be not the presumption of sufficient knowledge, but the recognition of our ignorance: not the assumption that future events are expected, but that they will be unexpected. The resilience framework can accommodate this shift in perspective, for it does not require a precise capacity to predict the future, but only a qualitative capacity to devise systems that can absorb and accommodate future events in whatever unexpected form they may take.

Holling 1973: 21

The above passage, taken from the conclusion of Holling's 1973 article, is significant because it so clearly anticipates the guiding ideas of contemporary complex systems theory and its practical applications in crisis response. Under the sign of resilience, this is an approach to risk management which foregrounds the limits to predictive knowledge and insists on the prevalence of the unexpected, seeking to 'absorb and accommodate future events in whatever unexpected form they may take' (*ibid.*).

Holling's later contributions to the practices of adaptive ecosystem management (1986) earned him wide professional recognition. Following consensus building work with leading orthodox economists (Arrow et al. 1995), Holling and fellow ecologists formed the Resilience Alliance,

and conceived of an ambition to expand the insights of the resilience perspective well beyond ecology. More recently, these initiatives have been brought together within the Stockholm Resilience Centre, a high-profile think-tank which promotes the uses of resilience theory in international environment and development projects. Emblematic in the name change of the house journal from *Conservation Ecology to Ecology and Society*, the Alliance and Stockholm Resilience Centre was no longer concerned with resilience as a property of ecosystems but of the co-evolution of societies and ecosystems as a single system. This new research into 'social-ecological resilience' aspires to set the ground rules for a general systems theory capable of integrating society, the economy and the biosphere in a posthuman world. This totality is dubbed the 'Panarchy':

the structure in which systems, including those of nature (e.g., forests) and of humans (e.g., capitalism), as well as combined human-natural systems (e.g., institutions that govern natural resource use such as the Forest Service), are interlinked in continual adaptive cycles of growth, accumulation, restructuring, and renewal.

Gunderson and Holling 2002

There is a significant difference in scope and tone between this later definition of socio-ecological resilience and Holling's earlier work. Holling is no longer arguing that some socio-ecological systems undergo extreme fluctuations; nor even that all systems enter into stress conditions under the demands of maximum sustained yield; but rather that *all* ecosystem and social-ecological system dynamics can be approached heuristically as non-linear iterations of an 'adaptive cycle', moving through the phases of rapid successional growth (r) followed by stable equilibrium (K), by collapse (Ω), and then a spontan-

eous reorganization that leads to a new growth phase (α) (Holling 1992). Having emerged as a critical perspective on modernist theories of economic growth in the post-Second World War era, resilience theory now presents itself as an alternative theory of growth in non-equilibrium conditions – one that is capable of explaining the general dynamics of social and ecological evolution in a more than human world.

Today, we might argue that the science of complex adaptive systems has become a theoretical reference point for the full spectrum of contemporary risk interventions. Its influence is now felt in arenas as diverse as psychology, education, urban planning, global development policy, military strategy, disaster and risk management, social policy, central banking, financial economics, ecosystems science and resource management. Whereas energy physics played a foundational role in classical modernist theories of economic and ecological organization, and the homeostatic systems of first order cybernetics dominated the economic and military sciences of the Cold War, complexity science now serves as a source of naturalizing metaphors for contemporary practices of security, and functions to neutralize critical inquiry into the disastrous consequences of neoliberal approaches to financial regulation, urban planning and crisis response, environmental policy and development. Since the nineties, global financial institutions such as the International Monetary Fund (IMF 1996, 2006) the World Bank (2006, 2008), and the Bank for International Settlements (BIS 2002, 2008), have increasingly incorporated strategies of 'resilience' into their logistics of crisis management, financial (de)regulation and development economics. With the post-9/11 revolution in 'homeland security', resilience has become

a byword among agencies charged with coordinating security responses to climate change, critical infrastructure protection, natural disasters, pandemics and terrorism (cf. Coaffee, Wood and Rogers 2009; Evans and Reid 2014), reorienting these once distinct policy arenas toward a horizon of critical future events which (we are told) we cannot predict or prevent, but merely adapt to by 'building resilience'. In the process, we would argue, resilience theory has largely ceased to operate as critique and now asserts itself as a fully fledged methodology of power.

See also Capitalocene and Chthulucene; Earth; Ecoontology; Ecosophy; Exclusion Zone; General Ecology; Metastability; Negentropy; Planetary; Survival; Violence; War.

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REWILDING

The concept of rewilding has rapidly expanded to take on ever wider and more metaphorical meanings in the short period since it established itself within the vocabulary of inter-disciplinary, practice-oriented environmental thinking in the late 1990s. Beginning as a technical description for the release of captive animals into the wild, it quickly took on the more general meaning of the re-introduction of plant and animal species to natural areas that they previously inhabited. The definition also now extends to experimental programmes to restart natural processes in the landscapes that have been denuded of biodiversity as a result of anthropogenic degradation by using proxy species to replace extinct animals. Genetic engineering even holds out the prospect in the not

so distant future of the 'de-extinction' of species, with mammoth-like hybrids released into the wild to reinvigorate ecosystems. Since it pertains to the effects of activities that took place as far back as the Palaeolithic period, rewilding also has implications for society in general and our relations to the natural world by opening up vistas for the renewal of lifestyles made tame by consumer capitalism.

The gathering pace of what has been called the Sixth Extinction, the first mass extinction event in geological history to be triggered by the activities of a single species, is the underlying motivation for attempts to deliberately slow or reverse the collapse of biodiversity through rewilding. As the chemistry of the oceans alters and the stability of climate systems breaks down, those species that are not able to migrate in search of refuge or adapt to new conditions are disappearing at a rate of thousands of times background extinction, or the rate that would be expected to occur naturally. Rewilding holds out the prospect of bold action to engineer the recovery of endangered species by rebalancing the equation of humans and nature, even if in the short term resetting the natural ecosystems requires unorthodox human interventions that push at the distinctions made between the activities of the human, or culture, and those of nature or non-human.

In its most radical form, Pleistocene rewilding seeks to reintroduce the megafauna, from mammoths and giant ground sloths to sabre-toothed cats, which roamed the plains of Europe and the Americas until they were wiped out by humans 10,000 years ago. In the many cases where the megafauna in question are now extinct, according to the principles of rewilding, the closest surviving species should be introduced, even if they were never native to the area in question. The most dramatic rewilding project to date involves creating

a vast Pleistocene Park in the wilds of Siberia, where the reintroduction of bison, moose and wild horses aims to transform the waterlogged and mossy tundra into a diverse, grassy steppe, similar to the habitat once enjoyed by mammoths. Criticism of such projects has focused on the risk that introducing megafauna to habitats that have evolved without them for thousands of years could have a negative environmental effect, while barbed warnings about the dangers of ‘Frankenstein ecosystems’ highlights the survival within rewilding of the technocratic urge to interfere with nature.

Debates around rewilding have revolved on the one hand over the choice of ‘baseline’, in other words whether we should aim to recreate an approximation of a Late Pleistocene landscape or whether it is enough to set the clock back to the period before the arrival of Europeans. Critics of rewilding, echoing the objection frequently raised to the Anthropocene thesis that it unfairly displaces responsibility for ecological crisis from capitalism and colonialism to humanity as a whole, have pointed out that by shifting the blame for the destruction of wilderness onto pre-historic hunter-gatherers the enormous environmental impact of Western imperialism and capitalist economics is minimized. Rather than overcoming the dualistic divide between humanity and nature, the project of Pleistocene rewilding can also be seen as the most extreme manifestation of the modern Western mindset that simultaneously idealizes the purity of lost wilderness and champions scientific intervention to restore it.

In addition to revivifying entire ecosystems by reintroducing the wild card of large predators and missing keystone species, rewilding seeks to provide opportunities for modern society to reconnect with the wild. Environmentalist and writer

George Monbiot has written in *Feral: Searching for Enchantment on the Frontiers of Rewilding* (2013) about his attempts to re-awaken in himself the capacities to navigate a wilder world that lie buried in our psychological make-up, but which are dulled by the habits of living in a modern economy that has no need for primeval mental and physical skills. The project of reconnecting with suppressed, inner wildness oscillates between the revival of romantic individualism and questioning the alienation from the natural world associated with consumer capitalism. In this regard, anthropologist Eduardo Kohn in *How Forests Think* (2013) has challenged assumptions about the inevitability of the separation of humans from the natural world, demonstrating that forest creatures are able to think, represent the world, and make meaning without language. Actions to rewild culture and society could also be fundamental to changing the outlook of techno-capitalist society and combating the malaise of ‘ecological boredom’, a passive state of mind that may also account for the widespread indifference to the approaching spectre of ecological disaster.

In place of the static, territorial paradigm of the national park, wildness is conceived by rewilders as a fluid category that can occur in all types of land- and seascapes, and on a micro as well as a macro scale, while optimistic signs of natural resilience are identified in cases of the re-colonization by animals of urban as well as rural areas as humans retreat. Rewilding is also self-consciously geared not towards achieving the human-defined end state of ‘wilderness’, but rather aims to set in motion natural dynamics that will ultimately result in autonomous habitats and self-managing landscapes. Rewilding could be seen as an Anthropocene notion par excellence, since it recognizes the unique responsibility of the human race

for the mass extinction of species and destruction of biodiversity, calls for human intervention to remedy the situation, and at the same time holds out the prospect that in the future humans will deliberately relinquish control and let re-wilded nature be ‘natural’ again.

See also Animal; Animism; Anthropocene; Earth; Ecosophy; Extinction; Resilience.

Maja and Reuben Fowkes

ROBOPHILOSOPHY

The term ‘robophilosophy’ stands for a fundamental systematic reconfiguration of philosophy in the face of artificial social agency. Unlike other systematic research initiatives in philosophy, robophilosophy is time-sensitive, directly motivated by technological developments, and proactive. Robophilosophy is a response to (1) projections of the explosive development of the robotics market in the third decade of the twenty-first century, and (2) to empirical evidence that the large-scale use of artificial ‘social’ agents in public and private spaces of human social interactions quite likely will lead to profound disruptions of economic, social and cultural practices in industrialized societies West and East.

The term ‘robophilosophy’ has wider currency in academic contexts since the inauguration of the bi-annual Robophilosophy Conference Series in 2014.¹ The term was coined by the author in 2013, in resonance with Gianmarco Veruggio’s call for ‘robo-ethics’, in order to signal that the challenges of ‘social robotics’ go beyond ethical concerns and address all disciplines of philosophical research. Moreover, robophilosophy is a complex reconfiguration that engages three research

perspectives at once – it is ‘philosophy of, for, and by social robotics’ (Seibt Hakli and Nørskov 2016). The following paragraphs will describe each of these three perspectives in greater detail; however, as will also become clear in the course of the exposition, these perspectives form systematically connected trajectories and contributions to robophilosophy – here associated for illustration with one perspective – which should more properly be characterized in terms of locations within a three-dimensional research space.

The first dimension, philosophy of social robotics, takes the reflective stance of traditional philosophical research and investigates the conceptual implications of the phenomena of human interactions with robots that act in accordance with social norms. After a decade of empirical research in ‘human–robot interaction studies’ (HRI) there is sufficient evidence to show that humans accept robots as social interaction partners and even attribute to them moral standing. Given that these human reactions are sincere, they are counterevidence to (a) the Cartesian paradigm of subjectivity according to which self-consciousness, freedom, intentionality, normative agency and epistemic and moral autonomy are a package deal, and (b) to traditional and still dominant philosophical conceptions of sociality that restrict the capacity for sociality to Cartesian subjects, or else postulate, with Hegel, constitutive mutual dependencies between the capacity of sociality and the capacities associated with the traditional model of subjectivity. Since the latter figures centrally in the legitimization of moral and political authority in Western democracies, there may be far-reaching repercussions of a pervasive practical reconfiguration of the relevant capacities (e.g. sociality without self-consciousness, normative agency of great economic power without freedom). In short, robophilosophy

as ‘philosophy of social robotics’ tries to come to terms with the fact that the empirical evidence collected in HRI research goes against a built-in feature of Western thought that only humans are the kind of entity that can stand in social relations, and/or that standing in social relations confers upon humans exceptional capacities, as well as the rights and statuses adhering to these. Turkle’s felicitous observation that ‘we live the robotic moment not because we have companionate robots in our lives but because the way we contemplate them on the horizon says much about who we are and who we are willing to become’ (2011: 26) addresses the ‘robotic moment’ from an anthropological perspective as a turning point in contemporary culture, while robo-philosophy as philosophy of social robotics puts the ‘robotic moment’ into the wider perspectives of human socio-cultural and political history and explores its metaphilosophical implications as a game-changer for philosophical research. Outstanding examples of philosophical interactions with social robotics that explicitly engage the metaphilosophical dimension are Coeckelbergh 2012 and Gunkel 2012, who relate the new ethical tasks arising with social robotics to the deconstructions of modern subjectivity that twentieth-century philosophy developed on purely theoretical grounds.

Another important task for ‘philosophy of social robotics’, the reflective dimension of robo-philosophy, is to situate the phenomena of human–robot interactions within the larger context of philosophy of technology. As Nørskov (2015) observes, Don Ihde’s phenomenological classification of ‘human–technology relationships’ must be fundamentally reworked to capture the peculiar complexities of the phenomenology of human–robot interactions. Interestingly, since robots are produced in high-technology societies

West and East, philosophical reflections on social robotics quite naturally lead from auto-cultural hermeneutics into cross-cultural comparative and intercultural philosophy of technology (cf. Nagenborg 2007; Funk and Irrgang 2014; Nørskov 2011; Nakada and Capurro 2013).

The second dimension of robo-philosophy, ‘philosophy for social robotics’, employs standard methods of philosophical research such as conceptual analysis, method analysis, capacity analysis, phenomenological analysis, formal theory construction and value-theoretic discussion for the sake of addressing theoretical problems in the research methodology of social robotics, and in order to guide the development of social robotics applications.

To begin with the foremost task of a philosophy for social robotics, roboticists and researchers in HRI (Human–Robot Interaction Studies) currently operate in an interdisciplinary domain (in the intersection of robotics, psychology, anthropology and sociology) that suffers from the lack of a joint descriptive framework relative to which robotic capacities, human reactions and human–robot interactions can be characterized in clear and precise terminology. Despite some early efforts to clarify and classify varieties of ‘social’ robots (Breazeal 2003; Fong Nourbakhsh and Dautenhahn 2003), most researchers in social robotics use the epithet ‘social’ without apparently being aware of the semantic commitments incurred by our current conceptual norms that govern the meaning of this term. As philosophical reconstructions of these conceptual norms make clear, however, we cannot simply relax the requirements for sociality in general without thereby effecting central regions of our inferential space (Hakli 2014). Rather, we need to consider sociality as a gradient notion and develop precise, differentiated descriptions of

human–robot interactions that can justifiably be said to realize various degrees and types of sociality. Currently robotic capacities are described metaphorically, using the intentionalist vocabulary of human actions and social interactions – robots are said to ‘answer’, ‘recognize’, ‘deliver’, ‘respond’, ‘collaborate’, ‘smile’, ‘greet’ etc. At best such intentionalist idioms are bracketed by the ‘de-realization operator’ *as-if*: ‘We interact with [a social robot] as if it were a person, and ultimately as a friend’ (Breazeal 2002: ix). Here and elsewhere the preposition *as-if* is presented as the ‘as-if’ of fictionality and pretend-play, which has motivated ethical criticism of social robotics as engaging humans in inauthentic social relations. However, fictionalist interpretations of the sociality in human–robot interactions are incoherent; social relations cannot be ‘fictionalized’ – I cannot treat an item *as if* it were a person since the performance of such a social action is constitutive for its realization (Seibt et al. 2014, 2016). Rather, the de-realization in question should be understood as the *as-if* of simulation, where simulation is a similarity relation on processes; the latter can be used fairly straightforwardly for the definition of a fine-grained classificatory framework for simulated social interactions and associated degrees and types of sociality allowing for asymmetric (non-reciprocal) distributions of capacities among interaction partners (ibid.). This switch from the ‘as-if’ of fictionality to the ‘as-if’ of simulation – which fundamentally changes the premises for an ethical evaluation of human–robot interaction – is the cornerstone for a comprehensive descriptive framework for the interdisciplinary field of HRI.²

The second task area of a philosophy *for* social robotics is to analyse in detail specific human capacities and social roles. For example, which kinds of functionalities would a robot need to have to able to

provide ‘care’ or to ‘teach’ or to ‘coach’ – in the sense relevant in, for example, healthcare, language training or dietary assistance, respectively (Vallor 2011; Wynsberghe 2015)? If robots are to be ‘friends’ or ‘companions’, which behavioural routines would they need to exhibit to be perceived as such (Sullins 2008)? These investigations are direct extensions of familiar capacities analyses in AI of human cognitive predicates; however, while the question whether computers really can ‘think’ or ‘form new concepts’ is mainly of theoretical interest, conceptual and phenomenological analyses of capacity requirements for social actions and roles immediately lead to ethical issues. This also holds for the capacity of ethical reasoning itself – investigations about *how* to implement ethical reasoning in machines – for instance, in military robots – are tied to the question of *whether* to do it and thereby relinquish control (Wallach and Allen 2010). In tandem with developing a fine-grained classificatory framework for the description of human–robot interactions, philosophy *for* social robotics thus must define a differentiated array of new notions of moral and legal responsibility for collective agency constellations that involve robots.

The third dimension of robo-philosophy, philosophy *by* social robotics, represents a far-reaching methodological reorientation of philosophical research. As mentioned above, HRI research is an interdisciplinary field operating with quantitative, experimental and qualitative empirical research. If philosophy becomes, as philosophy *for* social robotics, an integral part of HRI – as it must, due to ethical concerns – the standard philosophical methodologies (conceptual and phenomenological analysis, rational value discourse etc.) lose the relative autonomy that is traditionally credited to them. The

research results of HRI not only force philosophers to rework traditional conceptions of normative agency, sociality, moral status, responsibility, etc., they also open up new ways of conducting ‘experimental philosophy’. For example, by implementing ethical reasoning in robots philosophers can investigate by construction and experiment which, if any, of the meta-ethical strategies (deontology, utilitarianism, virtue ethics etc.) leads to decisions that fit with our ethical intuitions, relative to which types of agentive contexts. Similarly, by varying design and functionalities of humanoid robots philosophers can join neuroscientists in the empirical investigation into which, if any, of the extant alternative accounts of our capacity of ‘mind-reading’ (theory of mind, simulation theory, phenomenology, mind-shaping) are most adequate and what this implies for the philosophical interpretation of mental discourse.

See also AI (Artificial Intelligence); Process Ontologies; Transhumanism/Posthumanism.

Notes

1. The notion of robophilosophy as expounded here summarizes general insights from collaborative research in the Research Unit for Robophilosophy (www.robophilosophy.org), with special acknowledgements to M. Nørskov, R.

Hakli, R. Rodogno, S. Larsen, C. Hasse, J. C. Bjerring, M. Damholdt, C. Vestergård and R. Yamazaki. The Research Unit for Robophilosophy (earlier called the ‘PENSOR’ group: Philosophical Enquiries into Social Robotics) was the first research group in Europe, and may still be the only one, to investigate philosophical aspects of social robotics with wide interdisciplinary scope, combining research competences in many disciplines in philosophy (ontology, philosophy of science, epistemology, logic, intercultural philosophy, ethics, political philosophy) with research competences in robotics, anthropology, psychology, cognitive science, education science and computer science.

2. In other words, human–robot interaction is not ‘a human playfully pretending to perform a social action towards a robot’ but ‘a robot simulating the performance of a social action towards a human’. This does not betoken, however, that investigations of the ‘as-if’ of fictionality are irrelevant for HRI. Larsen (2016) shows that the contrastive comparison between discourse about properties of fictional characters and discourse about robotic capacities is of important heuristic value for the semantic regimentation of descriptions of human-robot interactions formulated with the derealization operator ‘as-if’.

Johanna Seibt

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SENSING PRACTICES

If you were to outline a diagram of how an air pollution sensor interacts with an environment it would look something like this: air passing across a chemical membrane or being drawn into an optical sensor either forms a chemical reaction, in the case of the membrane, or is passed across an infra-red beam and counted for numbers of particles in the case of an optical sensor. These sensory readings and reactions cause voltages in electrical circuits to fluctuate, generating signals that in turn can be converted into digital output to be read as data in the form of parts per million of the particular pollutant being sensed. Yet such a sensor might also be used as part of specific environmental monitoring undertaken by a concerned citizen in order to document potentially harmful levels of pollution from industry or roadways. The unit of sense – the seemingly discrete organ or object through which sensing would occur – becomes entangled as another entity and set of relations in the making through the specific sensing practices under way.

This example of an air pollution sensor deployed for citizen sensing practices is just one of many possible examples of the ways in which sensing and units of sense begin to shift toward what we are calling ‘sensing practices’ (Gabrys 2012b; Pritchard 2013). Sensing practices refer to the ways in which sensing and practice emerge, take hold and form attachments

across environmental, material, political and aesthetic concerns, subjects and milieus (cf. Stengers 2011b). From sensors used for environmental monitoring to collaborations with lichens to understand air pollution, as well as smart infrastructures that sense and adjust to real-time conditions, the registers and practices of sensing are shifting from an assumed human-centred set of perceiving and decoding practices, to extended entities, technologies and environments of sense. New registers of sense are becoming evident as organisms express different and dynamic ways in which environments are changing. And many of these shifts and extended registers of sense are further captured through ubiquitous computing that distributes sensing capacities across environments. Citizen sensing also constitutes a set of sensing practices that is meant to enable and empower people to sense for political effect, giving rise to questions about the politics of sense, and how sensing entities transform into agents of provocation and change (Cuff and Hansen 2008; Goodchild 2007).

While we focus on citizen sensing in order to develop this notion of sensing practices, many other practices could be drawn together to elaborate this concept, from trans-material and racialized experiences of lead poisoning (Chen 2012), to digital simulation environments for battlefield preparation (Suchman and Weber 2016), to insect-plant couplings forming particular ecologies of sense (cf. Braidotti

2006a). With these developments in mind, how might it be possible to rethink and rework the practices, entities and environments of sense within this broader context where the assumed subjects and trajectories of sense are shifting? How might these expanded approaches to sensing practices recast engagements with experience, while reconfiguring explorations of practice-based research (Citizen Sense 2014–15)?

Rather than take 'the senses' as a fixed starting point, we suggest that sensing-as-practice allows for an attention to these different articulations of sense, particularly in relation to technologies of environmental monitoring, data gathered for evidentiary claims, the formation of citizens, and more-than-human entanglements. Sensing-as-practice also allows for an attention to experience that does not concentrate exclusively on a human subject, but instead accounts for a vast range of sensing subjects, from stones to insects (cf. Whitehead 1929). William James, a philosopher who influenced Whitehead, suggests that a moment of experience 'proliferates into the next [moment] through transitions which, whether conjunctive or disjunctive, continue the experiential tissue' (1996: 87). Sensing practices then shift attention to formations and processes of experience across multiple entities within particular milieus (cf. Gabrys 2016a).

Such an approach to sensing practices clearly links this way of organizing and understanding experience to a posthuman perspective. Within a posthuman context, experience is no longer confined solely to human points of interest or inquiry. Instead, experiences of more-than-humans become critical to rethinking how sensory relations form or are excluded, and the subjects – as well as new subjects – that concreate through these processes (Whitehead 1929; cf. *Feminist Posthumanities*; Braidotti 2006). But this is not just a project in attempting to

understand how a myriad of pre-existing entities perform their discrete sensing operations. While the specificity of organisms and entities is no doubt important, sensing practices as a concept equally emphasizes the point that these are also practices that are in transition, as James (1996) suggests, or in process as Whitehead (1929) has elsewhere suggested. The possibilities for one particular type of lichen or moss to incorporate and express registers of urban air pollution in one city could shift in relation to other organisms encountering these processes, the city in which the entities are located, the development or ruination under way, and a whole host of other interconnecting factors (cf. Gabrys 2012a).

By approaching sensing differently, not as the senses or as a human point of meditation, it is possible to begin to account for the ways in which sensing practices resonate with particular entities and relations. Sensing is not a project of a human mind or organs decoding external substantialist phenomena, as Whitehead would suggest, but rather could be understood as the ways in which experience is expressed through subjects. Yet this is also a collaborative undertaking, and so 'collaborative sensing' (Gabrys 2016a) is always a key aspect of sensing practices. Far removed from the Cartesian brain in a vat, here collaborative sensing refers to the ways in which shared worlds are felt, sustained and even created (cf. TallBear 2011). If we were to return to the air pollution sensor discussed at the beginning of this entry, we would find that the initial delineation of a sensor detecting stimuli and converting those stimuli into data is a rather linear and limited configuration of the sensing work that goes on with this technoscientific device. Sensors do not merely capture environmental data, but rather they are involved in collaborative sensing practices for parsing environments

and environmental problems, as well as organizing approaches for how to take action and generate political responses through particular forms of environmental citizenship.

Sensing practices are then differently materialized in relation to the subjects and entities, milieus and environments, processes and situations involved in experiencing. Distinct affective and political capacities are operationalized through sensing practices, where the use of an air pollution sensor by a citizen sets in motion a much different political trajectory than a forest damaged by smog. Sensing practices are ways of articulating what matters, of signalling an expressive register of relevance, and affecting and being affected. In this respect, sensing practices are world-making practices (cf. Stengers 2011a). They are ways of 'meeting in a world shared in common' (James 1996: 79). This common world is not so much a place where entities agree to show up, but rather is a milieu among a diversity of milieus that is actively made through shared inhabitations and experiences.

See also Animacies; Animism (Limulus); Body Without Organs; Ethereal Scent; Feminist Posthumanities; Neuronal Aesthetics.

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SOCIALLY JUST PEDAGOGIES

Socially just pedagogies have grown out of a critical or radical pedagogies movement, including pedagogical practices informed by Marxist, feminist and critical race theory which encouraged a critique of political, social, economic and sociocultural issues in education, whilst foregrounding the importance of transgressive transformation

of the educational project. The critical pedagogies literature has largely focused on what Freire (1972) referred to as 'humanising pedagogy' through democratic and sociocultural practices which focus on inequalities and power relations and the importance of economic, cultural and political participatory parity (Fraser 2008). Socially just pedagogies examine who has access to education, what sort of knowledges are valued and devalued, and whose voices are prominent in education. While acknowledging the important contributions that these humanist perspectives have had on socially just pedagogies, a critical posthuman perspective builds on this tradition, but also brings different foci to socially just pedagogies.

Posthumanism provides a number of productive and generative ways of considering socially just pedagogies. Rosi Braidotti (2013), Karen Barad (2007, 2015) and Donna Haraway's (2008) works are particularly pertinent in thinking about how posthumanism may contribute to imagining socially just pedagogies, as they all express a deep concern for social justice and socially just practices. Braidotti's (2013) notion of moving beyond critical deconstruction and critique to alternative enactments of becoming, where power is not only seen as limiting but also as affirmative, has particular relevance for socially just pedagogies. This provides the impetus for rethinking learning as a creative and indeterminate process rather than one which has as its objective acquisition fixed bodies of knowledge. Furthermore, Braidotti's (2013) embodied and embedded nomadic subject illuminates the potentialities and becomings in learning environments, where experimentation in education gives rise to unforeseen but productive and inventive processes rather than predetermined outcomes. Creativity is not an inherent property of individuals,

it is an assemblage; a complexity of networks of human and non-human actors which give rise to creative learning rather than human intentionality. Braidotti (2013) also alerts us to the problematic nature of Cartesian dualisms, such as mind/body, nature/culture, human/non-human, matter/meaning, teaching/research, theory/practice, thinking/doing. From a posthuman socially just perspective, pedagogies would assume a holistic and vital perspective, which includes both parts of these dualisms.

Barad (2007, 2015) refers to a 'yearning for connection, prolonged longing and the sparking of new imaginaries' (2015: 388). Although she is referring to lightning here, these desires for connectivity and creative imaginaries are particularly apt for socially just pedagogies too. Continuing in this vein, Barad continues 'Lightning is a lively play of in/determinacy, troubling matters of self and other, past and future, life and death. It electrifies our imaginations and our bodies' (ibid.). This troubling of self and other is a decolonizing logic, where difference is not seen as essentialized, foreign, negative, separate, other, lack, less than but rather as affirmative, entangled, indeterminate, as difference within, and as multiplicities. As Barad puts it, 'The self is itself a multiplicity, a superposition of beings, becomings, here and there's, now and then's' (2014: 176). Haraway's use of Trinh Minh-ha's (1986/7; 1989) inappropriate/d other which means to be 'in critical, deconstructing relationality, in a diffracting rather than reflecting (ratio) nality – as a means of making potent connection that exceeds domination' (2004a: 69) is particularly apt for socially just pedagogies. The inappropriate/d other provokes a rethinking of difference and relationality – as difference within, as well as differences among humans and non- or other-than-humans. Posthuman socially

just pedagogies are distinctive for their celebration of difference as productive rather than seeing it as alterity. The inappropriate/d other is an emblematic figure for this affirmative stance where difference is seen as a tool of creativity rather than as an apartheid separation.

Haraway's notions of situated knowledges (particular and embodied perspectives of the knower), her companion species and significant others, her notions of flourishing and natureculture (1991, 2008) have particular relevance for posthuman socially just pedagogies which foreground transdisciplinarity and the importance of including the natural sciences and humanities, as well as more than human others in educational projects. Both Braidotti (2013) and Haraway (2014) emphasize the importance of practices of joy for socially just pedagogies which they see as essential for living in our current times, where possibilities of flourishing in the Anthropocene have become increasingly compromised. Desire is also seen not as lack or need but as productive starting point in the education process.

A posthumanist perspective allows us to think about the effects of colonialism on pedagogies – a project which has become increasingly urgent in southern contexts, but which is of importance to northern contexts as well (Mbembe 2001; Taylor and Pacini-Ketchabaw 2015). A posthuman socially just pedagogy facilitates a playful experimentation and an affirmative ethics of potentiality, thus providing an imaginative and creative way of dealing with inequalities and forms of colonization in higher education. Posthuman socially just pedagogies enable us 'to devise new, practical and ethical acts of engagement which motivate and enact change in the material continuum that constitutes educational practice' (Taylor and Iverson 2013: 667). The concern with responsibility,

accountability, what matters, making a difference and an ethics of care emanating from new materialist/posthuman approaches are novel concerns for a socially just pedagogy (Barad 2015).

In posthuman socially just pedagogies, it is not possible to know beforehand what will happen in encounters (Massumi 2015a, 2015b). In posthuman socially just pedagogies matter is seen as vital and vibrant and as having agency and as being 'mutually constituted' with the discursive (Lenz Taguchi 2013; Phillips and Larson 2013). Thus what happens in a posthuman socially just pedagogy is often unexpected and acts as a catalyst for something new emerging. Also epistemology, ontology and ethics are seen as intertwined and not separate (Barad 2007). Posthuman socially just pedagogies start from the metaphysical position that challenges the assumptions of fixed differences between human and non-human, mind and body, matter and discourses. Such pedagogies also use diffractive rather than reflective methodologies as 'patterns of difference which make a difference' (Barad 2007: 72). Diffractive methodologies can be seen as more socially just practices than critique which pits one set of views against another, and which assumes a superior and exterior position, rather than acknowledging that we are all part of the world, situated in particular contexts and unable to extricate ourselves, seeing ourselves as always and already implicated in matters of concern. A diffractive methodology sees the value of past, present and future contributions to knowledge and is an ethical way of care-full reading the details of texts, rather than a dismissive putting people and their ideas down, which Barad sees as epistemologically damaging (Juelskjær and Schwennesen 2012). With a diffractive methodology, it is possible to read the insights from texts, disciplinary or theoretical positions through one another,

in a productive way where creative and new concepts and ideas can be formed.

A way of thinking about socially just pedagogies from a posthuman perspective can be summarized in Haraway's invocation, using the anthropologist Marilyn Strathern's ideas that 'it matters what thoughts think thoughts, what knowledges know knowledges, what relations relate relations, what worlds world worlds, it matters what stories story stories' (Haraway 2014). This provocation alerts us to the vibrancy of matter, the material/discursive and to the caution that some stories normalize other stories. A posthuman socially just pedagogy presents a shift from a concern with the epistemological, to one which directs our attention to an entanglement of the ethico-onto-epistemological (Barad 2007). This shift foregrounds matters of fact with matters of concern and matters of care, and a conviction that matter matters. These concerns and those of openness, response-ability provide a generative potential for socially just pedagogical possibilities 'so that we might use our ability to respond, our responsibility, to help awaken, to breathe life into ever new possibilities for living justly' (Barad 2007: 195).

See also Diffraction; Mattering; Posthuman Critical Theory; Naturecultures.

Vivienne Bozalek

SPECULATIVE POSTHUMANISM

Posthumanism comes in different flavours. The most common are Critical Posthumanism (CP) and Speculative Posthumanism (SP). Both are critical of human-centred (anthropocentric) thinking. However, their critiques apply to different areas: CP questions the anthropocentrism

of modern intellectual life; SP opposes human-centric thinking about the long-run implications of modern technology.

Critical posthumanists argue that Western Humanism is based on a dualist conception of a rational, self-governing subject whose nature is self-transparent. According to Katherine Hayles and Neil Badmington, the term 'posthuman' is appropriately applied to a late stage of modernity which the legitimating role of the humanist subject handed down from Descartes to his philosophical successors has eroded (Badmington 2003; Hayles 1999).

Whereas critical posthumanists are interested in the posthuman as a cultural and political condition, speculative posthumanists are interested in a possibility of certain technologically created *things*. If CP uses 'posthuman' as an adjective, SP nominalizes the term.

Speculative posthumanists claim that *there could be posthumans*: that is, there could be powerful non-human agents that arise through some human-instigated technological process. Another way of putting this is to say that posthumans would be 'wide human descendants' of current humans who have become non-human in virtue of a process of technical alteration (Roden 2012; 2015).

The term 'wide descent' is used to describe this historical succession because exclusive consideration of biological descendants of humanity as candidates for posthumanity would be excessively restrictive. Posthuman making could involve discrete interventions into the reproductive process such as genetic engineering, or exotic-seeming technologies such as methods of copying and 'uploading' human minds onto powerful computer systems.

SP is frequently conflated with Transhumanism, but it should not be. Transhumanists, like classical and modern humanists, wish to cultivate supposedly

unique human capacities such as autonomy, reason and creativity. However, they hope to add the fruits of advanced technologies to the limited toolkit of traditional humanism, believing that prospective developments in the so-called 'NBIC' suite of technologies¹ will allow humans unprecedented control over their capacities and morphology (Bostrom 2005a, 2005b; Sorgner 2009).

Transhumanism is thus an *ethical* claim to the effect that technological enhancement of capacities like intelligence or empathy is a good thing.

SP, by contrast, is a *metaphysical* claim about the kinds of things that could exist in the world. It does not imply that posthumans would be better than humans or that their lives would be comparable from a single moral perspective. One can hold that a posthuman divergence from humanity is a significant possibility but not a desirable one (Roden 2012).

This is not to say, of course, that SP lacks ethical and political implications but these become apparent when we have an adequate account of what a posthuman divergence (or 'disconnection') might involve. I will return to this issue in the last part of the entry.

There are no posthumans (as conceived by SP). Thus we are currently ignorant of their mechanisms of emergence. It is conceivable that posthumans might arise in many different ways, thus a philosophical posthumanism requires a *mechanism-independent* account of the concept of the posthuman. For example, we should not treat mind uploading as a *sine qua non* of posthumanity because we do not know that mind uploading is possible or has posthuman-making potential.

A plausible condition for any posthuman-making event is that the resulting non-human entities are capable of acquiring

ends and roles that are not set by humans – and that this autonomy is due to some alteration in the technological powers of things. Given our dated ignorance of posthumans this claim captures the core of the speculative concept of the posthuman. This is referred to as the ‘Disconnection Thesis’ (DT). Roughly, DT states that posthumans are feral technological entities. Less roughly, an agent is posthuman if and only if it can act independently of the ‘Wide Human’ (WH) – the interconnected system of institutions, cultures, individuals and technological systems whose existence depends on biological (‘narrow’) humans (Roden 2012; Roden 2015: 109–13).

One of the advantages of DT is that it allows us to understand human–posthuman differences without being committed to a ‘human essence’ that posthumans will lack. Rather, we understand WH as an assemblage of biological and non-biological individuals, whose history stretches from the world of Pleistocene hunter-gatherers to the modern, interconnected world.

Becoming posthuman, then, is a matter of acquiring a technologically enabled capacity for independent agency.

The fact that human–posthuman disconnection would not result from a difference in essential properties does not entail that it would not be significant. Just how significant depends on the nature of posthumans. But DT says nothing about posthuman natures beyond ascribing a degree of independence to them. It is thus *multiply satisfiable* by beings with different technological origins and very different natures or powers (e.g. artificial intelligences, mind-uploads, cyborgs, synthetic life forms, etc.).

Nonetheless, one picture of posthuman technogenesis has had pride of place in philosophical and fictional writing on the posthuman. This is the prospect of human-

created artificial intelligences (robots, intelligent computers or synthetic life forms) acquiring human intelligence or greater than human intelligence (super-intelligence) thereby transcending human control or even understanding.

In futurist thought, this is called ‘the technological singularity’. The term comes from a 1993 essay by the computer scientist Vernor Vinge, ‘The Coming Technological Singularity: How to Survive in the Post-human Era’. According to Vinge, a singularity would involve accelerating recursive improvements in artificial intelligence (AI) technology. This would come about if the relevant AI or Intelligence Amplification (IA) technologies were always ‘extendible’ so that the application of greater intelligence could yield even more intelligent systems. Our only current means of producing human-equivalent intelligence is non-extendible: ‘If we have better sex, it does not follow that our babies will be geniuses’ (Chalmers 2010: 18).

Given an extendible technology, human or human-equivalent intelligences could ‘extend’ that AI/IA technology to create superhuman intelligences (AI+) that would be even better self-improvers than the earlier AIs. They could consequently make *super-superhumanly intelligent* entities (AI++) and so on (Chalmers 2010). If the technology in question were some kind of machine intelligence, this might result in an accelerating exponential growth in machine mentation that would leave biological intelligences such as ourselves far behind.

The minds shot out by this ‘intelligence explosion’ could be so vast, claims Vinge, that we have no models for their transformative potential. The best we can do to grasp the significance of this ‘transcendental event’, he claims, is to draw analogies with an earlier revolution in intelligence: the emergence of posthuman minds would

be as much a step-change in the development of life on earth as the emergence of humans from non-humans (Vinge 1993). Humans might be no more able to grasp a post-singularity world than mice are able to grasp concepts in number theory. They would be lost in a world of essentially incomprehensible and unknowable gods.

But suppose a singularity is not technically possible. Maybe there are hard limits on intelligence (in this universe at least). Maybe the scenario does not adequately nuance the notion of intelligence. Still, Vinge's scenario raises a troubling issue concerning our capacity to evaluate the long-run consequences of our technical activity in areas such as the NBIC technologies. This is because it presupposes a weaker, thus more plausible, speculative claim: *our technical activity could generate forms of life significantly alien or 'other' to ours.*

If posthuman life could be significantly alien or 'weird' then we might not be in a position to understand it easily, making the evaluation of prospective disconnections problematic. Do we insist on adopting a humans-first perspective on our technical activity even though we, or our wide descendants, may cease to be human? Critical posthumanism implies that the privileging of human life is illegitimate. But what if – as Vinge fears – we may be simply unable to understand the things we (our descendants) might become?

Much depends, here, on the scope for posthuman weirdness. Do we have an *a priori* (hence future-proof) grip on how strange our posthuman successors could be?

There are two opposed perspectives on this: an anthropologically bounded posthumanism (ABP) and an anthropologically unbounded posthumanism (AUP). ABP states that there are transcendental conditions for agency that humans would necessarily share with posthumans in virtue of being agents at all.

For example, maybe all serious agency requires mastery of language or the ability to participate in social practices. Perhaps all agents must be capable of pleasure and pain, must apply Kant's categories or be Heideggerian *Dasein*. If so, there are limits to posthuman weirdness and the extent to which posthumans can exceed our understanding.

Do we have evidence for such constraints? If we don't, we should adopt an *unbounded posthumanism* according to which there are no future-proof grounds for viewing posthumans as agents of a particular kind. AUP has the disconcerting consequence, though, that we could only evaluate the ethical perspectives of posthumans by encountering or becoming them.

If AUP is right, humanists and transhumanists have seriously underestimated the inhumanism our technological predicament (Roden 2014: ch. 7). We are not yet in a position to evaluate the ethics of posthumanity, but we can only do so by precipitating an event whose consequences are incalculable this side of a disconnection. AUP and DT jointly imply that there can be no general ethics of the posthuman, only multiple lines of *posthuman becoming* and experimentation with posthuman forms of life and being. At this point, arguably, the perspectives of CP and SP converge.

See also Computational Turn; Artificial intelligence; Critical Posthumanism; Rationalist Inhumanism; Transhumanism/Posthumanism; Xenofeminism.

Note

1. NBIC stands for 'Nanotechnology, Biotechnology, Information Technology, and Cognitive Science'.

David Roden

SS = SECURITY/SURVEILLANCE

Security/surveillance is rooted in beliefs of anthropocentric mastery and control, in beliefs of unobstructed human access to and control over the 'actual', which is the starting point for outlining posthuman predicaments of security. There are two lines along which to map these predicaments. The first is a question of knowledge and the de-centring of human control and certainty. The second is a question of objects or predicaments of 'the actual' subjects/objects of security pursuit. On both counts, histories of global north security/surveillance could be read as describing quickening more-than-human sensibilities. It is not that security/surveillance was not more-than-human before, but that the contemporary moment finds the de-centring of the human and human knowledge at the forefront of official practice – indeterminacy in human decision-making is acknowledged and constitutive of security/surveillance culture (e.g. the infamous 'unknown unknowns' of the war on terror announced by former US Secretary of Defense Donald Rumsfeld) and security objects are constituted through complex and indeterminate more-than-human assemblages (e.g. digital networks, of acute security concern, are constituted through fibre-optic cables, data, traffic flows, users, ideas, private companies, national legal landscapes and so on).

Most boldly, security/surveillance ambitions are characterized by the following (and the degree to which any of these characteristics are new is an open question): a pre-emptive mandate to act early on imagined, speculative futures; pressure to 'connect the dots' of potential events before they occur; collection and analysis of massive amounts of data often throughout the unfolding spaces of everyday life; faith and investment in technological and

algorithmic analytics; desire for seamless, 'interoperable' access to information across all manner of im/material borders, and the pre-eminence of circulation as that which is to be protected and a means through which security/surveillance is pursued (see Amoore 2013; Massumi 2015c; Cowen 2014). The spatial and temporal depth of security/surveillance saturation is thus immense. Anticipated futures colonize the present and the spaces of everyday life are indivisible from such efforts to 'connect the dots' of potential future events, just as attempts are made to suture gaps and cracks across borders, jurisdictions, the public and private and so on (Amoore and de Goede 2008). It is not simply that the de-centring of human knowledge and control are recognized but that uncertainty is the grounds on which security/surveillance efforts are constituted – emboldening rather than diminishing as ever more spaces, times, subjects and objects might be drawn into security assemblages.

Thus, security/surveillance sights are often trained upon future potentials, on what bodies may become capable of. This applies across the field of data bits, individual identities and persons, through to complex networks and assemblages. Objects of security pursuit – borders, transport networks, non-state based terror networks, digital networks, infrastructures, pandemics, ecosystems – are engaged as emergent, circulatory, irruptive milieu (e.g. Elbe, Roemer-Mahler and Long 2014). Subjects/objects of security pursuit take form through the capacities and potentialities of bodies enmeshed in and constituted in more-than-human ways. What does this do to the figure of the human? Louise Amoore writes that the data-driven, risk-based, speculative frames of algorithmic modelling are 'indifferent to the specificity of persons, places and events' (2011: 30) and are rather concerned

with relationships of correlation between data points. The individual, the personal narrative even, recedes such that 'the data derivative is not centered on who we are, nor even on what our data says about us, but on what can be imagined and inferred about who we might be – on our very proclivities and potentialities' (ibid.: 28).

Given this state of affairs, particularly with much attention given to technofetishism in security and strands of post-human thought that privilege technological innovation and saturation, there is a strong temptation to historicize the present as a posthuman moment distinct from before. But this must be complicated. Not least because we could ask, 'When was the human *not* inextricably entwined in material, technological and informational networks' (Braun 2004: 271)? But also because embracing such historicism is ethically and politically problematic. Technological quickening and advance must be held in tension with other elements of more-than-human security assemblages; to not do so risks reifying the powers of security/surveillance states.

First, technological privileging risks lending credence to the abdication or dislocation of responsibility for security decisions. Techno-security visions enjoy claims of clean machine vision, which, it is said, does not discriminate but simply analyses the data, accesses the actual truth of the matter through data. Decision and design are displaced in indivisible and inaccessible meshes of analysts, algorithms, secrecy, data, jurisdictional divides and so on. This creates a condition in which it is very difficult to locate and contest decisions, to parse responsibility. Thus, one question is to ask how accountability can be interrogated in complex material, technological, informational assemblages? And to consider how security/surveillance optics benefit from attending to the human

as 'never itself', as enmeshed environmental/bodies in formation.

Second, foregrounding technological and informational advances gives too much credit to security/surveillance assemblages. The brochures of security technology companies, for example, are more-than-human masterpieces, detailing products that 'will' seamlessly integrate technologies, systems, data flows, environmental and 'situational' factors, human analysts and decision-making processes. The current buzzwords are 'interoperability' and 'situational awareness', which could perhaps be seen as posthuman terms of art, suggesting as they do elegant hybrids of human, technology, environment. They suggest a more-than-human actor that sees all without gap or prejudice and seamlessly makes undecidable security decisions. This is, of course, not the case. While not discounting the depth and reach of such forces, nor the more-than-human constitution of security/surveillance, the fissures, cracks, inabilities and inconsistencies of such states are just as crucial to this constitution and to a more-than-human understanding of becoming. Inconsistencies, gaps, impossibilities and failures are as much a part of security assemblages as data points, satellites and intelligence agents.

It is crucial to ask what security/surveillance optics gain by embracing the fact that the human was and is 'never itself' (Braun 2004, citing Wolfe 2003); that the human, both as security decider and locus of suspicion, is enmeshed in multiple bodies in formation. It would seem that powers of security/surveillance gain quite a bit by embracing open-ended and expansive imaginations of becoming, at the same time that obstacles to security control are inherent to the open-ended becoming of the world. This is the starting point for interrogating the generative indeterminacy constitutive of posthuman security/surveillance.

See *also* Algorithmic Studies; Stateless State; War.

Stephanie Simon

STATELESS STATE

The concept of the stateless state emphasizes the dual meaning of the concept of the *state*. On the one hand, the term ‘stateless’ refers to those peoples struggling for the right to self-determination who are denied an independent nation-state of their own. On the other hand, the concept of ‘state’ refers to a ‘state of mind’. So the first addresses the concept of the state as a *construct*, whereas the second refers to the state as a *condition*. Assembled together, the *stateless state* names the condition and practice of those living without the state – either because they are denied a state of their own, or because they reject the very structure of the state all together (see also Staal 2014a, 2014b).

Professor Jose Maria Sison, founder of the Maoist Communist Party (CPP) of the Philippines and its armed wing, the New People’s Army (NPA), emphasizes the importance of the role of art and culture in the context of the stateless state. The Filipino revolutionary movement, born out of the resistance against Spanish and US occupation, controls large pieces of land throughout the country; its aim is to liberate its peoples from imperialism and feudalism, but at the same time it aims to strengthen the national consciousness of the peasants, working poor and indigenous peoples whose language, history and symbols risk being erased as a result of the decades of foreign occupation. In this regard Sison writes that: ‘The local cultures and the developing national culture must be cherished and affirmed and integrated into a revolutionary national conscious-

ness in order to serve national liberation and do away with the stultifying sense of subservience to foreign domination (Sison and Staal 2013: 37).

Through visual art, theatre, poetry, literature and music the cultural consciousness of a nation under occupation is maintained; and thus the revolutionary Filipino struggle simultaneously attempts to change the material conditions of society, while also strengthening the cultural consciousness in preparation of a new one. The latter is referred to by the Filipino revolutionaries as ‘cultural work’. Within the stateless state of the revolutionary movement cultural work essentially takes the form of a (temporal) *alternative to the state*. Whereas those living within a recognized state outsource the maintenance of art and culture to the administrating arms of a given regime, within the stateless state this demands an ongoing process of culturalization and politicization. Culture is a weapon that builds the revolutionary consciousness necessary for a people to effectively recognize and oppose its oppressors. Poet Ericson Acosta, himself jailed several times for his cultural work, explains: ‘It’s about finding a way to use visual materials in union education or using songs to agitate the ranks. The revolutionary movement in fact has a strong tradition of revolutionary worker and peasant songs . . . The activists immediately understood the decisive role of art, literature, and music in building resistance’ (ibid.: 98).

We see a similar important role of art and culture in other revolutionary organizations, such as the National Liberation Movement of Azawad (MNLA), led by the Kel Tamasheq (translated as ‘those who speak the language of Tamasheq’), better known as the ‘Tuareg’. The MNLA is rooted in the long history of resistance to French occupation of the Sahara and the Sahel, and later on, against their forced

integration into the state of Mali. From 1960 on, the year of Malian independence, the Kel Tamasheq rebelled in demand of their own autonomy, most recently in 2012, when the organization declared their independent state of Azawad in the northern part of the country, one and a half times the size of France. Writer and MNLA representative Moussa Ag Assarid says:

I have met many men and women who fight for education and art, who make beautiful works in the form of the calligraphy that now covers our city and declares itself part of Azawad, and great poets who roam the streets and speak to the children. In the MNLA we have women and men who make history. And our history is now; it is constructed day by day. Every element, every person, each fighter is an actor in our common Azawad.

Assarid and Staal 2013: 42

Similar to the Filipino leader Professor Sison, who famously wrote that 'the guerilla is a poet' (Sison 2013), Ag Assarid emphasizes how the revolutionary struggle is simultaneously a cultural struggle, calling each politicized subject in the struggle for independence an 'actor'. The Kel Tamasheq do not fight merely with arms, but through a politicization of their own history, language and cultural symbolism that they have had to defend over decades from foreign occupation. In this regard, Ag Assarid mentions particularly the work of the Kel Tamasheq band Tinariwen (translated as 'Deserts'), which consists of former revolutionary fighters who travel the world to narrate the history of the revolution through their own language and traditional music. Ag Assarid explains:

Tinariwen is . . . unique in that their music is passed on through cassette tapes. The cassettes are the weapons that make our message travel: a message of revolt, but also a message of peace. In times of revolt,

the music reminds us of our goal of peace. In times of peace, we are reminded of the revolt that laid its foundation.

Assarid and Staal 2013: 42

In the case of the Kurdish revolutionary movement – occupied by what the Kurdistan Workers Party (PKK) has named the 'inter-colony' of Kurdistan, the land of the Kurds being separated through the countries of Turkey, Syria, Iraq and Iran – the notion of the stateless state as enacted through cultural work gains additional importance due to the fact that their struggle for self-determination has come to reject the concept of the nation-state altogether. Co-founded by women and men in 1978, Abdullah Öcalan and Sakine Cansiz being the best known today, the PKK grew quickly through its effective guerrilla struggle against the Turkish state into a mass movement in the 1980s.

Initially grounded on Marxism-Leninism, the PKK aimed at establishing an independent Kurdish nation-state. But women in the ranks of the guerrillas felt marginalized from the struggle along the way, due to the fact that many men did not recognize them as equal fighters and expected them to dedicate themselves to care work instead. Öcalan, who had been the political leader of the PKK from the start, supported the women's movement to develop autonomously within the PKK in order to protect their stake in the revolution.

Both Öcalan and the women's movement concluded that the structure of the nation-state essentially consists of the culmination of patriarchy and capitalist imperialism. A representative of the Kurdish Women's Movement, Dilar Dirik, in this light rhetorically asks: 'Could we have a nation-state, a concept inherently based on capitalism and patriarchy, and still think of ourselves as liberated?' (In der Maur, Staal and Dirik 2013: 52).

The result of the alliance between Öcalan and the women's movement was the emergence of 'democratic confederalism', or what Öcalan calls 'democracy without the state': *stateless democracy* (ibid.: 99). It is grounded on principles of self-governance, gender-equality, the right to self-defence, cultural co-existence and communal economy. Practised in large parts of Bakûr (North Kurdistan, Turkey) and the total region of Rojava (West Kurdistan, Syria), it has developed as a parallel structure to existing states as well as fully autonomous regions under control of communes, councils and cooperatives. Dirik explains it as follows:

[Democratic Confederalism] considers the question of how to build an alternative to the state – for and by the people – independent of the international order, while also taking into account the specific oppressive regimes of the region. This is why the insistence is always on regional governments and regional autonomy, even though the model of democratic confederalism is proposed for the entire Kurdish region.

ibid.: 43

Similar to the Filipino revolutionaries and the National Liberation Movement of Azawad the role of art and culture is prominent in the Kurdish revolutionary movement. The fact that Kurdish language, literature and music was banned under the regimes that occupied its lands for decades increasingly politicized Kurdish culture throughout the struggle. Different from the cases of the Filipino and Azawadian independence movement, the Kurds no longer strive for a state of their own – the stateless state, in which cultural work plays a key role, instead has become a *permanent* condition. Even when autonomy is won, there is no state to outsource one's history to, and thus the role of the artist is not

merely important as a substitute for the state, but foundational in maintaining the stateless state. Nesrin Botan, vocalist of the Kurdish band Koma Botan in Rojava, explains the role of culture in the Kurdish movement as follows:

We have an important role in the revolution ... This revolution gives us the opportunity to express our culture, art, and folklore that used to be suppressed. We are now working hard for our culture and identity. Like a musician receives education from school, our fighters learn the art of fighting in the People's Protection Units [the people's army of the Kurdish Rojava region, JS]. Like a teacher of art, our warriors show performance on the battlefield.

ibid.: 242

In Botan's words we hear the echoes of Sison and Ag Assarid – musical cassettes are *weapons*; the *guerrilla* is a poet; the *fighter* a teacher of art ... All of them describe the artist as a worker who contributes to upholding the narratives and convictions of those who are marginalized, dispossessed and persecuted by the occupying state. The cultural worker is an educator, agitator and organizer, all in order to maintain and to enact – to perform – the symbolic universe of the unacknowledged state that is not so much an administrative entity as a collective condition.

The long cultural struggles of the Filipino, Kel Tamasheq and Kurdish peoples has created a state in itself, a detailed network of references, histories and symbols that define a people's identity far beyond what a state could ever contain. This is the *art of the stateless state*.

See also Art; Political Affect; Lampedusa; Violence; War.

Jonas Staal

STATIC GLOW

Static Glow refers to the phenomenon by which data persists in the network long after the person it relates to is dead, such as the so-called Facebook ‘ghost profiles’; accounts owned by the deceased that continue to appear in ‘Friends’, ‘Suggestions’ and, somewhat more disturbingly, ‘Birthday Reminders’.

Example: Her *static glow* still lingers after four years.

Static Glow became notorious with the quintessential scene that presages horror in the film *Poltergeist*: a TV set hisses while the black and white flickering static glows in the dark room. The juxtaposition of stasis (static) and movement (glow) reflects the tension between the desire to remember and the necessity to forget that underlines the eeriness of encounters with our ‘undead media’ (Chun 2011b: 134).

Ghost profiles became a phenomenon in the early MySpace days, when the mediated violent murders of teenage girls in the US led strangers to comment on the profiles of the tragically deceased, and even sometimes to create RIP tribute profiles. Nowadays the infamous Facebook algorithms generate ghostly encounters with Birthday Reminders or timely placements of photographs of the deceased in our Timeline Memories. These and similar phenomena are the object of what has been called digital death, digital afterlife or death online studies, which consider the particular interaction and identity construction engendered by lingering data in the context of mourning (Gibson 2007; Walter et al. 2011; Maciel and Carvalho Pereira 2013; Gotved 2014; Klastруп 2014; Lagerkvist 2016). The notion of the abandoned site is embedded in the inception of the World Wide Web. The growing cemetery has been indexed by the Internet Archive since 1996, and is already inscribed

within historicities of ‘digital folklore’ (Lialina and Espenschied 2009).

Media Afterlife: An Inherent Aspect of Media History

The history of media technology is deeply entangled with the attribution of supernatural power to communicate with or to represent the dead. The notion of emanation that manifests after excitation accounts for much of what has historically haunted media (Sconce 2000). *Static Glow* is also inspired by the afterglow produced by phosphorescence that emanates from a CRT screen after the television is turned off. Such examples go as far back as the Shroud of Turin and Veronica’s Veil, and have bloomed since the development of new technologies in the late 19th century.¹ Media’s ghosts are epitomized by the practices of spirit photography and spiritualism, both explicitly linking the afterlife through the *medium* of the emerging technology of the time. Spirits were communicated with through the spiritual telegraph and *captured* on a gelatin silver print.² The experience of looking at a photograph or watching a film is described as watching and being watched by spectres (Barthes 1980; Derrida and Stiegler 1996). Media are perceived as a means to communicate with the opposite bank of the River Styx. The tradition continues in networked computation with ‘computer-based discarnate entities’ or cyber-spirits (Collins 2004). The multiple data traces every user leaves behind further augment this ghostly anthropomorphization. The question might not be whether humans are perpetuated through networked data archives, but *how* that data is reused.

The profile of a dead person can be forgotten, but its remains in the database may be integrated into new identity and re-branding models. A ghost’s allure, for

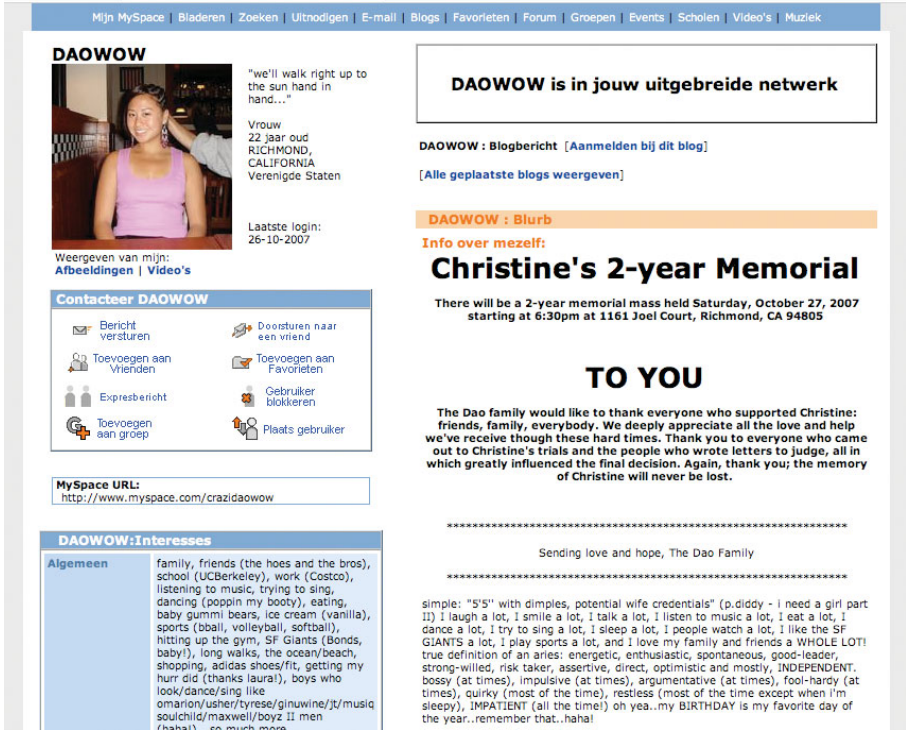


Figure 1. Screenshot of Christine's MySpace profile (circa 2007).

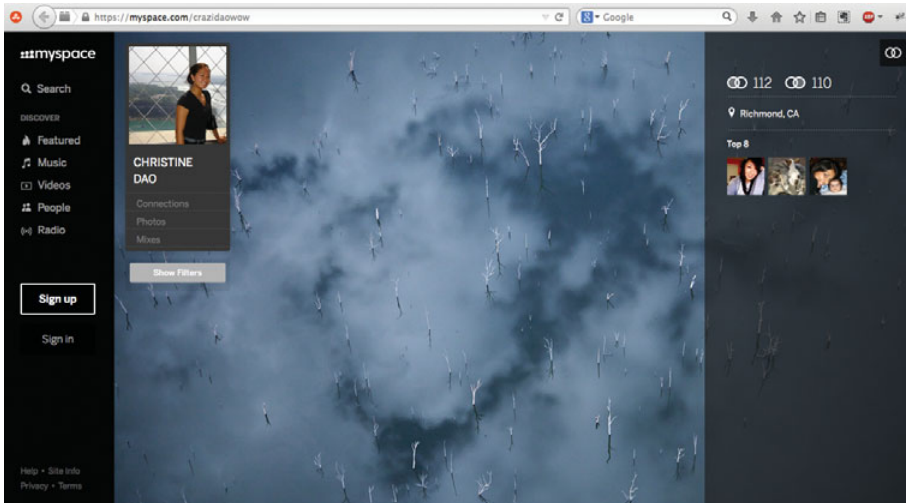


Figure 2. Screenshot of Christine's MySpace profile (circa 2015).

example, may change with web fashion re-design trends. Christine's MySpace profile lives on, ten years after she was killed by a drunk driver.³ In the years following her death, the site was periodically active with mourning comments, and generally used as a memorial by her parents (see Figure 1). Ten years later, MySpace has completely redesigned its interface, and consequently the face of Christine's online posthumous presence (see Figure 2). The result is an uncanny presence, patches of fossilized content with a slick new interface bearing the recognizable default settings. Christine's static glow is ten years strong at the time of writing.

Static Glow as Commodity

For commercial providers an abandoned profile is at best an inactive profile; however, when the amount of inactive profiles affect the possibility to sell space for targeted advertising, platform providers will attempt to close inactive accounts. At worst, a deceased person's profile becomes a liability when the platform provider uses the user-generated content for advertising campaigns and risks becoming exposed by using images of a deceased person, or when the profile is vandalized by users who are aware of the death of the person. Reason enough to start regulating the digital estate.

As our lives started to play out online, platforms became a growing archive for our life events. From teenage partying over our first love to the birth of our children, and the passing of our parents and friends, these documents became archives of highly personal value. This value is being monetized by companies providing services to preserve our online life, luring us with a notion of an immortal memento and promising to posthumously let us keep our place in the social graph of our life. Pioneer vendors such as LIVESON,

Eternime and ETER9 paved the way for continuous presence through virtual immortality.

If static glow is an indication of popularity, the highest form of emanation could be the posthumous hologram, such as those developed by Hologram US for Patsy Cline, Liberace, and Whitney Houston (see Kleinman 2015). Occasionally, these are developed 'prehumously' for such personalities as rapper Chief Keef and WikiLeaks founder Julian Assange as a means to circumvent territorially bound laws.⁴ Rosi Braidotti has expanded Mbembe's (2003) definition of necropolitics to an 'opportunistic exploitation of the life of you' (Braidotti 2013: 123). This exploitation now continues after death, as posthumous data is also subject to commodification. From the Holy Grail to Tupac Shakur's patented hologram onstage appearance, immortality is a hot commodity.

With social networking sites projected to include more dead users than live ones in the not too distant future,⁵ could humans be anomalies in a web of ghosts? In addition to these increasing posthumous agents, most profile or account activity seems to follow the infamous 80/20 rule, or the Pareto Principle. That is to say, around 80 per cent of profiles or accounts on the WWW are inactive. These may be owned by dead people, though usually they are created by people who have set up an account once and never returned, or *bots*. For example, what surfaced through the Ashley Madison data leak (an online dating service for married people),⁶ is how many of the online 'engagers' were actually bots, programmed to engage with heterosexual men (Newitz 2015).⁷

Not only do our traces live on after we die in databases associated with our profiles and desisted accounts, but more and more data is being created and capitalized upon from interactions with bots, bots

interacting with dead data, the recycling of our data for new identities and interactions, and the outsourcing of our communication to software applications. We also increasingly use bots to help us with our email conversations, or responses to comments in our social media profiles. These bots continue the conversations posthumously on our behalf.⁸

'Necro-financialization' and the desire for immortality could prove to be a strong motivation for such cannibalism (Samson 2015). Technological infrastructure embedded within commercial ecologies also facilitates various forms of static glow. The internet's infrastructure of redundancy and its propagation-oriented code also contribute to static glow. Videos, images and texts generated by or about the user are copied, stored and re-distributed beyond the user's editorial control. There are so many ways in which traces can be archived, shared, re-used, corrupted, sold, rehashed and ultimately given new *life*. Inevitably, *necro-financiers* will render calculable the capacity in which static glow posthumously emanates over time.

Measuring Static Glow

Static glow could be calculated by using a formula for exponential decline ('Forgetting curve', Ebbinghaus 1885). However, while unattended memory does fade exponentially or gradually into oblivion, the calculation must include variables for incidents of activating or refreshing memory (e.g. anniversaries). Additionally, static glow is

affected by the social graph of a person. Fans, committed friends or a professional network might affect the static glow in the long run as the strength of the memory is stronger in this group. It is also affected by the contributions a person made during her life, as they can also trigger the activation of memory. A book might be re-issued, or works might be referenced, exhibited or presented in other contexts.

To calculate the static glow (SG) over time (t), the relation of the common group of people (a) multiplied by the exponential decline of memory (e) with the occasional attention from the closer group of fans, friends and family $(1-\alpha)e^{-t/2}$ plus the occasional stimulation of memory ($Stim$) or by the activity of bots (B). The entire calculation could be executed as shown in Figure 3, where S_{common} and S_{fan} are the respective strengths of the memory in the common and fan group. A stronger memory in this context leads to a slower fade of the static glow.⁹

Referring to Georg Franck's notion of the attention economy (1999), we can state that the static glow marks its expansion and measurability into the period after a person has died. The static glow becomes the measurement for memory as it is still kept alive on various web platforms. Social graphs, and data generated over a lifetime online, such as achievements and contact lists, are the basis for the commodification of our social life beyond the end of our biological one. As Michel Serres foresaw, with these technologies death is domesticated, it has become *cultural* (2001). The

$$S(t) = SG(0) \left(\alpha e^{-\frac{t}{S_{\text{common}}}} + (1-\alpha) e^{-\frac{t}{S_{\text{fan}}}} \right) + Stim(t) + B$$

Figure 3. Static glow formula.

formula above might serve as the calculating model that determines the value of a person's afterlife and answer the ominous question: how long will *my* static glow linger?

See also Algorithm; Algorithmic Studies; Digital Rubbish; Obsolete Technologies; Necropolitics; Zombie.

Notes

1. Jeffrey Sconce gives a comprehensive overview in *Haunted Media: Electronic Presence from Telegraphy to Television* (Durham, NC: Duke University Press, 2000).
2. These practices were described in an early American spiritualistic journal (c. 1850), *The Spiritual Telegraph*, and compiled in volumes under the title of *The Telegraph Papers*.
3. A profile was submitted to MyDeathSpace explaining the circumstances of her death. <http://www.mydeathspace.com>
4. A Chief Keef hologram performance was shut down by police in Chicago (Baraniuk 2015).
5. See XKCD for a projection of future numbers concerning Facebook: <https://what-if.xkcd.com/69/> [accessed 21 April 2017].
6. Links were made available to download the data on several torrent sites. The Reddit link containing sources is at https://www.reddit.com/r/AnythingGoesNews/comments/3h71ar/we_are_the_impact_team_we_are_releasing_the/ [accessed 21 April 2017].
7. Findings indicated that a majority of the conversations on Ashley Madison unfolded between bots and humans. Annalee Newitz, who analysed the data, also shows how the latter was an integral part of Ashley Madison's business model.
8. Examples are the algorithmic assistants, using data-mining and machine-learning

to assist largely autonomous in e-mail conversations, scheduling of appointments, providing information etc. See for example Crystal (<https://www.crystalknows.com/>) or Google Now (<https://www.google.com/landing/now>).

9. We would like to thank Gerhard Blab for his valuable advice on how to formulate Static Glow as an equation.

*Mirko Tobias Schäfer and
Audrey Samson*

STORIED MATTER

'Storied Matter' is one of the conceptual tools of material ecocriticism, which basically underlines the idea that matter is not only lively, agentic and generative, as it is theorized in the new materialist paradigm (Barad 2007; Bennett 2010; Coole and Frost 2010; Abram 2010), but also densely storied. It describes the idea that from its deepest lithic and aquatic recesses to the atmospheric expanses, and from subatomic to cosmic realms, matter is capable of bringing forth a display of eloquence, which can be explained as the 'ontological performance of the world in its ongoing articulation' (Barad, 2007: 149). Whether biotic or not, matter in every form is a meaning producing embodiment of the world, or 'storied matter': 'a material "mesh" of meanings, properties, and processes, in which human and nonhuman players are interlocked in networks that produce undeniable signifying forces' (Iovino and Oppermann 2014b: 1–2). This means that matter's stories emerge through humans, but at the same time humans themselves 'emerge through "material agencies" that leave their traces in lives as well as stories' (Cohen 2015b: 36). As cosmologists Brian Swimme and Mary Evelyn Tucker also observe, 'the universe is not simply a place

but a story – a story in which we are immersed, to which we belong, and out of which we arose’ (2011: 2). In a key way, then, ‘life itself is made of stories’ (Wheeler 2014: 77) through which ‘meanings are differentially enacted’ (Barad 2007: 139). In this process, life is continually reconfigured, regularly revealing new chapters as in the case of ‘genes and fossils chronic[ling] an amazing story of life on Earth’ (Chaisson 2005: 299). This amazing earthly story always issues from the multiple encounters of biomes, geological and microscopic realms, as well as cultural spaces and literature, which can be compellingly affirmative or unexpectedly disruptive. As a living text with a rich narrative efficacy, matter slides through human ‘expressways’ often unnoticed but always exerting its influence in conceptual and material habitats, like Lowell Duckert’s ‘slippery’ arctic ice that is ‘alive, creaturely, and desiring’ (2013: 71). Ice or a stone, a fossil fragment or bacteria, no matter which form it takes, matter yields terrestrial tales of resilience, creativities, uncertainties, evolution and dissolution in non-deterministic ways.

Spread across a wide spectrum of its organic and inorganic forms, matter’s dynamic expressiveness is more than a meaningful communication among living organisms, like bacteria communicating within and between species using ‘quorum sensing language’ (signalling molecules used for communication). Eloquence is the defining property of all matter beyond the biological world. That is, all agencies, from subatomic particles to cosmic forces, are storied subjects of an ever-unfolding ontotale. Chemical substances circulating in the biosphere, for example, or plastic bags invading the oceans and choking marine life, are as expressive as bacteria and more complex organisms such as plants, animals and humans. Even ‘lifeless’ entities like electrons can be said to have a certain

degree of creative expression when they communicate non-locally. In other words, being storied is as much a trait of the so-called non-living matter as of biological organisms and sentient beings. As eco-phenomenologist David Abram puts it lyrically, ‘tumbling waterfalls’, ‘dry riverbeds’, ‘gusts of wind’, ‘freshly painted houses’, ‘rusting automobiles’, ‘cumulous clouds’, ‘granitic cliffs’, ‘diamonds’, and ‘grains of sand’ (2010: 272) are all expressive, and thus epitomize storied matter in its different manifestations. If we are ‘dwelling within a community of expressive presences’, as Abram claims (*ibid.*: 173), then we need to be attentive to their stories and their more-than-human meanings forged in matter’s storied dimension.

Storied matter compels us to think beyond anthropocentricity and about our coexistence and coevolution in the story of the earth itself. It is, therefore, important to acknowledge matter in its broad range of expressions as a ‘*site of narrativity*’ (Iovino and Oppermann 2012a: 83) with ongoing configurations of signs and meanings that we interpret as stories. These stories come to matter in the form of evolutionary histories, climatic narratives, biological memories, geological records, species tragedies and DNA poetics. What makes matter storied is ‘narrative agency’, which is a non-linguistic performance inherent in every material formation from bodies to their atoms making them telling or storied. Whether it is a cell, a singing whale, a whispering wind, a pebble on the beach, an erupting volcano, a hurricane or a plastic bag, matter is encoded with meaningful narratives, or narrative agencies through which the world becomes eloquent. ‘Storied matter is thick with narratives,’ concurs Jeffrey Cohen, ‘some vivid, some barely legible, others impossible to translate’ (2015b: 275). Thus understood, storied matter is not a mere conceptualization,

nor is it a cultural construction to grant material agencies meaningful existence. On the contrary, it represents a new ecology of understanding the ultimate ontology of a meaningfully articulate planet. The fossils, for example, tell stories of extinct beings captured in time. Volcanoes tell stories about the earth's turbulent past. Tree rings yield stories of long years of droughts and rains, while retreating glaciers transmit stories of changing ecosystems and climate, blending global warming with political anxieties and social changes. Since narrative agencies emerge through their interchanges with the human reality – such as rocks and mountains with geological records revealing stories of dynamic fusions with animals, plants and humans – they all 'tell us evolutionary stories of co-existence, inter-dependence ... extinctions and survivals' (Iovino and Oppermann 2014b: 7). That is why, when we speak of 'storied matter', we are not only using a material metaphor, but acknowledging its narrative agencies as active co-authors that shape this world and co-determine our existence. Serenella Iovino offers a palpable example of how this mutual shaping of the world unfolds in the narratives, bodies and landscape of Pompeii: 'while the bodies ... narrate about an almost forgotten complexity (the site of the ancient Pompeii), the lava ... narrates about the forgotten orographic structure of this site, inhabited by volcanic and seismic agencies, even though it was believed to be 'simply' a mountain' (2016: 26). Conceived in this way, storied matter helps us better understand fragile ecosystems, polluted landscapes, carbon-filled atmosphere, acidifying oceans, changing climate, retreating glaciers, species extinctions and social crises than the scientific data presented in figures and numbers. Simply because through these stories we come to know 'not only ... the hidden plots

and meanings of a reality, but also ... the often unheard voices of this reality' (ibid.: 48), which has today become quite disenchanted with catastrophic human practices.

Thinking about storied matter in a disenchanted world means thinking seriously about how our invasive economic practices produce planetary cycles of pollution, how our political decisions and cultural meanings are enmeshed in their production, and how they all enfold into one indissoluble process. The material stories narrative agencies convey today are profoundly troubling, like the traumatic tales of plastic-choked birds on Midway Island, and of countless plastic objects that compose the infamous Great Pacific Garbage Patch. They are narrative agencies demonstrating the dire consequences of the social and the natural interpenetrating each other in the slow death of so many marine species. They call for our attentiveness to the stories of destruction and pollution, but at the same time they compel us to imagine alternative stories of wind or water energies for a better future. In such a case, the narrative agencies of storied matter would be the primary authors of environmental sustainability and ecological sensibility, offering a better image for the living world and a better discernment of human-non-human encounters. If we read the world this way, as storied materiality that binds all beings, forces and substances with interconnected stories, we can answer frequently posed questions positively, such as: can storied matter assist us in building disanthropocentric practices in a world facing potentially catastrophic impacts from climate change? Can it move humanity into more earth-friendly modes of thinking? Can it change our energy systems, and help implement policies of solar, water and wind energy in the near future?

If we make storied matter part of our storytelling culture, it can play an important role in bringing the state of the world more to public awareness, and we can impart new ideas and insights about our experiences and perceptions of the planet. Because storied matter induces ‘out-of-the-box’ thinking, which is exactly what is needed today to develop solutions to our current problems and to build post-anthropocentric discourses. Hence, giving matter access to articulation by way of stories that co-emerge with the human is not only a way to emancipate matter from silence and passivity, but also to liberate ourselves from the images, discourses and practices of our own Cartesian dreamworld.

See also Econtology; (Material) Ecocriticism; Neo/New Materialism; Ecomaterialism.

Serpil Oppermann

SURVIVAL

In the Stomach of the Predators

Nature meets itself in the stomach of the predators.

In the stomach it creates disasters & produces demands.

it creates disasters & produces demands; it makes people superfluous.

In the stomach it creates disasters & produces demands.

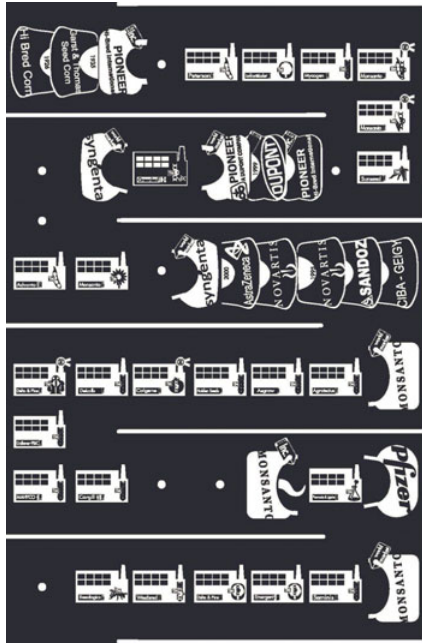
It makes nature superfluous.

In the Stomach of the Predators was a two-part exhibition by Berlin-based artists, curators and theorists Alice Creischer and Andreas Siekmann exploring the predatory logic of advanced capitalism. Stemming from their joint research concerning the privatization of the commons through the cases of seeds, land rights and intellectual

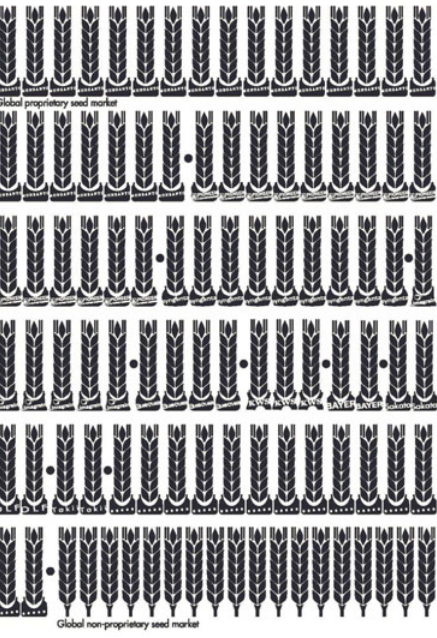
property, the two distinct bodies of work exhibited employ the methods and languages of theatrical and filmic stagings (Creischer) and pictorial tableaux (Siekmann).

The installation of Siekmann takes us to the Norwegian island of Spitsbergen where the Svalbard Global Seed Vault, a project set up to ‘protect’ all existing agricultural kernels in the world from eventual extinction, is based. We learn, however, that the seed bank is financed by the very same corporate lobbies that exercise interests and practices that threaten crop diversity, including, among others, genetic manipulation. These entangled complicities are uncovered through large moveable panels with pictograms, reminiscent of the vocabulary developed by science philosopher and political economist Otto Neurath in cooperation with artist Gerd Arntz, who was a part of an anarcho-syndicalist movement in the 1920s in Cologne and Berlin, developing graphic icons specifically for proletarian agitations. The ordered, systematic and meticulously structured succession of signs, symbols and their visualized interconnections draw an alarming relational map of the economic and political aspects of biodiversity’s transfer into private hands that so accurately defines our global present.

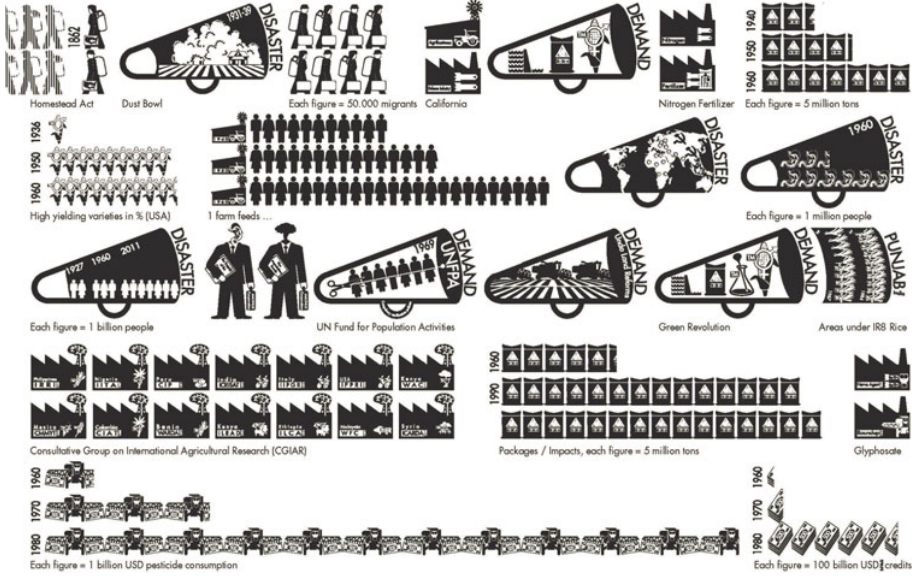
Creischer’s work contains a cast of a number of whimsical, symbolically charged animal figures – the wolf, the hyena, the bear and the jackal – each of them representative of a particular form of monopolization of what was once the common good. The animals are sent on a journey from Spitsbergen to Benin and Istanbul, during which they encounter situations that seem absurd and at times outright grotesque. Such surreal scenes are continuously stabilized, however, by an undercurrent of real gravity as the characters delve into the disquieting workings of the neoliberal condition. The creatures are emblematic of,

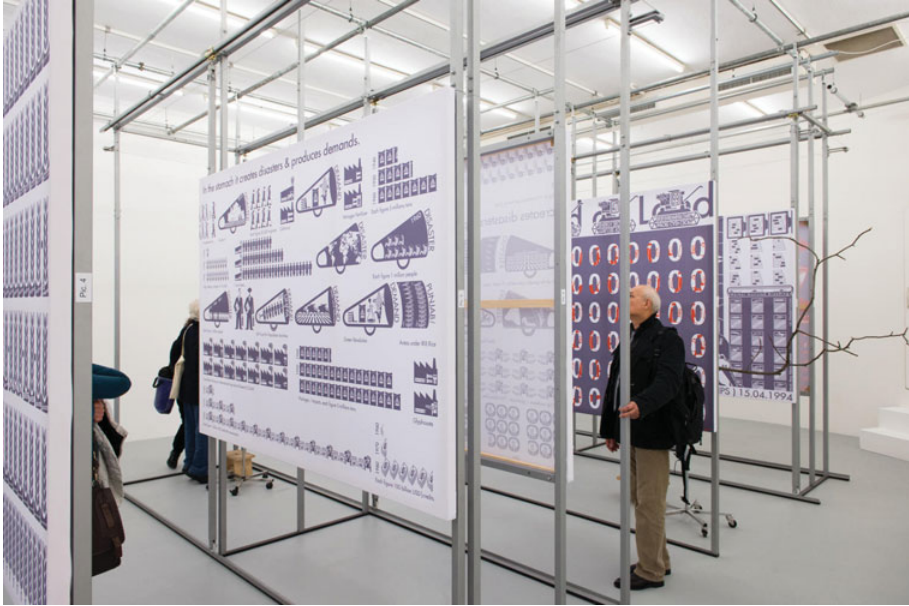


Nature meets itself in the stomach of the predators ..



In the stomach it creates disasters & produces demands.





Text and images are from the work *In the Stomach of the Predators*, Alice Creischer and Andreas Siekmann, 2013.

and personify, acquisitive greed paired with injustice and devastation; through them multiple scripts unfold, delivered in a variety of vernaculars, at once resembling the Chaplinian slapstick handlings of despair and the theatrical experimentations of Bertolt Brecht. While addressing the apocalyptic questions of global gene pool heritage, land grabbing, the devastation of natural resources and the fantastical 'science' of financial speculation, art itself – and its possibility to counter systemic violence of such amplitude – is not spared questioning. Though the work tests art's subversive potential, its complacency in the face of the flows of capital surfaces at least as often as the paradoxical meaning of survival in an era of human-engineered catastrophes.

In the Stomach of the Predators was presented at BAK, basis voor actuele kunst, Utrecht, as part of the year-long research into the notion of 'survival' within the

long-term series *Future Vocabularies* (2014–16). The series enquires into the possibility of art to offer a space for developing a variety of itineraries for envisioning another future.

See also Anthropocene; Capitalocene and Chthulucene; Exclusion Zone; Resilience; Anthropocene Observatory; Extinction.

**Alice Creischer and
Andreas Siekmann**

SYMBIOGENESIS

Mixotricha paradoxa was discovered in the hindgut of an Australian termite. At the time the oddity of this protist or eukaryotic microbe was its possession of both the flagella that typically provide microbial locomotion and a 'coat of cilia disposed in closely packed transverse bands' that drove

it through its liquid medium: 'In general appearance, and particularly in the presence of both cilia and flagella, this form is quite unlike any described termite parasite' (Sutherland 1933: 163, 165). Three decades later researchers equipped with electron microscopes determined that Sutherland had erred in her description of the 'paradoxically mixed-up hairs' of *Mixotricha paradoxa*: 'these structures are not cilia but adherent spirochetes. They do not move in the manner of cilia, with alternate effective and recovery strokes, but instead undulate, exactly as spirochetes do' (Cleveland and Grimstone 1964: 670–1). The earlier 'paradox' of two distinct, seemingly redundant kinds of locomotory organelles, both cilia and flagella, now yielded to another conundrum. How could adherent spirochetes – prokaryotic hitchhikers with no phenotypic connection to their host – arise in this instance to a state of startlingly effective locomotory co-ordination? Moreover, these authors noted, 'The utilization of spirochetes as a method of locomotion does not appear to have been reported in any other organism' (ibid.: 681).

Absent from either Sutherland's or Cleveland and Grimstone's texts is the term *symbiosis*. However, this term is prominent in the American microbiologist and evolutionary theorist Lynn Margulis's first book, *Origin of Eukaryotic Cells* (1970). This work offered a stark challenge to an earlier evolutionary consensus holding that the eukaryotic or nucleated cell evolved due to an accumulation of random single-point mutations selected for in some ur-prokaryote somehow giving rise to a nucleus binding its genome, and that the other eukaryotic organelles (mitochondria, cilia, chloroplasts) then emerged by gradual differentiation from that nucleus. Margulis argued, instead, that through 'serial endosymbiosis' the evolution of the eukaryotic cell along with its distinct organelles

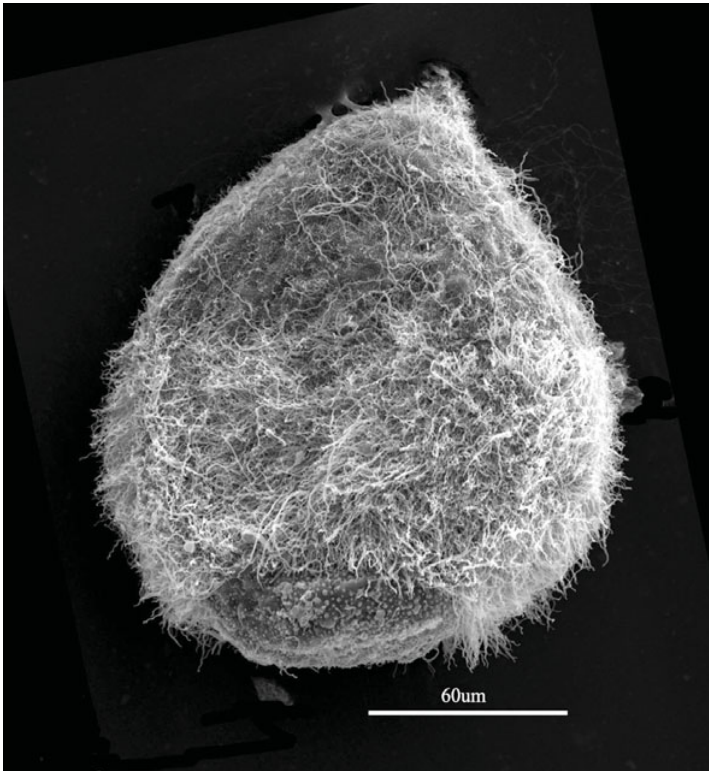
came about by the multiple assemblies, one by one, of different free-living prokaryotic precursors. These entered the eukaryotic consortium intact, as endosymbionts ('living together on the inside'), and then developed obligate genetic and metabolic interrelations with the evolving cell as a whole. In addition, she continued, eventually a pre-mitotic ur-eukaryote also evolved the reproductive machinery of mitosis, and this, too, she theorized, was an adaptive outcome of the symbiogenetic acquisition of spirochetal motility turned inward to conduct the moving parts of the mitotic process.

Chapter 6 of *Origin of Eukaryotic Cells*, 'Symbiosis,' has a striking epigraph marshalling *Mixotricha* as a representative for symbiosis in general with a long quotation from Cleveland and Grimstone's paper focused specifically on the organismal motility that arises from *Mixotricha*'s relations with its spirochete companions. They are not parasites, merely freeloaders. Technically termed ectosymbionts ('living together on the outside'), the banded masses of spirochetes that adhere to *Mixotricha* form a motility symbiosis, propelling this large and lumbering protist much more energetically than it could ever muster 'on its own'. But for all practical purposes of biological viability, the protist lives on its spirochetes as much as they live on it (Margulis and Guerrero 1991). The symbiotic consortium of the eukaryotic protist and half a million prokaryotic spirochetes is a specifiable 'individual' in the form of what is now called a *holobiont* (Margulis 1993; Bordenstein and Theis 2015). In subsequent decades Margulis would advert to *M. Paradoxa* as the 'poster protist for symbiogenesis' (Margulis and Sagan 2007: 45), a general evolutionary process of speciation more fundamental than genetic mutation – the emergence of new kinds of organic beings through the genetic binding of symbiotic partners.

Rescued by intrepid microscopists and phylogenetic systematists from base obscurity unkempt and wearing its abject hybridity and ongoing symbiogenesis on its sleeve, and contrary to an exclusively competitive-predatory view of living relations, *Mixotricha* models nature's good nature. Margulis spent the rest of her life developing this new account of evolutionary innovation. *Acquiring Genomes: A Theory of the Origins of Species* (Margulis and Sagan 2002) reported the fine details of her investigations on this research front. But one can get a quick fix on this topic from her memoir *Symbiotic Planet*. Here

she underscores that at the end of the last century proposing symbiogenesis as a major evolutionary dynamic was still a radical act. While her account of the endosymbiotic origin of the eukaryotic cell had achieved mainstream acceptance by the later 1980s, 'the idea that new species arise from symbiotic mergers among members of old ones is still not even discussed in polite scientific society' (Margulis 1998: 6).

Things have changed in Margulis's favour in the two decades since that remark (Gilbert, Sapp, and Tauber 2012). But the residual scientific resistance to granting due significance to the concepts



***Mixotricha paradoxa*. Image MX27-2 from the Lynn Margulis Lab, taken by electron microscopist David Chase, year unknown.**

of both symbiosis – ‘the system in which members of different species live in physical contact’ (Margulis 1998: 5) – and symbiogenesis – ‘the origin of new tissues, organs, organisms – even species – by the establishment of long-term or permanent symbiosis’ (ibid.: 6) – tells us something about their bona fides as posthumanist tropes (Clarke 2015). Symbiogenesis in particular is an affront to the humanist ideal of an essential humanity composed of uniquely human individuals. Symbiogenesis underscores the ecological multiplicity of all living arrangements taken to their biological foundations. Biological ‘individuality’ is always the collective accomplishment of a holobiont. Individuality emerges ‘from the community interactions of once independent actors’ (Margulis 1998: 10–11). Another way to

put this is that symbiosis and symbiogenesis stress the sociality of biological systems. The discourse of posthumanism foregrounds the reciprocal of this relationship – the biological dynamics of social systems – once one’s view of biological relations has undergone posthumanist reconstruction. Margulis’s erotic vision of life conduces to such revisions: living beings naturally lust for increasingly intimate proximities in increasingly outlandish environments. In her long evolutionary view of this process, ‘Symbiogenesis was the moon that pulled the tide of life from its oceanic depths to dry land and up into the air’ (Margulis 1998: 111).

See also Body Without Organs; Ecosophy; Kin; Multispecies; Naturecultures; Planetary.

Bruce Clarke

T

TECHNICITY

Posthumanist approaches challenge the ontology of humanity by questioning its separateness. The shift to relational and processual ontologies reconfigures the human as irreducibly entangled, and to an increasing extent, as co-evolving with technology. While traditionally conceived as external to being, contemporary approaches are granting technology a new role in knowledge and existence by pointing to its involvement in processes of becoming (for example Gilles Deleuze and Félix Guattari, Don Ihde, Donna Haraway, Bruno Latour, Bernard Stiegler, Karen Barad and Peter-Paul Verbeek). Technology's complicity in being is not, however, an altogether new topic. It was famously explored by Martin Heidegger, as well as by other thinkers whose works are currently being reappraised (for example Henri Bergson, Ernst Cassirer, Gaston Bachelard and André Leroi-Gourhan). Among the thinkers receiving renewed critical attention, Gilbert Simondon (1924–89) stands out as particularly noteworthy, offering a genetic ontology of technical objects.

Simondon's seminal treatise on technology, *Du mode d'existence des objets techniques* (1958), was published as a complementary thesis to his main doctoral thesis,¹ where he develops his theory of individuation. Drawing on the latter, the treatise on technology conceives technical objects in dynamic terms, as something that undergoes a process of becoming. Much like

living beings, technical objects have a genesis, and this genesis is part of their being (Simondon 2012: 22). The treatise starts out by criticizing the tendency to see culture and technics as opposites. According to Simondon, the xenophobic rejection of technical reality is based on a misconception of the nature and essence of machines. This failure leads to alienation, or else, to technophobia, technophilia or intemperate technocratic ambitions, which are all inadequate reactions towards machines (ibid. 9–10). Simondon, instead, conceives the existence of humans and machines as correlative (ibid.: 16). Humans and machines are mutually related; they imply and complement each other. Technical objects intervene as mediators between humans and nature, and humans intervene as mediators between machines.

As Simondon sees it, machines are beings that operate (ibid.: 192). To firmly grasp technical reality in its entanglements with humans and nature, we need to consider technical being in its operative functioning, and not as things or artefacts with fixed characteristics. 'Technicity' for Simondon has to do with the performance or the manner of acting of technical objects. The 'essence' of a technical object – say, a motor – is not this or that motor but a certain 'scheme of operation' that remains more or less stable and recognizable through an evolutionary lineage from the first motors to the motors of today (23, 53). The current relevance of Simondon's work on technology has precisely to do

with the fact that it offers an operational theory of technological mediation.

Despite his talk about essences, Simondon breaks away from substantialist notions of identity, including the hylomorphic variety (see *Metastability*). First, a technical essence owes its origin to an act of invention. To begin with the technical object is 'primitive' and disconnected. Yet it continues to be invented, to evolve in ways that are not completely foreseen by the inventor(s). Second, a technical essence is fecund. It evolves by engendering a series of variations or a 'family' of technical objects (51–3). A technical object 'exists ... like a specific type obtained through a convergent series' (26)² that, in Simondonian parlance, progresses from an 'abstract' to a 'concrete' mode of existence. A technical essence evolves through a process of individuation (see *Metastability*), which in the case of technical objects is further specified as a process of 'concretization'. An evolved technical object is more 'concrete' than a primitive or 'abstract' technical object, in that its elements are more functionally coherent, approaching the internal coherence of living being. In addition to that, and again in analogy with living being, it incorporates parts of the natural world into its system by entering into a relation with its environment (*milieu*). Thus, through the process of concretization, the technical object loses its artificial character and approaches the mode of existence of natural objects. In becoming more concrete, the technical object comes closer to constituting a natural system; it 'naturalizes itself' by incorporating parts of the natural world into its regime of functioning (57). Challenging established distinctions, Simondon refers to the process of concretization as 'a natural technical evolution' (52).

The evolved technical object is characterized by its energetic coupling to an associated environment. It is here – in its

conception of the way the technical object relates to its environment – that Simondon's operational approach demonstrates its true capacity to overcome entrenched patterns of thinking. For the concretizing invention is not simply an adaptive reaction to a pre-existing environment. Concretization, rather, is a process that 'conditions the birth of an environment', which in turn becomes 'the condition of possibility of the functioning of the technical object' (68).³ In Simondon's view, technical being is self-conditioning – but only in a very peculiar sense, since it is at once condition and conditioned. Technical being creates around itself a certain regime of natural elements that it depends on for its functioning – which means that it conditions the associated environment just as much as it is itself conditioned by it.

Despite his acknowledgement of the constructive role of the technical object, Simondon maintains that the associated environment is not fabricated. The associated environment is a 'third' or 'mixed' environment that is at once technical and geographical, and that acts as a 'mediator of the relation between fabricated technical elements and natural elements in which the technical being functions' (70).⁴ On the same grounds, he claims that the technical operation is not arbitrary. Simondon's focus on operations provides an escape from the dilemma of causality and finality. Certainly, machines are made for a purpose; but as Simondon makes clear, through the process of individuation 'this external finality is erased to the benefit of the internal coherence of the functioning' (167).⁵ Nor can the process of technical individuation be explained in terms of causality in its ordinary sense. It is the analogy with living beings that provides a way out of the dilemma. Concretization is 'organic' in the sense that the system tends toward internal coherence. Technical elements integrate themselves in a

'technical individual' much like organs are integrated in a living body. Further, like a living body in its environment, the technical individual constitutes a system where 'a part of the natural world ... intervenes as a condition of functioning' (56).⁶ The evolved technical object constitutes a circular regime of causes and effects, or more precisely, a system 'in which there exists a multitude of reciprocal causalities' (23).⁷ Like a vault that is not stable until it has been completed, the technical operation maintains itself by virtue of the mutual forces of its constituent functions. As a consequence, the progress of technical genesis can only be arrived at in inventive leaps beyond given reality, through an internal redistribution of functions that augments the total performance of the system and that resolves antagonisms between the elements in the primitive distribution. The technical object progresses, in other words, through inventive anticipation where, as Brian Massumi poetically puts it, 'the past effectively swings over into a futurity of functioning' (Massumi, in De Boever et al. 2012: 30).

To come to terms with technicity, we need to consider technical being not only in *analogy* with living being but also in its *coupling* with it. Technical being requires living being; it requires the human in its double capacity as a living being and as a being that understands the functioning of machines (Simondon 2012: 175). It is a mistake, therefore, to use automatism as an indicator of perfection in machines. A machine that operates without continuous input from an operator is severely limited in its functioning and possible uses. With a view to achieving true technical perfection, reducing human intervention to a minimum is not a goal. The true indicator of perfection in machines, rather, is the level of technicity, which 'relates to the fact that the functioning of the machine harbours a certain margin of indetermination' (ibid.:

12).⁸ Thus, while a purely automatic machine is closed upon itself and predetermined in its functioning, a perfect machine is an open machine characterized by a high degree of freedom in its functioning. It is only by virtue of this openness that a machine is sensitive to exterior information, and hence, capable of being grouped together with other machines in a coherent way, constituting what Simondon refers to as a 'technical ensemble'. Even in this case, where machines hook up with machines, the human is not rendered superfluous: 'the ensemble of open machines assumes the human as permanent organizer and as living interpreter of machines in relation to each other' (12).⁹

See also Metastability; Naturecultures; Non-human Agency; Ontological Turn; Process Ontologies.

Notes

1. The title of Simondon's dissertation is *L'individuation à la lumière des notions de forme et d'information* (*Individuation in the Light of the Notions of Form and Information*). While defended in 1958, it was published only in 1964 (the first part) and in 1989 (the second part).
2. 'existe donc comme type spécifique obtenu au terme d'une série convergente'.
3. 'conditionne la naissance d'un milieu'; 'condition de possibilité du fonctionnement de l'objet technique'.
4. 'médiateur de la relation entre les éléments techniques fabriqués et les éléments naturels au sein desquels fonctionne l'être technique'.
5. 'cette finalité externe s'efface au profit de la cohérence interne du fonctionnement'.
6. 'une partie du monde naturel ... intervient comme condition de fonctionnement'.
7. 'dans lequel existent une multitude de causalités réciproques'.
8. 'correspond ... au fait que le fonctionnement d'une machine recèle une certaine marge d'indétermination'.

9. 'l'ensemble des machines ouvertes suppose l'homme comme organisateur permanent, comme interprète vivant des machines les unes par rapport aux autres.'

Aud Sissel Hoel

TECHNOANIMALISM

Can we one day design a machine that is indistinguishable from the animal? This is the question that drove René Descartes, four hundred years ago, to his widely influential Animal-Machine hypothesis.¹ This ethological hypothesis (ethology is the study of animal behaviour – see *Animal*) claimed that animals, like other machines, were assemblages of parts and as such he rejected the idea that animals are able to attain a degree of rationality; animals do not 'think' and their behaviour is not in any way similar to human action. Nicolas Malebranche, seconding Descartes, took this idea a step further, claiming that the cries and groans of this animal-machine point to its mechanical failures (its 'cogwheels') rather than to its joy or sorrow.

Built upon the idea that one needs the human brain to think, this Cartesian hypothesis extends well into our time. For although the life sciences and related disciplines today are very much interested in how actually all animal life pursues a 'kind of' thinking, having a brain that somehow resembles the human brain is, according to many scientists, still regarded a necessity. Much of animal behaviour is still ascribed to animal instinct (innate non-reflective behaviour), developed in its contemporary form by Konrad Lorenz and Nicolaas Tinbergen in the 1950s. And this idea of 'instinct' still shows a deep Cartesian belief in humanism: it considers animal behaviour still predominantly as mechanically. This

becomes all too obvious when highly complex animal behaviour, when executed by 'brainless' cytoplasm, causes fierce discussions in major scientific communities, as a fairly recent discussion in *Nature* (12 May 2005 issue) shows. The discussion (between Rüdiger Wehner and Dan-E Nilsson et al.) concerned the cubozoa, also called box jellyfish or sea wasp (though these creatures are neither of the family of the jellyfish nor of the wasp). Cubozoa move most elegantly and rapidly and react with great refinement to their environment (they are fierce hunters). They have an elaborate sensory apparatus most remarkable for the complex eyes that include very sophisticated camera lenses that come very close to our own. But the idea that these complex eyes and its complex behaviour were possible without there being a central, uniform nerve system (as with us humans) seemed to exclude the idea that this animal could think or feel, or experience joy or sorrow.

Examples like the cubozoa make us wonder what this 'machine', as Descartes proposes it, is all about. And what makes it unfit to 'think, feel and experience, like we (humans) do? In his *Discourse* Descartes is quite clear on this as he gives us two reasons for this. First of all machines could not understand language. It would probably be able to talk, Descartes already envisions, but to follow a conversation 'as even the dullest men can do', and to give some sort of an 'emphatic' response, seems impossible according to him. Second, as machines only act from the disposition of their organs, they are unable to make a rational choice, to interpret and to compare. It is for this reason that machines, according to Descartes, can never be 'creative', can never speculate and come up with 'a new idea'. Consequentially their actions, however complex mechanically speaking, are still severely limited when compared to what the *cogito* (the human 'I think') can do.

No doubt this Cartesian idea that machines can impossibly talk and act like humans do is a recurring theme in modern thought. The ‘Turing Test’, as developed by Alan Turing in 1936, is an imitation game which practises the Cartesian method by comparing computer intelligence to human intelligence (more or less repeated in John Searle’s Chinese Room experiment). Also Hubert Dreyfus’ iconic book *What Computers Can’t Do* from 1972 (smartly rewritten in as *What Computers Still Can’t Do* in 1979), gives a refined overview of how the discussions on Artificial Intelligence (AI) are struggling with this (Cartesian!) idea of the human mind, showing us once more that Descartes’ humanism still dominates not only our ideas on what human thinking is, but also why ‘the ideas’ of machines and animals are still only to be considered *in relation to* the Cartesian rational mind.

At the start of the twenty-first century we find ourselves living in an age in which both the animal (through the ecological crisis) and the machine (through the digital crisis) force us to change our behaviour and to fundamentally rethink the idea of the human and the role it plays in the world. And it is through the arts, more than anything else, that we have explored the possibilities of escape from the Humanism that suffocates us more and more (see *Art*). Challenging these extremely powerful ideas ‘requires all of the resources of art, and art of the highest kind’ (Deleuze and Guattari 1987: 187). But art is not needed for critiquing the Cartesian hypothesis, but rather for occupying it (see *Occupy*), by pushing it to its extreme (as Bergson would have it), thus questioning in various ways our ideas of ‘thinking’, ‘emotion’, ‘consciousness’ and ‘otherness’, to name just a few important concepts at stake. Being occupied by what ‘the technoanimal’, as we will materialize the Cartesian hypothesis from now on,

can do, means *being occupied with* the technoanimal. In other words: art poses many questions in regard to how these mechanical cries and groans ‘work’, how we are affected by its presumed individuality and how we care and perhaps interact with it.

Over a longer period of time, the work of Tove Kjellmark dealt with technoanimality, giving rise to another type of animality (see also *Postanimality*), another type of nature but above all very delicately playing the affects of the involved audience. Most strikingly is the video performance *Naked*, where we are confronted with a mechanical toy panda that most of us (grown-ups) would not care for too much. It makes odd sounds and movements that should somehow resemble the sounds and movements that baby pandas make, but these qualities have been ‘humanized’ in the sense that they are supposed to affect us humans the way our own spouse affects us more so than resembling the baby panda which it seems to refer to. Yet again, as it does not imitate its ‘original’ too successfully, most of us, I assume, would hardly be ‘touched’ by the toy when in a conventional situation (a toy shop, a child’s room).

That changes when the toy panda is placed in a different situation in which its ‘life’ is ‘at stake’, as in this performance. The toy shop or the children’s room, where mimicking is its ultimate goal, is very different from the operation room, with its knives, its medical specialists, its clean and white environment. The movements and the sounds, which seemed so banal at first, now rapidly gain in their appeal to reality as the pathetic clumsiness of the panda all of a sudden comes awfully close to the unpleasantness and the fearfulness we all recognize from being in the operating theatre. The affects produced have radically changed, and only seem to increase in their power as the performance continues.

The surgery being carried out is all about taking off the toy panda's skin with the greatest possible precision. We could endlessly discuss the various different signs being created as the procedures takes place, as the knives carefully remove the fur from the paws, the glue from the eye. The name of the performance, *Naked*, nicely captures the ambiguity as it poses the question at what moment the panda is truly naked (perhaps being liberated from the skin is all about releasing the mechanism from its 'toy identity?'). Much more urgent, however, is the ongoing and – we need to mention this again – very *carefully* carried out surgery on this toy panda that *keeps on* making unpleasant sounds and clumsy movements. Even the surgeon is not at all at ease with the situation. At times he seems very nervous, even cutting himself in the glove, and actually admitted afterwards that this was a very 'traumatiz-

ing experience' for him. After seeing this video we are left with a seriously unpleasant feeling. But why?

After performances such as *Do you Mind?* or after showing the video piece *Gaze* or *Naked*, people from the audience often show an urge to talk about their reactions. They describe how disturbed they become by their own reactions and emotional responses while watching this. The most disturbing thing, they say, is that they find themselves reacting more strongly watching the mechanical panda on the operation table (in *Naked*) then if it had been a real person.

It is at this very short moment between perception and the rational 'correction' that 'the shock to thought', which only art can give, happens. Only then the Animal-Machine hypothesis, as it is so deeply engraved in our thinking, is fundamentally critiqued. Suddenly someone in the audience walks up to the artist and asks, 'Why





Some images from *Naked* and other installations. IMAGES COPYRIGHT TOVE KJELLMARK.

are the rabbits so sad?’ or ‘How did you get the elephants to group up and walk together in one direction?’ The answer is that the artist has done nothing special. They are just moving in a very simple and automated pattern.

What does it say about us, Cartesians, when we react so strongly and emotionally to these plastic shapes that so obviously move with the help of small servos and batteries? What does this say about our mechanical reactions *and* actions? And why do we, so easily, attribute ‘a life’ to a set of cogwheels? Rather than defending or critiquing the Animal-Machine hypothesis, experiences like these play with our passions and most convincingly realize the crisis (ecological, digital, but then also capitalist) that make up our everyday lives today. They enact these crises and their consequences best, compelling us to rethink the same question over and over again: ‘What happened . . .?’

See also Animal; Art; Occupy (after Deleuze); Postanimalism

Note

1. *Réponse de M. Descartes a M. Morus*. 1649. *Œuvres*, tome x. p. 204. ‘Mais le plus grand de tous les préjugés que nous ayons retenus de notre enfance, est celui de croire que les bêtes pensent,’ etc.

Rick Dolphijn and Tove Kjellmark

TERRESTRIAL

As a noun, terrestrial makes its first appearance in English in 1602, in Shakespeare’s comedy *The Merry Wives of Windsor*. In the play, it refers to a mortal, a layman, a human being (*Oxford English Dictionary*) and it is coupled by way of opposition to

celestial beings. In similar fashion, previous adjectival uses of the word, for example in Tyndale’s 1525 English translation of the Bible, had introduced terrestrial as a reference to the earthly sphere, again in opposition to the celestial sphere. Terrestrial is – both as noun and adjective – that which pertains to the earth and the soil, to material instead of ethereal life.

Three planes present themselves to us in view of this term: terrestrial as tool to think human existence emancipated from a divine order; terrestrial as tied to earth in view of the immanent realm of planetary existence; and terrestrial in the sf-mode as envisioning terran existences – as earthly critters, and thereby disrupting the structural verticality of heaven and earth and the anthropocentric fantasies of extraterrestrialism.

First plane: terrestrial as tool to think human existence emancipated from a divine order. Derived from the Latin *terra* (whose Greek precursor and equivalent is *gaia*), the rising usage of terrestrial in the Renaissance – of which the stress of Dante’s *Divine Comedy* (1305–21) on the pilgrim’s worldly journey is one early example – is not surprising. The earthly existence of the human animal was of growing concern to Renaissance humanism, reaching from Dante, Erasmus and Bruno, via Shakespeare’s dramatic anatomies of the human to Vico’s birth of the new sciences, whereby the internal, especially gendered and racialized divisions and exclusions within the category of the ‘human’ were crucial to this first-wave humanist conception of ‘Man’ (Wynter 2003; also Bourke 2011). As Erich Auerbach’s study *Dante als Dichter der irdischen Welt* (1929) argued – and Edward Said was to follow Auerbach in this (Said 2003) – Dante was an early *Poet of the Secular World*, as the English translation renders the title of Auerbach’s study. Emily Apter has noted that this translation is not entirely fortunate (2006: 69), as it was

not so much the secular (as different from, yet folded onto the divine) but more radically the earthly (*irdisch*) that Dante, Auerbach and Said were interested in. Said argues that Auerbach's reading of Dante suggested that 'for all of its investment in the eternal and immutable, the *Divine Comedy* is even more successful in representing reality as basically human' in its 'earthly historicity' (2003: xxvi). In a similar fashion, Said, up until his *Humanism and Democratic Criticism* (2004), is invested in thinking the 'worldly' as the fact that 'all representations were *in* the world and subject to its numerous heterogeneous realities' (2004: 49), speaking also with his critical analyses of Orientalism and his lifelong political analysis of and commitment to the Palestinian question in mind. In view of Said's (Auerbachian) stress on 'worldliness', Apter speaks then of Said's 'terrestrial humanism' (2013: 226), a commitment to the historical, power-bound arrangement of reality. She suggests that his emphasis, throughout his writings, on the 'word "world" in its widest ascriptions prompts renewed philosophical investigations of what is *irdisch*, in the manner of late Kant, who advanced some wacky yet intriguing theories about the earth as a self-sanctioning *nomos*' (ibid.: 225). Such a 'terrestrial' or '*irdisch* human' that Said aimed to imagine may be, Apter supposes, 'somewhat otherworldly, but it is a kind of otherworldliness that discloses states of freedom, or heresy, or sublime justice' (226).

Second plane: terrestrial as tied to earth in view of the immanent realm of planetary existence. Although the term terrestrial rings with allusions to the couple terrestrial/celestial outlined above, its reference to the earthly has also begun to move it into yet other orbits. In her plea for planetarity, Gayatri C. Spivak evokes the earth(ly) as a crucial figure in order to imagine the world-wide span of contemporary, historically indebted interac-

tions. In *Death of a Discipline*, Spivak argues for a conceptual turn to the 'planetary rather than continental, global or worldly' (2003: 72) in order to imagine present-day cohabitation and to 'reverse and displace globalization into planetarity' (ibid.: 97). According to Spivak, especially globe (but also world) permits abstraction, computation and the 'imposition of the same system of exchange everywhere' (72). In response to this she strives to unearth figures for this cohabitation that permit thinking the 'differentiated political space' (72) of the southern and northern hemispheres, figures that allow us to reimagine alterity and collective responsibilities, rework historical stratifications of power and train our transnational literacies. With recourse to Cuban activist intellectual José Martí, Spivak suggests that the earth (and especially the shape it takes in Martí's investigations of the rural and the land), as a 'bigger concept-metaphor than bounded nations, located cities' (93), might offer a 'paranational image that can substitute for international' (95) in order to speculate and imagine planetarity. In its allusions to the earthly and to the celestial body earth, terrestrial – although not directly used by Spivak – speaks of this need to reimagine collective cohabitation and planetary responsibilities.

Third plane: terrestrial in the sf-mode as envisioning terran existences and/as earthly critters. This third plane gives another spin to the divide; it transforms the very verticality of heaven and earth. The hierarchy between heaven and earth always already limits the scope of terrestriality before we even begin to think it, by setting terrestrial in opposition to a possible escape into the extra-terrestrial (Haraway [1992] 2004a, [1992] 2004b, 1997). Feminist science studies contexts put into question this hierarchically structuring framework as a necessary guide for critical inquiries. To think with Haraway in the sf-mode – and sf stands

for 'science fiction, string figures, speculative fabulation, science fact, speculative feminist and so far' (Haraway 2012a) – enables terrestriality to become a kennel of thought itself for, as Haraway specifies, 'the history of companion species, a very mundane and ongoing sort of tale, one full of misunderstandings, achievement, crimes, and renewable hopes' (Haraway 2003: 5). The radical emphasis on earthly matters, attending to the always unfinished business of meaning-mattering processes making up terra, highlights the urgency to work towards accountability in and for the violent, asymmetrically bound relations 'we' find each other in – as terran beings, and therefore entangled in human and non-human relations (Braidotti 2013; Wynter and McKittrick 2015). Yet it also stresses that this endeavour does not only allow for that which 'is' – that which is known in the material-semiotic hegemones or that which 'we' are convinced to see in front of us, i.e. that which we usually call 'reality'. Inquiring in the sf-mode as terran terrestrials asks for a curiosity that 'gets one into thick mud' to envision 'autremondialisations' (Haraway 2008: 38). Other truths to be told, other stories to be heard, and other worldings to come about is an 'otherworldly' endeavour, yet one that is not in need of an 'outer space' or any 'other world' – the old fantasy of the space race in its colonial, phallogo- and anthropocentric imagination. Rather, it is a becoming-with-other(s) and/as affirmation of terran conditions so that the task 'to believe in this world' (Deleuze and Guattari 1994: 75) returns non-apologetic and yet open to the yet-to-come.

See also Capitalocene and Chthulucene; Cosmopolitics; Kin; Earth; Mattering; Planetary.

**Birgit M. Kaiser and
Kathrin Thiele**

TOLERANCES AND DURATION

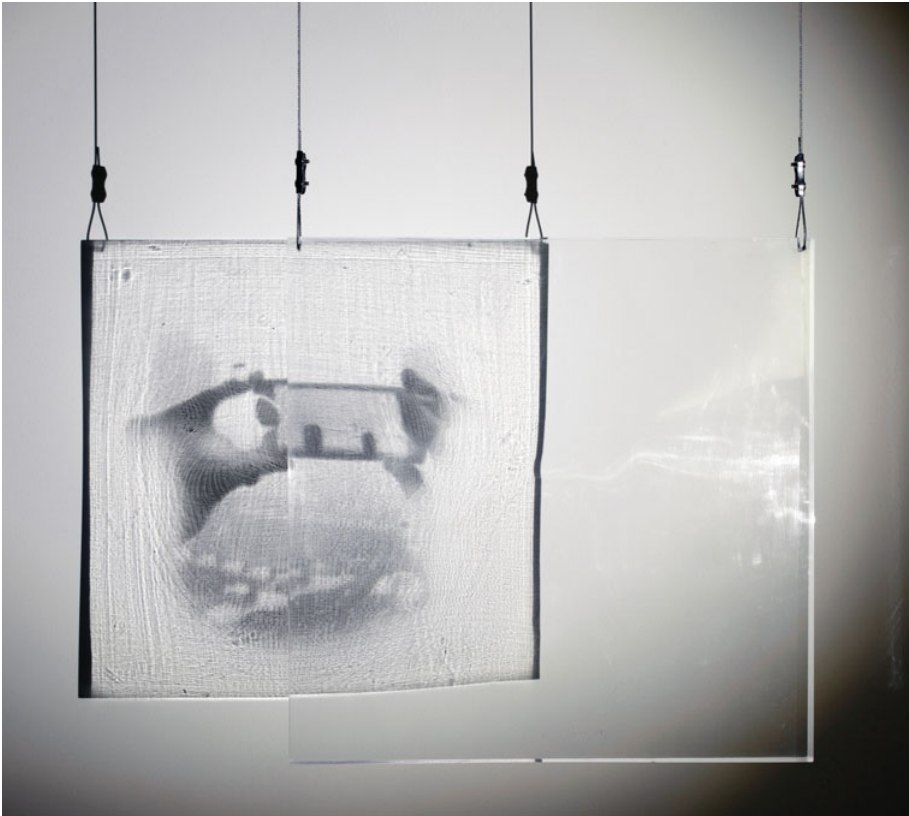
In engineering terms tolerance refers to the permissible variations within a machine's performance, material properties and measured values. In colloquial use it describes the limit at which something will cease to function as expected, or the personal characteristics of a subdued stoicism. Often liberal, and potentially feminized, to be 'tolerant' is to be graciously receptive but not necessarily generous. The intersection of the mechanical and personal meanings of tolerance echoes its political implication, and its bearing on the posthuman. European nation-states pride themselves on their tolerance of the differences they permit within their territory. The idea of neutrality and acceptance is a foundational European myth and has repeatedly given permission to expansion, colonialism and exclusionism. Tolerance is a supposedly stable space but it has a fragile boundary, which if pressured too forcefully may shatter. Tolerance is then a calculable preciousness rather than a boundless resource: compared to the interiority of tolerance, duration is romantically expansive. Duration and durability are notoriously hard to represent because in the promise of endurance is an implicit appeal for change: where the persistence of change is a description of process. To tolerate is not to endure and so it is in this temporal expanse of duration that we could say aesthetic description opens to the capacity to articulate the space, continuity even, between the emotional and the mechanic. It's in this space that it is possible to make sensible the temporalities of a politics of endurance and so the violence of conditions of tolerance.

Harry Sanderson's research-led artwork *Solid State* (2014–ongoing) occupies this space. The caustic light sculptures freeze



an entanglement of labour relations, matter, technocratic aesthetics, the temporalities of visibility, and durations of light and production in sculptural objects. The sculptures are icy, crystalline and beautiful. Almost invisibly incorporated into the transparent plastic slab is a subtly contoured, contingent surface that refracts the light passing through them. The process that guided the milling machines that shaped them is not commercially available;¹ Sanderson's algorithms compute the relationship between the focal distances and the laws of light refraction, so that under specific conditions light bends through it and an image is cast out,

as if from nowhere. These are photographic representations in as much as they are literal drawings with light. In a traditional understanding of photographic practice the formal aspects of the image become its currency and its meaning. In the caustics works the impermanence of the image and the foregrounded technique undermines notions of the pictorial and of representation. If the image they enable is anything, it is a continuous, circular description between the engineered plastic object, the computational metrics edified by its form, and the fleeting chiaroscuro it draws into its from and then refracts on in light and shadow. Its tolerances are set by



***Solid State, Rain.* 2016. CNC Milled Acrylic, Torch, Steel Wire & Fittings. 56.5 × 40 × 3 cm, at Gallery Levy | Delval. PHOTOGRAPHER: ISABELLE ARTHUIS.**

the duration of time spent with them, and the visibility it might conjure.

They are tricky objects. Without prior knowledge of the engineering and optical physics involved the image seems to be conjured by magic. Magic is a process that obscures its own workings and in Sanderson's sculptures the technical process is obfuscated by their superficial transparency. This is the magic of technology, but also the violence of the light. While the caustics machines are the formation and objectification of a specific

condition of a visibility, the politics of transparency belong to a longer history of systems of knowledge production. The invention of photography is concurrent with and tied to European colonial expansion. The French state awarded Louis-Jacques-Mandé Daguerre the patent for the first fixed chemical process in the same decade that France began its conquest in Algeria. Colonial expansion depends on a perspectival logic that allows for the geometric organization of space from projection. We believe the more we see, the

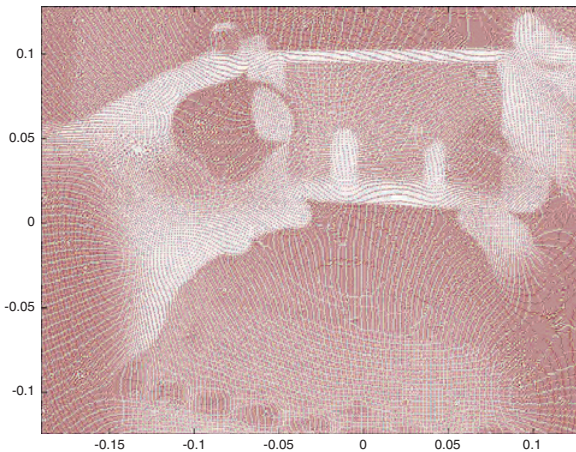
more we know, the more we can act. This is the Albertian perspective system that runs through all forms of Modern Western representation and links Renaissance painting to cartography and the camera obscura, but it is a chain of logic which is under pressure in Sanderson's work.

The unnoticed contours of the surface of Sanderson's sculptures sediment a knowledge that is tacit and tactile, and this binding of the dual meaning of 'caustic' activates feelings inside of technology. In the language of physics 'caustics' refers to the spread of rays of light produced by a curved surface. More generally 'caustic' refers to a sharp or burning feeling, a felt consequence and the embodied documentation of sensation. The projections are soft images of small gestures that do not belong to the graphic language we associate with advanced vision technologies, and so they make systems of visibility more explicitly an issue of human inhabitation and politics. Where the CNC milling machine followed a pattern written by a process of durational computing, and as

light goes on to follow this surface as the mode of production, the projection that is refracted is an image whose duration encompasses the techniques, ideologies, bodies, epistemic expectations and labours entangled in it.

The caustic objects are not ghosts, but present figures in our fleshy lives – active matter in the extension of the real through the techniques of the image. The drive to re-describe and reconstruct the visible-temporal field is a political desire that runs on a libidinal currency; it is the emotional in the technological. Sanderson's work is hugely desiring but it comes up against the conditions of its own production and in that confrontation of necessity and ambition the barriers of imagination, its tolerances, are made tangible. It is in this image-object-duration continuum that the caustics-objects embodies the limits of the visible and in doing so proves its edges to be intolerable.

In the frame of the posthuman the caustics works move beyond representation into a process of description. They



Detail graph plot showing surface contours for *Solid State, Rain, 2016*. IMAGES: HARRY SANDERSON, *SOLID STATE* (2014-ONGOING).
TEXT: ALEXANDRA SYMONS SUTCLIFFE.

make manifest a version of historical and durational perspective that exceeds our current ideological limits. It is a composition that is not asked to tolerate the opening up of the frame of representation; but one that is, like the projections springing from both the objects themselves and the very labour and abstractions that computed and fabricated them, generative. In the complex relationship between manufactured tolerances and duration the need to construct new methods of looking and knowing becomes acutely apparent: and the material consequences of that undeniable.

See also Algorithmic Studies; Computational Turn; Process Ontologies; Violence.

Note

1. The algorithms guiding these processes were developed by Sanderson with Eric Verner and Vipul Lugade at Matlab Geeks (<http://matlabgeeks.com/>), based on the papers Schwartzbkurg et al., 'High Contrast Caustics', EPFL (École Polytechnique Fédérale de Lausanne), 2014, and Yue et al., 'Poisson-Based Continuous Surface Generation for Goal-Based Caustics', *ACM Transactions on Graphics*, 33(3), May 2014; and use 'Ceres solver' by Google and the algorithm 'Optimal Transportation' by Quentin Merigot, Ceremade, Université Paris-Dauphine.

*Harry Sanderson and
Alexandra Symons Sutcliffe*

TRANS*

In the most general sense, *trans** denotes a movement across, above and beyond, with particular reference to (yet not limited to)

gender and sex. Such a conceptualization, stemming from the field of transgender studies, constitutes a certain kind of transpositional and transversal methodology, a way of seeing and knowing that intersects with other humanities, social and natural sciences' disciplines and asks how (trans) gendering is related to processes of racialization, dehumanization, speciation and animalization (Stryker and Currah 2015). It represents 'mattering's vital capacity to become more and other than it already is through movements, connections, intensifications, and refigurations that traverse existing material arrangements' (ibid.: 190). The transitive, prefixial, prepositional nature of *trans-* and *trans** proposes to see transness/transing as a process, a 'becoming with' (Haraway 2008) that stretches across species (Chen 2012), ecologies (Kier 2010), and matter itself (Colebrook 2015), and allows for transgender studies to move beyond transgender only as an identity category and towards transgender as a mode of analysis – or, as Regina Kunzel calls it, 'transoptics' (2014).

Even though the academic writing – mostly coming from the field of medical sciences and psychology – on 'transgender phenomena' has been around for a long time, the 1990s marked the advent of the field of 'transgender studies' and 'transgender theory' (Stryker and Aizura 2013). This emerging body of thought pointed out that transgender is inextricably linked to questions of who gets to count as human. As Stryker and Currah note, 'to be human has meant taking a position in relation to sexual difference and becoming gendered ... while to be forcibly ungendered or to become transgendered renders one's humanness precarious' (2015: 189). Transgender therefore challenges the humanist standard of legibility and intelligibility and allows for exploration of how the category of the human works as a

normative tool (Hayward and Weinstein 2015) in defining what counts as animal, non-human, monstrous, etc.

Trans embodiment has a long history of being seen as monstrous and in that sense not-quite-human, not least because of intricate connections – both material and discursive – with the medical and pharmaceutical industry. In her polemical book *The Transsexual Empire: The Making of the She-Male* (1979), Janice Raymond claims that transsexuals are essentially raping women's bodies by reducing them to artificial constructions, with the notion of 'empire' here standing in for science, technology and medical discourses and practices. In response, Sandy Stone, taking up her mentor Donna Haraway's notion of the cyborg and the kind of politics of resistance that it proposes, argues that while indeed the medicalization of trans often leads to reinstating sexist binaries, the only solution is not to look for some authentic truth beyond medical discourse but to construct one's own position *as* transsexuals (Stone 1991). Stone therefore proposes that there is a need for transsexuals to come out as transsexuals and in this way create space for their own discourses.

Similarly, Susan Stryker discusses the metaphor of Frankenstein in relation to transsexuals as monstrous 'man-made' binary violators. In her germinal text 'My Words to Victor Frankenstein Above the Village of Chamounix' (1994) she claims that the transgender body, like that of Frankenstein's monster, is seen as an artificial experiment, thus excluded from human communities. However, she also resists the dialectical move of naturalization by embracing her own monstrous identity and acknowledging her 'egalitarian relationship with non-human material Being' (ibid.:240). Later on Stryker and her colleagues at Macquire University

coined the term *somatechnics* (Stryker and Pugliese 2009) to underscore the inextricability of 'the body (as a culturally intelligible construct) and the techniques (*dispositifs* and hard technologies) in and through which corporealities are formed and transformed' (Sullivan 2014: 188). Michelle O'Brien ([2003] 2013) also points to entanglements between matter, technology and biopolitics by arguing that trans bodies are always already enmeshed within the flows of biomedical capitalism, colonial histories and 'immunowars' through their access to and use of hormonal pharmaceuticals. The latter also points to a cyborgian political strategy for accounting for one's complex position and at the same time finding modes of resistance (in her own words: 'my survival depends on interfacing global capitalism, but interfacing it improperly' – O'Brien [2003] 2013: 63).

The intersections of capitalism, biopolitics and trans is also taken up in the work of Paul Preciado. In his book *Testo Junkie: Sex, Drugs and Biopolitics in the Pharmacopornographic Era* he analyses how the pharmacopornographic regime – the process of a 'biomolecular (pharmaco) and semiotic-technical (pornographic) government of sexual subjectivity' (2013: 34) – produces contemporary forms of sexual embodiment. Preciado proposes that for a movement and politics of contemporary trans-feminism it is crucial to recognize that 'your body, the body of the multitude and the pharmacopornographic networks that constitute them are political laboratories, both effects of the processes of subjectivation and control and potential spaces for political agency and critical resistance to normalization' (ibid.: 348). The critical intersections between trans embodiment and military and surveillance technologies are also taken up in the work of Dean Spade (2011), Toby Beauchamp (2009, 2014) and

Christine Quinan (2016). The work on these intersections highlights that surveillance is not only built into the very category of transgender through the medical discourse and close medical monitoring that transgender bodies undergo, but also affects transgender subjects through policies such as new security measurements at airports adopted as part of the 'war on terror'.

Another emerging field within trans studies is what can be called 'tranimalities' (Kelley 2014) or 'tranimacies' (Chen 2012). The category of the human depends strongly on the animal as its other in a binary mode of difference that places human/man/culture in a superior position over animal/woman/nature. In a similar vein, especially in popular media discourses around trans rights and life, transgender has often been rejected as 'unnatural', belonging to neither of the binary categories, yet traversing both. This position has been challenged, for instance, by Myra J. Hird in her article on 'Animal Transex', which shows that trans is not a 'distinctly human enterprise' (2006: 39) and should not be considered as an entirely socio-cultural phenomenon. Bringing together new materialism and trans scholarship Hird demonstrates that trans exists in non-human species, and proposes that trans phenomena, if explored in a way that is not restricted to cultural explanations, challenge the nature/culture distinction itself.¹

The explorations of cross-overs between animal and trans studies as well as new materialism highlight the calls for 'transing the posthuman' (Nurka 2015), too. Trans*/Trans- here comes to represent a line of flight or a movement of becoming (Stryker, Currah and Moore 2008). It opens a space for transgender studies to engage with a broader set of theoretical questions, and for posthuman theory to consider the kind of capacities, relationalities and crit-

ical potentials engendered in trans-/trans* theory and embodiment.

See also Animacies; Makehuman; Pill, the; Posthuman Sexuality; Placenta Politics; Xenofeminism.

Note

1. Apart from significant work already produced on trans and materialism (such as Chen 2012; Hayward and Weinstein 2015, Hayward 2010; Irni 2013b; Simpkins 2016), currently a special issue of *Graduate Journal of Social Science* is also being put together on 'Trans materialities', addressing specifically the intersections between new materialism and trans studies (editors Max van Midde, Olga Cielemeńska and Vick Virtú, forthcoming July 2017).

Goda Klumbyte

TRANS-CORPOREALITY

Trans-corporeality is a posthumanist mode of new materialism and material feminism. Trans-corporeality means that all creatures, as embodied beings, are intermeshed with the dynamic, material world, which crosses through them, transforms them, and is transformed by them. While trans-corporeality as an ontology does not exclude any living creature, it does begin with the human, in order – paradoxically perhaps – to disrupt Western human exceptionalism. The figure/ground relation between the human and the environment dissolves as the outline of the human is traversed by substantial material interchanges. Mapping those interchanges across all species and at all scales is the prelude to trans-corporeal ethics and politics. Trans-corporeality contests the master subject of Western humanist individualism, who imagines himself as transcendent,

disembodied and removed from the world he surveys. The trans-corporeal subject is generated through and entangled with biological, technological, economic, social, political and other systems, processes and events, at vastly different scales. Trans-corporeality finds itself within capitalism, but resists the allure of shiny objects, considering instead the effects they have, from manufacture to disposal, while reckoning with the strange agencies that interconnect substance, flesh and place. It does not contemplate discrete objects from a safe distance, but instead, thinks *as* the very stuff of the ever-emergent world (Alaimo 2016).

Thinking as the stuff of the world has a long feminist history, due to the way women, along with racially marked and disabled peoples, have grappled with being subjects often categorized and systematically treated as objects. Trans-corporeality, along with other theoretical concepts within feminist posthumanities, suggests a new figuration of the human after the Human, which is not founded on detachment, dualisms, hierarchies or exceptionalism, and which does not, in Val Plumwood's terms, 'background' nature (1993). Like Rosi Braidotti's transversal subject outlined in *The Posthuman* and other works, the 'trans' of transcorporeality insists on multiple horizontal crossings, transits and transformations. As Braidotti contends, 'The challenge for critical theory is momentous: we need to visualize the subject as a transversal entity encompassing the human, our genetic neighbours the animals and the earth as a whole' (2013: 82).

I developed the concept of transcorporeality while editing the collection *Material Feminisms* (2008) with Susan J. Hekman and while writing *Bodily Natures: Science, Environment, and the Material Self* (2010). In an earlier essay about architecture and environmental ethics, I had drawn

upon feminist theories of corporeality, including the 'intercorporeality' of Gail Weiss, which, she notes, emphasizes that 'the experience of being embodied is never a private affair, but is always already mediated by our continual interactions with other human and nonhuman bodies' (1999: 158). Donna Haraway's work, starting with *Primate Visions* (1989), has long influenced my writing; her argument for 'situated and embodied knowledges' and against 'various forms of unlocatable, and so irresponsible knowledge claims' (1991: 191) as well as her insistence on non-human agencies and the material-semiotic no doubt permeated my conception of trans-corporeality. Trans-corporeality is developed in *Bodily Natures* by drawing upon Karen Barad's notion of intra-action (2007) as well as other new materialist theories of non-human agency, particularly those from science studies. *Bodily Natures* argues that the trans-corporeal subject emerges from environmental health and environmental justice movements, which must discern, track and negotiate the unruly substances that move across bodies and places. Racism becomes materialized, in multiple and interconnected ways, when, for example, in Percival Everett's novel *Watershed* (1996) the African-American protagonist reckons his own blood as a marker not of an essentialist or contained racial identity but as a trans-corporeal conduit marking the history of racist medical experiments, his own experiences with police brutality, and the environmental racism of the US military against Native American lands, which may have resulted in his cross-species contamination with the anthrax virus. Science, medicine, history, law enforcement and the military are all entangled in the racism, environmental degradation and epistemological quandaries that course through the protagonist's very blood. (Alaimo 2010: 64–70).

Trans-corporeality is not a mystical, spiritual, phenomenological or experiential sense that 'everything is connected'; it requires a radical rethinking of ontologies and epistemologies; it involves science, science studies, citizen science, feminist theory, environmental theories, critical race studies, disability studies, literature, art and everyday activism. Thinking the subject as a material being, subject to the agencies of the compromised, entangled world, enacts an environmental posthumanism. The subject cannot be separated from networks of intra-active material agencies (Barad 2007) and thus cannot ignore the disturbing epistemological quandaries of risk society (Beck 1992). Trans-corporeality, as it reckons with material agencies that traverse substances, objects, bodies and environments, entails reckoning with scientific captures, even as the data is always already 'mangled' (Pickering 1995) by social and economic forces. Scientific information, produced by experts or 'ordinary experts', is necessary for trans-corporeal mappings, which circulate through popular culture, politicized communities and subcultures, such as that of people with multiple chemical sensitivity (Alaimo 2010).

Trans-corporeality discourages fantasies of transcendence and imperviousness that render environmentalism merely an elective and external enterprise. Even though trans-corporeality emerged from environmental health and environmental justice movements, which focus on (post)humans, the concept extends toward all species who find themselves at the crossroads of body and place. The posthuman ethics of trans-corporeality insists that even the most routine human activities, such as purchasing plastics, impact human and non-human lives across vast geographic and temporal scales, extending even to the bottom of the sea (Alaimo 2016). The bizarre enormity of the effects of the most minute everyday

actions underscores the urgent need for rethinking ethics and politics in the Anthropocene, an epoch in which human activities have profoundly altered the planet. Cecilia Åsberg, Redi Koobak and Ericka Johnson contend that 'Posthumanities as feminist analytical practices work for us to re-tool the humanities so as to meet up with the on-going transformations of our worlds' (2001: 228). Trans-corporeality grapples with precisely how the transformation of the world alters – or should alter – ontologies, epistemologies, politics and ethics. While trans-corporeality was not conceived under the sign of the Anthropocene, it nonetheless epitomizes the sort of posthumanist ontologies in which there can be no 'nature' outside the human. And yet the human is hardly the master of his domain but instead a site traversed by strange agencies and immersed within entangled ethical and political relations. While toxic chemicals, radiation, toxic e-waste from the global north dumped in the global south, industrial agriculture, factory farming and animal experimentation are often overlooked in predominant visual, theoretical and popular accounts of the proposed anthropogenic geological epoch, trans-corporeality, with its attention to the disconcertingly extensive effects of seemingly benign consumerist practices, underscores that they too are matters of concern for the Anthropocene.

Since trans-corporeality involves unexpected transits and crossings, it may be fitting to conclude with a brief account of how trans-corporeality has been taken up in divergent and perhaps surprising ways. Christina Fredengren, in 'Posthumanism, the Transcorporeal and Biomolecular Archaeology', employs the concept in order to place archaeological data such as DNA and isotope analysis 'in a theoretical frame' that demonstrates 'the entanglement between the skeleton, the visceral parts of the body and the environment' (2013: 59).

Dayna Nadine Scott, a legal scholar, argues that ‘the theory of transcorporeality directs us not only towards the permeability of the bodily boundary but also towards the science/experience boundary;’ thus a ‘negotiated empiricism, attenuated by transcorporeality . . . puts forward the possibility that experiential knowledge is robust because of its intersubjectivity, not in spite of it’ (2015: 19, 20). Magdalena Górska takes transcorporeality as a ‘key analytical apparatus’ of her dissertation, *Breathing Matters*, demonstrating how breathing ‘materializes human embodied subjectivities as always-already dispersed’ as she argues for recalibrating ‘feminist analytical tools as onto-epistemological’ (forthcoming, n.p.). In the collection edited by Jeffrey Jerome Cohen, *Prismatic Ecology: Ecology Beyond Green*, Robert McRuer critiques how ‘pinkwashing’ obscures queer trans-corporeal relations; Steve Mentz paints trans-corporeality brown because it suggests ‘separation itself may be problematic’ within the ‘brown interchange of life and nonlife;’ and Cohen reflects on the greyness of zombies, asserting that ‘[m]onster, human, and world are transcorporeal’ (Cohen 2013a: 70, 207, 285). Tema Milstein and Charlotte Kroløkke analyse the ‘climactic moment of encountering the embodied other’ such as that of the ‘orcagams’ of whale watchers, which they argue are ‘intersubjective and transcorporeal events’ (2012: 88). Mel Y. Chen interprets transcorporeality as ‘affirming the agencies of the matter that we live among,’ such that ‘the sentience of the couch, in our meeting and communing, then becomes my own sentience as well’ (2012: 182). Astrida Neimanis and Rachel Lowen Walker in ‘Weathering: Climate Change and the “Thick Time” of Transcorporeality,’ make the temporal, rather than spatial, dimensions of transcorporeality ‘more explicit’: ‘The claim that . . . transcorporeal temporality belies a phenomenology of weathering,

means that the spatial metaphors we have historically used to frame our bodies are unable to fully account for the co-creative relationship between bodies, whether bodies of climate, water, soil, or bones’ (2014: 566, 570).

Jeffrey Jerome Cohen in *Stone: An Ecology of the Inhuman*, also expands the temporality of transcorporeality in order to bring the concept further along ‘its disanthropocentric path’. Extending transcorporeality to a ‘geophilic Long Ecology’, Cohen writes: ‘stone’s intimate alterity demands acknowledgement of more-than-human temporal and spatial entanglement, so that ecology becomes Long Ecology, an affectively fraught web of relation that unfolds within an extensive spatial and temporal range, demanding an ethics of relation and scale’ (2015b: 41). With this Long Ecology, and other matters, transcorporeality has, rather appropriately, developed beyond its origins.

See also Anthropocene; Bodies Politic; Body Without Organs; Feminist Post-humanities; Neo/New Materialism; Post-human Ethics; Non-Human Agency.

Stacy Alaimo

TRANSHUMANISM/ POSTHUMANISM

Posthumanism and transhumanism are two movements which are often confused with each other. The reason is that both are contemporary philosophies sharing a critical approach to the human, which, far from a fixed notion, is perceived as a dynamic and evolving frame; both arose as social and philosophical waves in the late 1980s and early 1990s, but the drives motivating them are rooted in different traditions of thoughts and they should

not be assimilated. Furthermore, posthumanism and transhumanism contemplate distinct currents within themselves, such as Critical, Cultural and Philosophical Posthumanism and New Materialism, in the case of Posthumanism; and Libertarian Transhumanism, Democratic Transhumanism, Extropianism and Singularitarianism, in the case of Transhumanism. In this entry, the terms Posthumanism and Transhumanism will refer to aspects indistinctly characterizing their inner currents; they will be summarized in such a way as to account for their specificities in the larger umbrella frame of the posthuman (Ferrando 2014).

In an extended sense, posthumanism can be presented as a post-humanism, a post-anthropocentrism (Braidotti 2013) and a post-dualism. Born out of postmodernism, it further develops the deconstruction of the human started in the 1960s and 1970s, underlining the fact that, historically, not every human being has been recognized as such: some humans have been considered more human than others; some have been considered less than human. Posthumanism, as a post-humanism, does not employ any hierarchical schemata in addressing the human frame. The intersectional critical lenses of gender, race, class, sexual orientation, ability and age, among others, have successfully demonstrated that the human is not one but many, and it shall thus be accounted in plural ways, based on the experience of embodied human beings. To this frame, posthumanism adds the critique of speciesism and can be thus seen as a post-anthropocentrism, highlighting and deconstructing the epistemological and ontological legacies of the Great Chain of Being, according to which the human has been granted a special position in the Western hierarchical structure representing divine creation (Lovejoy 1936). More in general, posthumanism acknowledges the

fact that the notion of the human has been mostly defined in separation from the non-human realm. Posthumanism, instead, does not grant the human any onto-epistemological primacy, addressing the human in interconnected and symbiotic relations to the non-human (Haraway 2008; Wolfe 2010). In this sense, posthumanism is a post-dualism, stressing the hybrid and relational terms of existence (Barad 2007).

The drive to reach post-humanist, post-anthropocentric and post-dualistic onto-epistemologies does not characterize the transhuman approach. Transhumanism traces its roots within the Enlightenment and does not reject the humanistic tradition (More 2013); on the contrary, transhumanism focuses specifically on human enhancement, which explains its symbol 'H+' as an acronym for 'Humanity Plus'. The main keys to access such a goal are identified in science and technology, in their existing, emerging and speculative frames. In the progressive timeline of the transhuman, the future bears unique potentials: some humans may transcend their actual outfit in such radical ways as to become posthuman (Bostrom 2005a). This is another reason causing the theoretical confusion between posthumanism and transhumanism. In fact, within the transhuman literature, the term 'posthuman' refers to a stage which might evolve after the current transhuman era. On the other side, according to posthumanism, the posthuman can be seen as a paradigm shift which is already occurring by approaching and performing the human in post-humanist, post-anthropocentric and post-dualistic ways.

See also Critical Posthumanism; Critical Posthuman Theory; Posthumanist Performativity; Object-Oriented Ontology.

Francesca Ferrando

(UN)DOCUMENTED CITIZENSHIP

One of the unavoidable questions that are raised by contemporary refugee crises, deaths at the borders of Europe and permanent marginalization of undocumented refugees in the interior of fortress Europe concerns the relation between citizenship and the value of human life.

There is an influential strand in critical theory which states that the refugee highlights the dominance of the figure of the citizen over that of the human. Writing in the aftermath of the Second World War, when millions of stateless refugees roamed Europe in search of juridical protection, Hannah Arendt identified a paradoxical effect of human rights discourse. Those for whom the notion of human rights was invented, and who need them most, can have the most difficulty in accessing them. As Arendt writes in *The Origins of Totalitarianism*: 'if a human being loses his political status, he should, according to the implications of the inborn and inalienable rights of man, come under exactly the situation for which the declaration of such general rights provided. Actually the opposite is the case' (Arendt 1973: 300). Arendt highlights that instead of one's humanity forcing civil treatment, civil status determines who deserves humane treatment. Arendt concludes her analysis of human rights – this section of the book is titled 'The decline of the nation-state and the end of the rights of man' – with a pessimistic conclusion: 'the danger is that

a global universally interrelated civilization may produce barbarians from its own midst by forcing millions of people into conditions which, despite all appearances, are the conditions of savages' (ibid.: 302).

This analysis is radicalized by Giorgio Agamben in his famous *Homo Sacer*. For Agamben, the notion of human rights signals the infringement of political life over biological life: 'declarations of rights represent the originary figure of the inscription of natural life in the juridico-political order of the nation-state' (1998: 75). For Agamben, human rights serve as a hallmark of the power over bare life. Agamben's analysis seems to end in a pessimistic prediction for the future: the figure of the refugee is an 'ontological destiny'; Agamben's famous conclusion, that we are all in the camps, aims to show how underneath juridico-political identifications we are all at the mercy of naked power over bare life. The triumph of juridico-political power over life is complete.

These conceptualizations proved to be a prescient criticism of the global violence to be unleashed on refugees. Indeed, now that the borders of Europe can be seen as sites where necropolitics are becoming ever more apparent (Mbembe 2003), and while in the interior of European nation-states who unanimously subscribe to the declaration of human rights the treatment of undocumented refugees is frequently in direct violation of human rights (Spijkerboer 2013), pessimism is justified. Yet, as the twenty-first century progresses,

this grim diagnosis is increasingly untenable. There is an urgent need to not just critique but also to change inhumane situations around the borders of Europe. Emphasizing that any conceptualization of the human is inherently bound up with domination and biopower paradoxically runs the risk of enforcing rather than critiquing the powerlessness of those who are most victimized (Lemke 2005). In the face of the plight of refugees both at the borders and within nation-states, this stance is woefully insufficient.

Increasingly, scholars argue that, contra pessimist diagnoses as outlined above, citizenship can be the site of micro-resistance (Papastergiadis 2006), and a rehumanization of those who are excluded (Zembylas 2010). In his *Acts of Citizenship*, Engin Isin has formulated an alternative conceptualization of civic agency which is illustrative of this trend in critical theory: 'we define acts of citizenship as those acts that transform forms (orientations, strategies, technologies) and modes (citizens, strangers, outsiders, aliens) of being political by bringing into being new actors as activist citizens (claimants of rights and responsibilities) through creating new sites and scales of struggle' (Isin and Nielsen 2008).

Defining politics not as a play of actors with preconceived notions, but instead as processes that expand the political sphere, claimant of rights and responsibilities, citizenship is seen here not as a stable category, nor as an identification which is completely at the hands of empire, but rather as a dynamic practice. Citizenship in Isin's sense is claimed by those actors who claim rights and responsibilities and those who create new sites and scales of struggles. Isin's conceptualization opens up civic agency to those who are usually not seen as claimants of it.

The activism of undocumented migrants themselves offers a good starting point. It

shows how the non-citizen, Arendt's 'savages' or Agamben's 'homo sacer', those who are often associated with a position of ultimate marginalization, act from a marginalized position. It is a good starting point for a discussion of the value of undocumented citizenship. Whereas citizenship and documentation, in the sense of passports, residence permits or official recognition of the right kind of refugee, seem to be inherently connected, when we see citizenship as a dynamic practice, it becomes possible to see citizenship enacted by those without documentation.

All over Europe activism of undocumented migrants is taking place. To take a number of Western European examples: between 2008 and 2010 France witnessed a series of strikes of undocumented workers. Almost 7,000 workers occupied companies and temp agencies (Kahmann 2015). This form of activism is not only an act that tries to reject marginalization, it is also an affirmation of the constructive civic presence of *sans-papiers* (literally: 'those without documentation') in French society. The strike showed to what extent the French economy counts on undocumented workers. The name that was claimed by the activists was not '*sans papiers*', but rather '*ouvriers sans papiers*' ('workers without papers'). There is no figure of the humanitarian victim here, nor is there only the grasp of power, rather what was shown by the strike of undocumented French citizens is that undocumented migrants are marginalized yet active and constitutive parts of society and hence can engage in acts of citizenship.

Similarly, the Netherlands has known a protest movement that uses the slogan 'We Are Here'. The slogan is simple yet effective: undocumented migrants have been making a life for themselves, often under extremely taxing circumstances, in the midst of Dutch civilization. The movement

does not ask for recognition of victimhood, it is not a plea for a humanitarian embrace nor is it purely negative; instead it is a courageous affirmation of presence. This slogan, if affirmed by Dutch civilization, cannot but lead to a fundamental reconsideration of the most foundational questions of belonging.

As these acts of undocumented citizenship show, it is not merely a matter of inclusion or exclusion. Undocumented citizens are already part and parcel of political communities. Indeed these acts show destructive marginalization and precarity, and indeed these movements make a claim for inclusion and normalization of their status in juridico-political orders, but they also showcase different forms of civic engagement. The challenge is to listen to and follow the example of these acts of undocumented citizenship. The voices of undocumented citizens confront ossified notions of humanity and civil treatment of humans with creativity, courage and the demand to reinvent the current horizons of civic engagement.

See also Camp; Expulsions; Lampedusa; Stateless State; Violence; SS = Security/Surveillance.

Ernst van den Hemel

URBANIBALISM

A provocative portmanteau of the terms 'urban' and 'cannibalism', Urbanibalism is an artistic practice and political agenda initiated in Amsterdam in 2006 and encapsulated in the terse metric of the 'Manifesto of Urban Cannibalism' (Maas and Pasquinelli 2013). Urbanibalism envisions the city, the environment and even the cosmos from the point of view of *the stomach*, that is from the perspective of a

larger metabolism of digestion and nourishment. As the Manifesto cites: 'The matter of the world is endlessly cooked and devoured – the stomach is the big / outside us' (Stanza 9). Against a pacifying and essentialist idea of ecology, Urbanibalism rejoices in the messy metabolism of nature in all its parasitic, 'cannibalistic' and endosymbiotic relations. Its posthumanism resides in its antithesis to the idea of a natural equilibrium and separation of the *natureculture* continuum: 'We should never abandon the city in favour of a virgin territory', reads the very first line of the Manifesto (Stanza 1). While Urbanibalism perceives the city as a gigantic stomach, it does this along its economical, political and colonial fault lines. An important reference of Urbanibalism is the anti-colonial 'Manifesto Antropófago' by the poet Oswald de Andrade, which is a founding text of the Brazilian avant-garde movement *tropicalismo* and historical challenger of Eurocentric humanism. In the western world Urbanibalism addresses new forms of biopolitical control as represented by 'green capitalism' and policies of sustainable development. As there is no longer an outside, within the ideology of degrowth we have established the borders of our own siege' reads the last stanza of the Manifesto.

Methodology

In postulating the stomach as the organ of perception and experience of the surrounding world (*Umwelt*), Urbanibalism turns upside down the dominant aesthetic and political canon that is based on the centrality of vision and, nowadays, computation. Urbanibalism deems the surrounding world, the *Umwelt*, as an 'extroverted' stomach. This is posited by Urbanibalism as a necessary thought experiment but also as a fertile provocation for emergent posthuman epistemologies. Such a neomaterialist

approach is not completely new and belongs to the history and anthropology of food and to so-called Material Culture Studies (see, for instance, the visionary work of the Italian scholar Piero Camporesi). Central to this methodology is the idea that gastronomy is a not a neutral and relaxed hobby but a cultural field which carries with it 'the smell of the centuries' (Stanza 10), that is the redolent traces of millenary wars, colonial invasions and mass migrations. Both art and gastronomy incarnate a radical antagonism against the fate of nature and history. 'Culinary art arose from the inventiveness of the poor against a matricidal nature – and never from pauperism' (Stanza 10). Along this tradition, Urbanibalism can be defined as 'materic art' or 'the art of living matter'. These aesthetics take issue with definitions such as food design, molecular cuisine or bioart where a larger and adequately scientific notion of metabolism is missing or is only understood in the isolated sphere of a laboratory setting.

The stomach is indeed an organ of thought(!). Urbanibalism readily alludes to the etymology of *Homo sapiens*, that (contrary to rationalist expectations) in the original Latin means 'the human that has a good sense of taste' (Stanza 8). In old Latin 'to know' (*sapere*) means 'to have taste'. The methodology of Urbanibalism moves from the subjective experience of the world to the metabolic perspective of specific forms of life: this could be a simple organism like a particular yeast strain flourishing in the air of Brussels, a historical record as a war recipe book, a political moment like the siege of Paris, the mineral composition of Berlin tap water, an old Dutch still life of edible flowers, etc. Each form of life produces and absorbs its own *Umwelt* of relations – a metabolic and aesthetic ecology that Urbanibalism explores beyond the borders of traditional

ecology (see the 'three ecologies' by Guattari 1989).

As artistic engagement, dissensual cooking and politics of experimentation, Urbanibalism is not only committed to mapping *Umwelten* but to connecting them in new constellations that are called *Convivia*, from the Latin word for 'feasts' that means literally 'living together' (*con + vivere*). *Convivia* are the final gathering of the *Umwelten* that have been discovered, explored and cooked. A communal feast with an always different community of urban gastronomers that unveils the common dimension of any urban landscape and metabolism.

Posthuman Ecology

'Innervated by flows of energy and matter / the urban landscape is alive . . . buildings are liquid strata of minerals – just very slow' (Stanza 2). Urbanibalism considers the city and the *natureculture* complex as a tangle of flows and strata 'where the border between organic and inorganic life blurs' (Stanza 3). The world is seen as a *geological metabolism* where strata of different natures overlap: inorganic, organic, social, economic, linguistic, iconic . . . Philosopher Manuel DeLanda has given a good example of this in his description of architecture as an exoskeleton of the human:

The human endoskeleton was one of the many products of that ancient mineralization. Yet that is not the only geological infiltration that the human species has undergone. About eight thousand years ago, human populations began mineralizing again when they developed an urban *exoskeleton*: bricks of sun-dried clay became the building materials for their homes, which in turn surrounded and were surrounded by stone monuments and defensive walls. This exoskeleton served a purpose similar to its internal

counterpart: to control the movement of human flesh in and out of a town's walls.

1997: 27

The borders Urbanibalism aims to subvert are situated between the definitions of the edible and edibility. To take a historical example from the French Revolution: 'Remember the siege of the Paris Commune, when communards ate the animals of the zoo and so engaged in a rebellious and joyful expansion of the edible' (Stanza 4). Overstepping the borders of comestible/non-comestible thresholds also occurs in the practice of *geopaghia* (common to German as well as African

traditions) – of 'eating the earth', usually fine soil or clay. It has been regarded as a psychiatric disease, a confined cultural practice or a result of poverty and famine, but it has precise ritual and medical purposes and is a form of vital nourishment in a diet where otherwise minerals are lacking. The craving for the earth is a reminder that our posthuman metabolism has always preceded us.

See also Animal; Food; Ecosophy; Naturecultures.

***Wietske Maas and
Matteo Pasquinelli***

V

VERTIGO SEA

Film stills from John Akomfrah's three-screen film installation *Vertigo Sea* (2015), which explores what Ralph Waldo Emerson calls 'the sublime seas.' Fusing archival material, readings from classical sources and newly shot footage, Akomfrah's piece focuses on the disorder and cruelty of the whaling industry and juxtaposes it with scenes of many generations of migrants making epic crossings of the ocean for a better life. Shot on the island of Skye, the Faroe Islands and the Northern

regions of Norway, *Vertigo Sea* has as its narrative spine two remarkable books: Herman Melville's *Moby-Dick* (1851) and Heathcote Williams' epic poem *Whale Nation* (1988), a harrowing and inspiring work which charts the history, intelligence and majesty of the largest mammal on earth.

See also Blue Humanities; Capitalocene and Chthulucene; Hypersea; Lampedusa; Nomadic Sensibilities.

John Akomfrah





John Akomfrah, *Vertigo Sea*, 2015, © Smoking Dogs Films. IMAGES AND TEXT COURTESY OF LISSON GALLERY.

VIBRANT MATTER

Vibrant Matter (Bennett 2010) aims to enhance the *perceptibility* of non-human forms of agency, where ‘agency’ refers to the capacity to inflect the direction of events and to make a difference to outcomes. The book tells an onto-story that plays with and begins to play out the idea that non-human things and forces actively shape the bodies they encounter, including the humans who never fully possess or control them. Here the figures of ‘thing-power’, ‘vital materiality’ and ‘vibrant matter’ are invoked. The short book also describes, and attempts to revive, aspects of past (Euro-American) ontologies or cosmologies, wherein non-human bodies and processes were more sharply experienced as entering into, and enabling and constraining, *human* action.

The book draws examples from contemporary political culture (concerning food, abortion, energy policy, a political economy of extraction and waste), as well as from the work of Spinoza, Kant, the ‘critical vitalists’ Henri Bergson and Hans Driesch, Thoreau, Darwin, Gilles Deleuze and Bruno Latour – in order to make the case that *human* agency is itself an assemblage of human and non-human powers. When humans act, they do not exercise exclusively human capabilities, but express and engage a variety of other *actants*, which is Latour’s term for an entity or a process that makes a difference to the direction of a larger assemblage without that difference being reducible to an efficient cause. Actants collaborate, divert, vitalize, gum up, twist or turn the groupings in which they participate; or, as archaeologists Chris Gosden or Lambros Malafouris argue, tools actively constitute the styles and powers of human cognition and memory. If moderns tend to default to the assumption – often for the sake of maintaining the

ideal of individual moral responsibility – that the most potent actants in a group are human beings, the book suggests that, in many cases, human intentions, strivings or deliberate activities are *not* the key operators. Sometimes, that role is played by a weather-event, or a foodstuff, chemical, metal or pharmaceutical (or their sounds, smells, silent movements, rhythms and momentums). To really acknowledge the force of these other players would be to enhance our ability to detect with more subtlety what was, in a given case, the actual mechanism of a particular effect – such as, for example, a blackout or an oil spill or climate change or a gun culture.

One important example in *Vibrant Matter* concerns the multiple agencies at work to produce the electricity blackout in 2003 in North America (and later in the year in Europe). The government and industry response in the US was to seek to identify some human – some Enron executive or energy trader – who was responsible and then to punish him. Meanwhile, a whole series of other relationships – between the electricity grid as infrastructure, the legislation deregulating energy trading, the constant egging-on of the desire to consume, desire, and the natural tendencies of electricity itself remained under-explored. As a result, the possibility of blackouts today remains more or less the same. The fetish of the exclusively human agent and the associated tendency to define social problems as moral failures – and the implicit assumption that it is we humans who are always in charge – prevented analysts from discerning that the real locus of agency was an assemblage – of human and non-human actants. And it also prevented us from pursuing more *effective* forms of intervention into that specific configuration. Here the point is a pragmatic one: ethics and politics can sometimes have more traction on material

assemblages and the way they reproduce patterns of effects than they can have on that elusive entity called the moral subject.

The book also took issue with a tendency to frame stuff or things as ‘inanimate objects’ that merely form the background context for *our* actions – in other words, to consider this in ways that reserve the active, creative power for humans. A motivating premise of the book is the idea that by parsing the world into passive matter (its) and vibrant life (us), we are limiting what we are actually able to *sense*. In other words, a strict separation between matter and life places below the threshold of note the *active* powers of material formations, such as the way landfills are, as we speak, generating lively streams of chemicals and volatile winds of methane, or the way omega-3 fatty acids in a diet will alter brain chemistry and mood, or the way industrial chemicals that find their way into the water supply are ‘endocrine disruptors’.

In *Vibrant Matter*, *human* agency, like any form of activity, is always something *distributed* across a range of diverse bodies. When an I acts, it does not exercise exclusively human powers, but includes those of its food, micro-organisms, minerals, artefacts, sounds, bio- and other technologies, and so on. There are, of course, differences between a human individual and a stone, but neither considered alone has real agency. To invoke thing-power or the vibrancy of matter is *not* to say that non-human objects have agency in the strong sense: a glass of water doesn’t have intentions or a will. But it does make sense to admit that it has propensities and insistences, maybe even a kind of striving along the lines of what Spinoza called *conatus*. To be clear: it is not that individuated objects are wilful subjects; but they can be powerful actants in operation with others. The locus of agency is in practice always a human–non-human collective.

Vibrant Matter articulates a sensibility that is sensitive to the (material) connectedness of all things, and it offers one kind of radical critique of anthropocentrism. It is misleading to call it a ‘new’ materialism or even a ‘post-’ humanism, for the philosophical perspective and the sensibility it advocates sit alongside a strong and lively tradition of (human) body feminisms, Marxist ecophilosophies, Merleau-Ponty’s phenomenology, New Left experimentalities with eros and an under-explored tradition of indigenous thinking and sensing.

See also Animism; Ecomaterialism; Gaga Feminism; Joy; Material Feminisms; Non-Human Agency; Ontological Turn; Post-human Ethics; Trans-corporeality.

Jane Bennett

VIOLENCE

To think violence today requires that we reposition ourselves, philosophically, legally, politically and ethically, in the space between certain extremes, themselves built upon violent historical categorizations and exclusions: human/non-human, subject/object, culture/nature, *physis/tekhnē*, active/passive; the list goes on.

On the one hand, spectacular images of violent acts, for instance those produced by the media machine of so-called Islamic State (IS) precisely for our consumption, fill our screens on a daily basis.¹ Such images, be they of gruesome beheadings or immolations, demand that we consider the status of the human body as it relates to violence in our present moment. First of all, in today’s ‘wars of religion’ (if we can truly call them this), the ‘contemporary’ must be thought through its untimeliness. Here, as Jacques Derrida writes in 1996, but which is still of relevance, violence has

two ‘ages’: on the one hand, that which appears contemporary, ‘in sync ... with the hypersophistication of military tele-technology – of “digital” and cyberspaced culture’ (encrypted communiqués and hellfire missiles carried by unmanned aerial vehicles, for instance); and on the other hand, a ‘new archaic violence’ that counters or seeks revenge against the ‘contemporary’ and the attendant decorporalizing, delocalizing and expropriating powers of the machinic and tele-technoscience (here identified with the global market, military-capitalistic hegemony and the wholesale global export of the European democratic model) (88–9). In the latter, violence carried out in the name of ‘religion’ reverts as closely as possible to the body proper and to the ‘premachinal living being’ (ibid.: 88). Killings are enacted by ‘bare hands’ or at least primitive tools other than firearms, and the casualties and collateral damage of ‘clean’ or ‘proper’ wars (fought at a distance) are continually supplemented by tortures, beheadings and mutilations.

And yet, considered through the lens of deconstruction and its rendering unstable of the defensive borders between the organic and machinic, human and non-human, present and absent, actual and virtual, archaic and contemporary, these two ages, modes and impulses appear to collapse into and fold between one another.² If there is a specificity to the manner in which we are to think violence *today*, it is precisely through the contours of this anachrony and the violences enacted both as a response to and thanks to the impossibility of maintaining such fantasmatic distinctions. For that which *appears* contemporary in its reliance upon the speed and delocalization of technoscience is in fact but a quasi-infinite *acceleration* – albeit more brutal – of a principle of virtuality, violence and ruin that had always

already been at work (Derrida 2007), but that reveals itself all the more vividly today. Furthermore, in order to function, the revenge of the direct, corporeal act of violence (for instance, in execution videos) often relies upon the heightened rhythm of mediatic power as the resource that makes possible the media events or ‘image operations’ that underlie our contemporary aesthetics of terror (Koltermann 2014; Monzain 2009).³ Here, images themselves function as hyper-effective ‘weapons’, and the material substratum of the image – together with its means of mediaticization and archivization – constitutes the event as much as the human act (Derrida 1996; Schuppli 2017).

At the other end of the spectrum lies a violence of an altogether different speed, one that escapes the spectacle-driven corporate media and our flickering attention spans. Distinct from but related to structural violence, what Rob Nixon terms ‘slow violence’ – typically not even perceived *as* violence – is not time-bound or body-bound, but rather is attritional and of delayed effects (2011: 3, 11). This insidious violence, most often environmental and with everything to do with the ‘violent geographies of fast capitalism’ (Watts 2000: 8; cited in Nixon 2011: 7–8), as well as racism, elides the narrative closure of recognizable visuals of the victory and defeat of war, instead working its way inwards, ‘somatized into cellular dramas of mutation that – particularly in the bodies of the poor – remain largely unobserved, undiagnosed, and untreated’ (ibid.: 6). In this context, most notably in the case of climate violence and what Adrian Lahoud names its attendant ‘weaponization of Earth’ (2014: 495), violence must be re-thought in the absence of a punctual act, a violent event. Unlike individual acts of violence, or the industrialization of violence in modern warfare – and with this the necropower or thanatopower

that accompanies or supersedes contemporary biopower – this demands that we ‘imagine a crime without a criminal’, a violence ‘without coordinates on which transgressions might be plotted’, in the potential absence of a weapon and, moreover, a witness (ibid.: 496).

This, though, one might protest, is nothing altogether new: as Ann Laura Stoler reminds us in her forceful work on imperial debris and (ongoing processes of) colonial ruination, critical geographers, environmental historians and historically inclined anthropologists have been calling attention to what has now entered our lexicon as ‘slow violence’ for some time (2013: 11–12). What is relatively new, however, is the attempts to bring various fields of enquiry, including postcolonial scholarship and work of a posthumanist bent, into a more organic conversation – one that might at least begin to provide necessary tools for restitution and redress, and even legal prevention – a complex task when the legal ‘personhood’ of the violator, from the multinational corporation to the state (often both), is anything but straightforward. Here, a number of challenges arise: scientific, legal, political and representational. In the realm of the latter, scholars, activists and artists are called upon to make the unapparent appear, to make drawn-out threats accessible to the immediate senses (Nixon 2011: 15). Aesthetic strategy demands reconceptualization. In order to render slow violence visible, speed must first of all be redefined (ibid.: 13), as must causal relations and assemblages. In the work of the London-based Forensic Architecture project, for instance, ‘field causality’ becomes the operative concept through which conventional modes of understanding violence are challenged, accommodating for scenarios in which the environment itself becomes the medium through which violence is carried out, and in which nature possesses a certain agency.

Unlike in the beheadings videos mentioned above, where a direct line is traceable between the figures of victim and perpetrator, establishing field causalities challenges the established model of criminal law and instead traces ‘force fields, causal ecologies, that are nonlinear, diffused, simultaneous, and involve multiple agencies and feedback loops’ (Weizman, 2014: 27). In the end, we might say that in each of the two scenarios – the linear and the diffuse, the hyper-visible and the hyper-invisible – we are faced with extreme violence.

As is already becoming apparent, the multifaceted strategies that befit the forms of violence we are faced with today entail a recasting of our (i.e. Western) historically hierarchical gaze away from the primacy of the human, as active, sovereign agent. History has taught us that ‘humanity’ is a shifting index; that ‘humanism’ is inherently violent and goes hand in hand with the structural violences of racism, colonialism and patriarchy; that the biological status of ‘human’ is by no means the guarantor of the legal institution of ‘human rights.’ As such, contemporary investigative practices and conceptualizations, for instance ‘forensic aesthetics’ (Keenan and Weizman, 2012; Forensic Architecture 2014), not to mention more-than-human or ‘companion species’ ethics (Haraway 2003), must entail a hospitality towards thinking agency as distributed beyond the human, including matter and non-human forms of life (Bennett 2010), and thus towards a malleable relation between subjects and objects. Shifting attention from the *figure* (the human individual; be this agent, victim or witness) to the *ground* (collectives, technological assemblages or environments; as the ‘backdrop’ against which a violent crime would conventionally be considered to have been committed), and as such breaking with the norms of human rights work, objects and environments (including digital ecolo-

gies) are registered not only as the fields *through which* violence is enacted and mediated, but also as the potentially active *sensoria* or *indicators* that might bear witness to the (violent) crime – as soon as one learns how to access and read the traces (Forensic Architecture 2014; see especially the chapters by Anselm Franke and Eyal Weizman).

But the non-human is not only an evidential figure, assistant to human demands for justice; neither is the environment merely a passive victim of violence. Rather, war is waged against nature as if it were a criminal *subject*. This war is no longer fought merely in the name of progress, profit and security (i.e. modernity, colonialism, capitalism), but also as part of the global ‘war on terror’ that has ever-intensified since the events of 9/11 (burned into the USA’s psyche as *the* definitive image of violence),⁴ bringing us back at least tangentially – albeit in a distinct speed and register – to the media spectacles of violence with which we began. In this context, as demonstrated by Hannah Meszaros Martin’s research into the criminalization of the coca plant in Colombia, the violent eradication of non-human life (for instance, through aerial fumigation) necessarily implies the eradication of the lives of the humans that inhabit a given environment, as well as their ‘lifeworlds’. Such violence is legally sanctioned in the name of fighting the ‘war on drugs’, as this intertwines with the global ‘war on terror’ – with both ‘wars’ serving as the smokescreen behind which states, legally or illegally, exert violence upon their human and nonhuman populations (Meszaros Martin 2015). This theatre of operations in which non-human life, here the object of ‘ecocide’ (Meszaros Martin 2015; Tavares 2014a: 229; and Zierler 2011, cited in Lahoud and Tavares 2013), is deemed ‘terroristic’ and in need of violent extermination, is but one of the contexts that intensifies the need for a wholesale rethinking of legal standing and

personhood, as a means of protections against violence and violations, that has since the 1990s been explored under the banner of ‘non-human rights’, ‘the rights of nature’ or ‘Earth jurisprudence’ (Tavares 2014b; Demos 2015). Such a legal innovation (already practised to some degree in Bolivia and Ecuador)⁵ entails a legal, political, social, cultural and philosophical upheaval of extreme dimensions, one that embraces radically alternative cosmologies and perspectives regarding nature and culture (worldviews that have traditionally borne the brunt of colonial epistemic and material violences) as well as the very premises through which we conceive of violence itself (Viveiros de Castro 2015; Franke 2010).

Such a project on the one hand takes us back to slow violence, as this relates to Indigenous struggles for human rights, and environmental justice in the global South. But it also opens up into more universal questions such as what Patrick Hanafin calls a ‘micropolitics of posthuman rights’, enabled by the thinking of Rosi Braidotti, that aims ‘to subvert the majoritarian model of human rights as one premised upon the human as white neoliberal male’ (Hanafin 2014: 214). In this conception of posthuman rights that ‘embody the claims of transversal assemblages of individuals who do not see a binary cut between thought and action, life and death, environment and humanity, or animality and humanity’, and who do not cede to the demands to divest oneself of one’s singularity and become ‘human’ (ibid.: 215, 218), the challenge is to find strategies for aestheticizing and narrating slow violence that would entail moving beyond simply *humanizing* inaccessible violences.⁶

See also Naturescultures; Necropolitics; Neocolonial; Non-human Agency; Post-human Rights; Technicity; War.

Notes

1. Regarding the logistical infrastructure of IS, including its propaganda units, see Winter 2015.
2. For the import of Derrida's writings for posthumanism, see Wolfe 2010.
3. The 'operativity' of images, including in the context of conflict and terrorism, was discussed extensively at the 'Image Operations' conference held at the ICI Berlin in April 2014, <https://www.ici-berlin.org/events/image-operations/> [accessed 28 April 2017].
4. Nixon speaks of the impact of 9/11 in its reinforcement of 'a spectacular, immediately sensational, and instantly hyper-visible image of what constitutes a violent threat' for efforts to make forms of slow violence more urgently visible (2011: 13).
5. The only international or national courts that currently recognize the rights of nature are Ecuador, under the constitutional provisions established in 2008, and Bolivia, under the Law of the Rights of Mother Earth, passed in 2010 (Tavares 2014: 558).
6. 'In a world permeated by insidious, yet unseen or imperceptible violence, imaginative writing can help make the unapparent appear, making it accessible and tangible by humanizing drawn-out threats inaccessible to the immediate senses' (Nixon, 2011: 15).

Shela Sheikh

W

WAR

War is a time at which violence is legitimized, institutionalized and deployed against a constructed enemy. Apart from being horrific and atrocious, war is normality. It repeats and reproduces itself through imaginaries which render it acceptable and necessary, and through institutional forms which serve as war-making machinery. For Jabri, 'War and violent conflict are social phenomena emerging through, and constitutive of, social practices which have, through time and across space, rendered war an institutional form that is largely seen as an inevitable and at times acceptable form of human conduct' (1996: 4). For war to start, it first has to become imaginable. A crucial stage in the run-up to war is its dress rehearsal in the form of 'million repetitions' of 'single words, idioms and sentence structures' imposed on people (Klemperer 1947 [2000]). Anthropologists Schröder and Schmidt argue that 'violence needs to be imagined in order to be carried out' (2001: 9). In describing the processual characteristics of violent action they propose a four-stage model leading from 'conflict' to 'war'. The first stage, 'conflict', is seen as the socio-economic contradiction at the base of inter-party competition. However, organized violence ('war') does not automatically result from contradiction. 'Wars are made by those individuals, groups or classes that have the power successfully to represent violence as the

appropriate course of action in a given situation' (ibid.: 5). So, for war to break out, a second and third stage, named 'confrontation' and 'legitimation' are necessary. 'Confrontation' relates to the parties involved coming to look upon the 'contradiction' as somehow relevant, creating an antagonistic relationship. During the third stage ('legitimation') violence is officially sanctioned as the legitimate course of action through the imagining of violent scenarios, what Schröder and Schmidt call 'violent imaginaries'. Finally, during 'war' violence is put into practice.

War often provides an enabling environment for the accumulation of wealth, social organization and institutional and technological change. Contrary to propagandistic portrayals of war as a (sports) game or collapse, wars are not necessarily about winning, or implosion and disorder. Rather, war is an alternative system of profit, power and protection. As famously argued in relation to the Second World War by Randolph Bourne, 'war' and 'the state' are deeply linked, and in a sense interdependent: 'War is the health of the State', and the ultimate act of statehood. 'States are deeply war machines, and the peace they make is the peace of *pacification*', says the Retort collective (Boal et al. 2005: 94). In return, what we call 'peace' is often sustained by highly destructive forms of structural violence (Galtung 1996; Žižek 2008; Demmers 2017).

Over the past decades, remoteness in all its modalities (e.g. as distancing or

outsourcing) has become a characteristic feature of warfare. According to contemporary military and security doctrines the only adequate means to contain violence is to permanently monitor the spaces of everyday life in 'zones of suspicion.' We see the extension of war-like activities in areas of social life that were previously sheltered from such intrusions. Drawing on buzzwords such as 'stability operations,' 'integrated missions' and 'coordinated responses' there is a widening of the scope of military responsibilities and technologies into contexts of non-war. Militarization has now moved into police work, humanitarian relief operations, migration management, economic espionage, crowd control and corporate security. This tendency to militarize the social is certainly not confined to the 'Global South' (although the South is now an open laboratory for developing the intelligence potential of these technologies). In the Former West as well, technologically mediated modes of sorting, recognition and training are becoming increasingly sophisticated, on the one hand, and popularized on the other. From infiltration in virtual worlds, through facial recognition of car drivers nearing airports to drone surveillance, state powers and corporations aim to identify, separate and target bodies deemed malign and threatening from those deemed valuable and threatened.

The gamification of actual warfare, but also the rise of the war games industry foster new questions on the interface between virtual and spatial war, fantasy and reality, combatant and gamer, simulation and authenticity. Discussions on the connections between gaming and warfare often point at the use of games in military recruitment and training (such as the US Army produced video game *America's Army*) and the rise of the so-called 'military-industrial-entertainment network' (Der Derian 2005; Graham 2010). Combat simulation games are designed to help

soldiers prepare for war. The DARWARS *Ambush!* combat simulation game, for instance, was used to train soldiers bound for Iraq in military convoy operations (Bray 2004). But also the Hezbollah-produced game *Special Force* was allegedly used to train anti-Israel paramilitary troops in the Middle East (Charles 2009). At the same time, material warfare is increasingly *cartoonized*. As King and Krzywinska highlight: 'devices such as head-mounted displays can be worn by troops, projecting onto their field of vision data not dissimilar to some that is provided in games' (2006: 199).

Leading in the fictionalization of warfare is the intensifying use of armed drones in for instance the CIA's assassination raids in Pakistan and the Middle East. The 'pilots' of the armed drones are located in virtual reality 'caves' set up in trailers on Air Force bases on US soil. As stated by Graham, here the 'ubiquity of games and virtual simulations blends into the game-style reality of very real weaponry and killing' (2010: 215). Graham describes how arms maker Raytheon in building its newest drone control system deliberately used the same HOTAS ('hands on stick throttle') system as a video game uses. According to Raytheon's drone designer there 'is no point in re-inventing the wheel. The current generation of pilots was raised on the [Sony] PlayStation, so we create an interface that they will immediately understand' (Graham 2010: 215). What stands out in the debate on gamification is the issue of 'distancing,' the 'sanitization' of war, and the political consequences of the blurring of boundaries between game and combat. In this respect, the First Gulf War is often mentioned as the first example of 'Nintendo warfare'. One of the leading icons of that war was a video segment showing a smart-bomb targeting screen. The video places the viewer directly in

the seat of an F-117 stealth bomber witnessing in detail how a laser-guided bomb descends on its target. This kind of top-down, abstract electronic imagery would become emblematic in later US or NATO-led wars in Kosovo, Afghanistan, Iraq, Syria and Libya. For those not directly at the receiving end of armed aggression, warfare has become *play-stationized*.

The new technologies of remote control and technological warfare are increasingly based on remote knowledge, relying heavily on cyber-intelligence and meta-data (tracking the movement of individuals through their mobile phone use). Global Pulse (UN project in Africa), Nexus 7 (US military counter-insurgency in Afghanistan), Frontex (EU external border surveillance) and Eurodac (EU internal control of irregular migrants) all use geospatial technologies to map and draw up security governance. Current surveillance technologies are much more subtle and sophisticated than ever before and rely on selective rather than generalized forms of control. An example of this is the way in which the EU makes use of satellites with synthetic radar equipment that are able to trace and track immigrants long before they have reached European borders. This way, fresh forms of exclusion are produced which not only cut off targeted groups from social participation but do so in ways that are at times scarcely visible to the larger public.

This form of 'permanent war', in seeking to normalize itself, is in constant need of legitimation. It needs 'weak citizenship' (Boal et al. 2005). It depends on audiences' passive consumption of sanitized images of war and the eternal evil enemy. The only possibility for war to transform is if dominant imaginaries and discourses begin to crumble, and doubt creeps in. Discourses of war are rarely fully hegemonic: there is always some room for counter-realities.

The ways in which the small Serbian youth movement Otpor! engaged in discursive practices of resistance against the Milosevic regime in the late 1990s, mainly by means of symbolic inversion, satire and ridicule, and the dissemination and performance of 'non-violent imaginaries', are a miniature example of how a dominant discourse can be 'toppled'. The de-legitimation of violence, its conditions of possibility always somehow connected to transformations in political and material structures of domination, is a crucial stage in the weakening of the war machine.

See also Camp; Lampedusa; SS = Security/Surveillance; Violence.

Jolle Demmers

WEARABLE TECHNOLOGY

(Or: 'Science Fashion')

One of the exciting new fields in the creative industry is the integration of fashion and technology. Wiring complex systems of microprocessors, motors, sensors, solar panels, (O)LEDs or interactive interfaces into the fabric, textile or clothing turns them into smart garments that have a certain agency of their own. Designers experiment with these 'smart materials' to create examples like a dress that connects to Twitter, a catsuit that visualizes emotions, a T-shirt that changes colour or trousers that measure the wearer's vital functions. These examples show how '[t]echnology is now evolving faster than fashion trends', as designer Katrina Barillova claims (cited in Quinn 2002: 73). Called 'wearable technology', 'wearable tech' or simply 'wearables', this new field places fashion among the considerations of the posthuman. Some also use the term

'techno-fashion' (Quinn 2002), while others prefer the label of 'fashionable technology' (Seymour 2009, 2010). Given the futuristic look of many designs the term 'cyber-couture' is also fitting (Smelik 2017).

Wearable technology is versatile and can therefore be quite bewildering: it ranges from e-fashion, smart materials, wearable electronics, solar energy and 3D printing to bio-couture and nanotechnology. Smart materials and smart garments can be understood as protecting the body or extending its physical functions. Although cultural anthropology claims that clothes function first and foremost as decoration and adornment, clothes are also an extension of the skin, protecting it against nature and society (see for instance Flügel 1950). Within a context of technology this idea derives from media guru Marshall McLuhan (2002 [1964]: 129–30). At the beginning of the 1960s he suggested that all technology is in fact an extension of the human body. In posthuman times technology is not only a bodily extension, but also involves physical improvement, enhancement and expression. Wearable technology can thus be used to control, improve and enhance human lives and bodies. As Lucy Dunne writes, 'Through technology, garments are now becoming dynamic, responsive, and aware; thus, they are better able to express our individuality and meet our needs and wants' (2011: 616). By wearing them directly on the body, people relate intimately to technical objects and materials. Integrating technology into clothes will therefore have an impact on how humans experience their bodies and, by extension, the self. Or, as Tómicó and Wilde put it: 'Wearables enable the wearer to enact identities' (2015: 1185).

Dressing happens literally on the body; it is an active and embodied practice (Entwistle 2015). Thus the bodily practice of dressing is an important factor in

constructing one's identity. The body is not a given, but something to put in shape or dress up for a 'performance of identity' (Smelik 2011). Fashion is thus an important way of performing identity in its many facets. Identity can in this sense be likened to the performance of a constant dress rehearsal (Smelik 2016). Or, to put it differently: our identity is 'wearable'. Technology is indeed one of the major factors in affecting identity and changing the relation to the body, and wearable technology even more so because of its closeness to the body. This is not entirely new because human beings have always been closely connected to technology. The scientist who launched the term 'cyborg' in 1960, Manfred Clynes, says: '*Homo sapiens*, when he puts on a pair of glasses, *has* already changed' (1995: 49, original emphasis). If this is the case for simple lensed glasses, just imagine how the human body and identity change with Google glasses; the new 'geek chic' (Quinn 2002: 97) that Diane Von Furstenberg brought to fashion in 2012. A few decades after Clynes coined the term 'cyborg', Donna Haraway launched the idea of the cyborg as a figure that typically embodies fluid identity, because it has 'made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines' (1991 [1985]: 152). This is particularly relevant for wearables, since they shift and push the boundaries between body and technology. As Fortunati, Katz and Riccini argue, 'the body continually abolishes the border between nature and technology by converting one into the other' (2008: 216). In understanding identity as a bodily practice that is performed time and again, wearable technology offers alternative and new ways of transforming identities. Exploring the wearer's corporeal and

sensorial boundaries, wearable technologies enable the body to perform identity in and through smart clothes.

Today, a number of designers experiment with the ways in which bodies can be shaped or identities performed beyond our wildest dreams, for example Hussein Chalayan, Iris van Herpen, Pauline van Dongen, Anouk Wipprecht, CuteCircuit, Suzanne Lee, Olek, Helen Storey, etc. They seem to have taken Haraway's plea to heart; an appeal 'for *pleasure* in the confusion of boundaries' (1991 [1985]: 150; original emphasis). Their futuristic designs blur the boundaries between art, fashion, science and technology. They not only share a sculptural, technological and artisanal approach to clothes, but also a fascination for stretching the form and shape of the human body and playing with human identity.

Recent studies in the field of wearable technology provide an overview of techniques and applications (Mattila 2006; Cho 2010), or summarize its developments and actors (Quinn 2002, 2010; Seymour 2009, 2010), but, to date, few studies critically reflect on the socio-cultural dimensions of wearable technology (Toussaint and Smelik 2017). Rather than giving an overview of what is possible in wearable technology, I therefore prefer to draw out some principal characteristics that are relevant for the posthuman: the emphasis on craftsmanship, the importance of materiality and embodiment, and the interplay of identity.

Fashion designers of wearable technology share an intense love for craftsmanship and a hands-on engagement with the materiality of textiles and textures (Smelik 2017). The renewed focus on craftsmanship is closely connected to the technological world we live in. As Richard Sennett writes, 'technical understanding develops through the powers of imagination' (2008: 10). The

artisanal qualities that are imbibed in craftsmanship bring the technologies within the grip of our hands, making the high-tech world more human and accessible. Where for Sennett it seems to be impossible or utopian for craftsmen to work with the machines productively (ibid.: 118), fashion designers are keen to combine craftsmanship with technology; it is not a question of one excluding the other – they go hand in hand. This refers back to the original Greek meaning of the word *techné*: art, skill, craft. The focus on craftsmanship betrays a new interest in the materiality of matter in a high-tech world of virtual technologies (Barrett and Bolt 2012). While fashion designers focus first and foremost on the materiality of textiles, and of the technologies involved, they are also interested in the materiality of the human skin and body (Rocamora and Smelik 2016). Moreover, they extend their fascination for matter and materiality to the technologies that they use; they have developed what Sennett calls a 'material consciousness' (2008: 119).

The issue of materiality is paramount here, because matter is precarious in an age of digital and virtual technologies (Bennett and Joyce 2010; Coole and Frost 2010). The notion of materiality allows a focus on the actual matter of technology and how – material – bodies relate, often intimately, to the technical objects that enhance clothes and also the identities of the wearer. There is no doubt that technological innovations will have a deep impact on the meaning and communication of clothes and fashion. If technologically enhanced clothes can measure temperatures, chemical processes or vital functions, sense movement and position, or have expressive qualities, they will change the relation of the wearers to themselves as well as transform the communication to and with others. The fact that the garments are worn on

the body increases the urgency to take into account the body's materiality. One of the present challenges of wearable technology is to bring the designs from out of the labs or off the catwalks into the streets and shops. Only then will the technology become 'wearable'. 'Embodied design' (van Rompay and Hekkert 2001) may help to take this into account more seriously, with a stronger focus on the materiality of the design, the experiences of the physical body, and of the social and cultural context (Hummels and Lévy 2013). Wearable technology should thus develop ways of integrating the body's tactility and sensitivity into the embodied design (Smelik, Toussaint and van Dongen 2016).

Wearable technology extends the possibilities and functions of fashion as an embodied performance of identity. This is where the futuristic designs of 'science fashion', as I propose to call it, can help to shape and change posthuman identities differently. Moving in-between art, fashion, science and technology, fashion designers experiment with the ways in which the posthuman can shape their bodies or perform their identities. Clearly, they move out of the comfort zone or bedroom wardrobes into a fantasy world, where they take pleasure in confusing boundaries between human and cyborg, or human and animal,

but also shift ambiguous borders between skin and textile, organic and technological, material and digital. Posthuman science fashion shares a futuristic outlook, opening up a horizon beyond conventional fashion. In their shared fascination for stretching the boundaries of the human body, the designers tempt the wearer to put their identity at play. Fashion designers of wearable technology challenge the potential wearer to engage affectively with the fusion of art, fashion, science and technology, embarking on a transformative process of becoming in the sense of Deleuze and Guattari (1987). Science fashion is thus part and parcel of an open-ended process of becoming-posthuman. The strange shapes and forms of smart textiles and smart materials invite a reflection on new forms of both embodiment and human identity. By reshaping the human body beyond its finite contours, science fashion offers an encounter between art, fashion, science and technology, opening up to a future world where smart garments are merged with human skin, body and identity.

See also Ecologies of Architecture; Mattering; Medianatures; Transcorporeality.

Anneke Smelik

X

XENOFEMINISM

As David Roden attests, all forms of post-humanism are 'opposed to some form of human-centred worldview' (2015: 20–1). Xenofeminism – the theoretical approach associated with the international transfeminist collective Laboria Cuboniks – is no exception. An interest in the assemblages within which social agents are embedded is evident throughout 2015's 'Xenofeminism: A Politics for Alienation' – a text very much alive to the entanglement and co-constitution of silicon-based and carbon-based actors. It makes frequent reference to current technoscientific conditions, from globalized cultures of e-waste, to the hyper-stitutional phenomenon of the stock market, to suggestive but embryonic advances in open-source medicine. In so doing, the manifesto points to some of the ways in which technological alteration might generate radical alterity. 'Nature', meanwhile, emerges as a recurrent force in the project – not as a naturalizing or essentializing underpinning for gender and eco-politics, but as an always already technologized space of contestation that fundamentally shapes lived experiences. This is captured in the manifesto's ultimate call to action: 'If nature is unjust, change nature!' (Laboria Cuboniks 2015).

The subject of xenofeminism, then, is neither woman nor human, if these terms are understood as suggesting discrete entities snipped from the wider fabric of technomaterial existence. Instead, to the extent

that it advances 'a non-dualistic understanding of nature–culture interaction' (Braidotti 2013: 3), the project invites the reader to see it as a call to, and for, the posthuman. That being said, however, the xenofeminist manifesto demonstrates considerable debts to some of the key tenets of earlier humanist thinking – not least in its reliance upon ideas of reason, rationality and the universal. This reliance is telegraphed at numerous points throughout the text, from the insistence on reason as an engine of feminist emancipation, to the explicit claim that 'Xenofeminism is a rationalism' (Laboria Cuboniks 2015). Given the posthuman trajectory of Laboria Cuboniks's approach to gender politics, readers may well question the collective's use of such seemingly old-fashioned concepts. What is the point of running against those influential currents of feminist and posthumanist thinking that have been so effective in problematizing the legacies of humanism? The utilization of the idea of the universal has been one of the most controversial elements of the project, and is important in understanding much of what characterizes the xenofeminist perspective.

Previous attempts to articulate a universal have, as Rosi Braidotti astutely reminds us, been hampered by a wilful failure to be properly representative; the universal subject is 'implicitly assumed to be masculine, white, urbanized, speaking a standard language, heterosexually inscribed in a reproductive unit and a full citizen of a

recognized polity' (2013: 65). The wary response that the manifesto has received from some quarters reflects understandable critical anxieties, given the problematic history of this concept. Critics argue that to emphasize the generic is to go against established intersectional practices, and that to engage with the universal is to ignore the significance of difference (including racial difference). Xenofeminism appreciates that intersectional methods have significantly enhanced feminist theoretical approaches, demanding a sustained sensitivity to 'the possibility of compound discrimination' and privilege (Crenshaw 1989: 148). This approach has prompted feminists to engage in what Kimberlé Crenshaw refers to as 'asking the other question' (1991: 1245) – reflecting upon the implications of an issue in the light of numerous (and often overlooked) structures of oppression. Certainly, xenofeminism seeks to retain the myriad insights of this approach and to apply them to emerging technocultures, but it does not see the need to abandon the universal in order to do this.

Indeed, xenofeminism precisely aims for an *intersectional universal* – that is, a 'politics assembled from the needs of every human, cutting across race, ability, economic standing, and geographical position' (Laboria Cuboniks 2015). For xenofeminism, the universal represents the forging of intersections, slicing through particular localities (our bounded phenomenological condition) towards vectors of unanticipated and constructed solidarities (formed, in part, by 'asking the other question(s)'). This is in direct opposition to the bloated particularity that has conventionally been passed off as the universal and which has largely cornered the market on popular understandings of the generic since the Enlightenment. The xenofeminist challenge is not simply to reject universality, but to contest and to

re-engineer the universal. This is why Laboria Cuboniks seeks to position the universal as a kind of 'mutable architecture that, like open source software, remains available for perpetual modification and enhancement' (ibid.), and why the xenofeminist project should be viewed as an invitation rather than a blueprint. Far from transcending the concerns of the social, then, the universal demands to be understood as the perpetually unfinished business of the political. As Dominic Fox remarks in his review of the manifesto, xenofeminism points to 'the extreme delicacy of the universal, the care that must be taken at every point to preserve its genericity, its quality of being "neither this nor that and both somewhat this and somewhat that"' (2015).

The dominance of parochial universalism within humanist discourse, then, is not suggestive of the fundamental infelicity of attempts to use the universal as a political tool. But still, the question remains: why bother to contest for the universal at all? What does it have to offer this contemporary posthuman feminism? In order to answer this question, I'd like to focus on two points: the first concerns the utility of universalism for gender abolitionism, whilst the second relates to issues of scale, ambition and complexity. Xenofeminism purports to be gender abolitionist. That is to say, it seeks to unpick those naturalized and culturally weaponized markers of identity that harbour oppressions and injustices. Laboria Cuboniks's abolitionist project is invested in ensuring that traits assembled under the rubric of gender, race or class are stripped of their cultural significance and of their ability to act as vectors of discrimination. To be clear, the text does not advocate for the abolition of identity markers themselves (an enterprise which, in its potential quashing of diversity, would clearly be undesirable). Instead, it is a commitment to an ongoing political

struggle – a struggle that will not end until characteristics now unevenly loaded with social stigma are prevented from furnishing a basis for asymmetrical power relations.

Such a project of dismantling technopolitical, socio-embodied matrices of discrimination is buttressed by a set of ideas about the generic. Xenofeminism is quite explicit about this, recognizing that ‘the viability of emancipatory abolitionist projects – the abolition of class, gender, and race – hinges on a profound reworking of the universal’ (Laboria Cuboniks 2015). It is here that the importance of politically refusing the parochial universal becomes particularly apparent. It is no good aspiring to abolish a range of traits that act as leverage points for prejudicial power if this abolition leads only to the trap of ‘bloated, unmarked particulars – namely Eurocentric universalism’ (ibid.). It is for this reason that xenofeminism insists upon agitating for an intersectional universal, where intersectionality is understood not as the ‘morcellation of collectives into a static fuzz of cross-referenced identities, but [as] a political orientation that slices through every particular, refusing the crass pigeonholing of bodies’ (ibid.). A more universal universal, then, offers substantial political affordances for emancipatory gender projects, and is in fact a prerequisite for imagining a post-abolition moment to come.

The final point that I want to make about the universal as an activist tool speaks to issues of scale and resistance. In the manifesto, Laboria Cuboniks write that ‘whilst capitalism is understood as a complex and ever-expanding totality, many would-be emancipatory anti-capitalist projects remain profoundly fearful of transitioning to the universal, resisting big-picture speculative politics by condemning them as necessarily oppressive’ (ibid.). Such a position clearly resonates with the work

of the Marxist sociologist Vivek Chibber, who argues that issues of scale and the ‘universalizing drive of capital’ generate a particularly problematic schism at the heart of contemporary postcolonial theory (2013: 285). Although it ‘presents itself as the analytical framework of capitalist domination’, he argues, ‘it rejects the idea of a universal theory. Hence, it is in the awkward position of the acknowledgment that capitalism has been globalized, but denying that we can conceive a general theory of its functioning or its properties’ (2015: n.p.).

For Chibber and Laboria Cuboniks, rejection of the project of constructing a universal has contributed to a perceived diminution of political agency and ambition. Many contemporary emancipatory projects do not appear ‘proportionate to the monstrous complexity of ... a reality crosshatched with fibre-optic cables, radio and microwaves, oil and gas pipelines, aerial and shipping routes, and the unrelenting, simultaneous execution of millions of communication protocols with every passing millisecond’ (Laboria Cuboniks 2015). In short, we do not have ready to hand the requisite conceptual resources for confronting capitalism, ecological crisis or complex, embedded structures of oppression. The wilful or unwitting neglect of actions beyond the scale of the local and the micropolitical leads to the treatment of universals as absolutes, and generates ‘a debilitating disjuncture between the thing we seek to depose and the strategies we advance to depose it’ (ibid.). If we are going to take the risk of advancing large-scale, counter-hegemonic gender-political projects, xenofeminism insists, it is imperative that we intercede within debates about the operation and constitution of the universal.

The universal, then, is a mutable object of political contestation, positioned at the

heart of xenofeminism for both its scaffolding of gender abolitionist ambitions and its facilitation of counter-hegemonic leftist projects capable of confronting pervasive (if unevenly distributed and differentially manifested) networks of capital. Xenofeminism insists upon the universal not as an object but as a process – a technology always in need of assembly. It is, to quote the manifesto, ‘not a universal that can be imposed from above, but built from the bottom up – or, better, laterally, opening new lines of transit across an uneven landscape’ (ibid.). I agree with Braidotti when she argues that the concept of the posthuman requires a ‘new agenda

... which is no longer that of European or Eurocentric universal, rational subjectivity, but rather a radical transformation of it’ (2013: 52). Note that this agenda is framed as a transformation, however, rather than an outright rejection. If posthumanism is to be a successful political project, the xenofeminist claim is that we must intersectionalize the once-parochial universal, and remake it for ourselves and for our alien kin.

See also Feminicity; Rationalist Inhumanism; Trans*; Critical Posthuman Theory.

Helen Hester

Y

YOUTH

How do young people come of age as posthuman subjects? How do their already ideological and disciplined techno-bodies normalize and contest dominant ideas of what it means to be human? As new hardware and software alter their environments and everyday practices, young people navigate the opportunities that these shifts afford in their quest to stake out their livelihoods and identities. In their rites of passage toward adulthood, young people can draw on new metaphors and performances stemming from biotechnological advancements, including wearable technologies, smartphones, quantified-self applications, genetic engineering and neuropharmacology.

Reflections such as Bostrom's 'Why I want to be a posthuman when I grow up' (2013b) illustrate the all-too-common teleological narrative of progress and human enhancement. Hope is projected onto future generations' accumulation of posthuman capacities. In this scenario, as the human-technology, nature-culture symbiosis steadily advances to completion, posthuman potentialities will actualize and naturally enhance health, cognition and emotional well-being and bring about universal equality and peace. However, although most young people in today's world are cyborgs in some form, the deterministic and universalizing notion of posthuman youth subjectivity must be problematized.

Feminist and postcolonial technoscience offer a corrective here in an identification of posthuman youth as a socio-technological assemblage, differently constituted in an intersectional grid of power relations. In this entry we address posthuman youth by unpacking the geopolitical micro-politics of four key stages in the technological lifecycle: manufacturing, marketing, use and disposal. In this way, we demonstrate how the posthuman experience of youthful techno-bodies differs widely. Depending on specific configurations of vectors such as gender, 'race', class and geographical location, technologies operate as practices of privilege or marginality.

Manufacturing

First, considering the beginning of the supply chain of gadgets, it is urgent to acknowledge the precarious lives of a substantial segment of posthuman youth and children. For example, in particular locations in the Global South, such as the conflict zones in the Democratic Republic of Congo, young people are forced to manually mine minerals like cassiterite, wolframite and coltan. These blood minerals are then used in the construction of consumer electronics. Subsequently, in Foxconn and Pegatron factories in China and India, young rural migrants make up the main labour pool. They work excessively long shifts on the assembly line performing tedious, repetitious tasks assembling smartphones and other consumer electronics.

These are then glossily packaged as the tools of learning, work, play and socialization for wealthy, predominantly white, Western youth.

As a counterpart to the tough physical labour of mineral extraction and manufacture, virtual sweatshops are another emergent phenomenon in the Global South. In these sweatshops, labourers perform basic routine work to build up credits and increase the virtual value of game characters and avatars. The Massively Multiplayer Online Game (MMOG) *World of Warcraft* is most well known for the emergence of 'gold-farmers' who gain in-game currency sold globally for real money. Benefiting from global economic inequality, affluent users in the West who wish to save time can buy these ready-made characters to get a head-start in their gaming and move up to higher levels. Nobody aspires to these very real and embodied instances of contemporary posthumanity, and these processes often remain invisible in dominant academic and corporate narratives of shiny and sleek human augmentation.

Marketing

Digital gadgets, which are connected to the internet, increasingly lightweight and heavily branded by major new media and technology corporations, promise limitless educational opportunities for young people. Such promises span the developing world, for instance in the One Laptop Per Child program, where techno-utopianist Nicholas Negroponte's non-profit organization sought to provide a low-cost laptop to every child without reliable access to education. The idealistic rhetoric about the cultivation of the digital student also characterizes the increasingly gamified Western classroom, and can be seen in the widespread enthusiasm for the construction game *Minecraft*, within initiatives such as

MinecraftEdu where game developers partner with teachers to support game-based learning. What marketing materials representing these diverse contexts share is the heady discourse of the so-called digital native, the privileged child born(e) into an environment saturated by networked technologies alongside disadvantaged youth requiring charitable investment in their futures through connected devices. These young subjects are seen as naturally skilled and hungrily expectant of instantaneous information, constant social networking and myriad opportunities for identity play and exploration. At the same time, digital technologies are framed as leading inevitably to better futures, without any mention made of the context in which they will be introduced, in regions without reliable electricity, within overcrowded classrooms and underfunded schools, in tenuous zones of conflict. This is because marketing discourses focus not on the messy realities of the present, but instead share an orientation towards the future, with young people framed as technologically enhanced consumers and digitally skilled workers in-becoming. Indeed, these devices are positioned as the missing ingredient for young people destined to ride the digital wave towards new frontiers of connectivity, mobility and prosperity.

Use

In their everyday use of digital technologies, young people are on the frontlines of changing definitions of self, privacy, political participation, authorship and labour. However, as a way of contextualizing and grounding everyday use it is urgent to consider how categories of difference variously configure youthful users. Young, affluent, white people living in urban areas in the Global North are the main target audience of many social media applications and

hardware innovations. Default identity categories and dominant user norms on platforms such as Facebook, Instagram and Snapchat revolve around whiteness, Westernness, heteronormativity and conventionally gendered beauty standards. The time and energy of this target audience is most readily commodified as their presence and selfies, cat videos and tweets provide the free virtual labour corporations need to attract other mainstream users and to sell to advertisers. This particularly configured 'normative, virtual body' (Nakamura 2011: 388) is also reflected in the majority of dominant computer game avatars. At least two additional groups of users, who do not fit these norms, need to be distinguished. Their impact on digital culture differs, and accordingly they can be considered invisible and hypervisible users. Invisible users are those non-normative users who do not fit the dominant imaginary. For example, although for non-elite users like youth in internet cafes in urban Ghana the internet offers a site to imagine a cosmopolitan self, the internet simultaneously remains a 'foreign commodity' for them (Burrell 2012: 51). Many youth there struggle to decode the implicit 'Euro-American codes of social interaction' and as a result they are met with silence or aggression in their online encounters (ibid.: 5). Hypervisible users, on the other side of the spectrum, are noticed and questioned exactly because they do not fit the dominant imaginary of the user. A case in point is the Autumn 2015 European media-frenzy scrutinizing why Syrian refugees who flee their war-torn country carry a smartphone. Those using communication devices are either depicted as bogus asylum seekers or they are considered unfit to handle advanced technologies. Such frames replicate historical narratives of othering, depicting racialized bodies as somehow 'culturally handicapped' and technologically backward

(Gómez-Peña 2000: 80–1). A recent *Independent* newspaper headline aptly captured the skewed debate: 'Surprised that Syrian refugees have smartphones? Sorry to break this to you, but you're an idiot. You don't need to be a white westerner to own a relatively cheap piece of technology' (Malley 2015). In sum, rather than a normative virtual body, the category of the posthuman user is internally diverse and combines positions of material and symbolic oppression and privilege.

Disposal

Finally, considering what happens after the use-value of digital technologies expires – once technologies become obsolete by choice or design – invokes the typically invisible context of technology disposal and e-waste. The posthuman potentialities of the Global North's immaterial fetish objects become recast as material ruins for the Global South. For instance, Ghana's e-waste dumps provide an additional layer of material context over youth subjectivities in the information economy (Burrell 2012). Situated just outside Accra, Agbogbloshie is a former wetland turned e-waste dump that often illegally takes in discarded electronics both domestically and from Europe and North America. The dump has proven to emit significant pollutants into surrounding land, air and water, in particular from the practice of burning electronics. These pollutants affect the local flora and fauna, including humans and especially children, whose reproductive and neural development is inhibited by the toxic chemicals emitted from burning e-waste. Moreover, such e-waste dumps not only in Ghana but also in Nigeria, Pakistan, India and China tend to be populated by the most impoverished young people in those countries, often young girls, trying to find any materials from

disposed electronics that can be salvaged and resold. This secondary economy around e-waste illustrates the fallacy of promoting 'recycling' as a solution to the proliferation of obsolete technological artefacts. The posthuman youth working in scrap yards and e-waste dumps have their bodies penetrated by digital technologies in ways that severely undermine the narratives supporting the development paradigm of recycling and reusing technologies by donating them to children in the Global South. Such donations tend to mean more products in e-waste dumps, more children affected by the toxicity of e-waste pollutants, and ever fewer opportunities for young people in the progressive fantasy of posthumanism.

Conclusions

Speaking predominantly of white, Western youth, Livingstone (2008) has noted that approaches to youth as digitally enhanced

subjects must remain balanced with a view to the 'risky opportunities' afforded by new media. The concept of risky opportunities comes into even more stark relief when framing the promises for posthuman youth in terms of the global micro-politics of intersectional youth subjectivities engaged in the process of becoming cyborg. In different ways according to local economic and social contexts, young bodies are being configured by digital technologies through the channels of privilege and oppression. Youthful agency in this broader context must be reconsidered within local socio-technical assemblages of technologies, bodies and practices that shape the meaning of posthumanity for differential subjectivities.

See also Neocolonial; Post Internet Hypersocial; Wearable Technology; Obsolete Technology.

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Z

ZOMBIE

The zombie is a species within a broader category of the *undead*, or *living dead*, which also includes ghosts, vampires and other creatures dwelling at the border between what we call life and what we call death or constantly crossing this border back and forth. Being a unique social phenomenon and at the same time a universalized figure of an intense collective imagination, it occupies a privileged position in contemporary mass cultures and is highly emblematic for capitalist modernity. The zombie's social ontology comprises at least four stages, which we will call here *the four seasons of zombies*.

As is emphasized by Sarah Juliet Lauro and Karen Embry in their 'Zombie Manifesto,' 'The zombie is historically tied to, and has been read alongside, the expansion of global capitalism. The zombie is a colonial import: it infiltrated the American cultural imagination in the early twentieth century, at the time of the U.S. occupation of Haiti. We cannot take up the figure of the zombie without acknowledging its appropriation from Haitian folklore' (2008: 96). Haitian zombies are the most important part of the whole story not only because they represent a mythological origin of a universal cultural metaphor analysed here, but also because they endow it with an irreducible historical materiality. The first season thus begins with the *real life zombies*, whose history is traced back to the French colonialism of the seventeenth century and

the Atlantic slave trade of the eighteenth century, when numerous ships full of people kidnapped from Black Africa arrived on Haiti and other Caribbean islands. The complex and situated structures and systems of beliefs that these enslaved peoples from across the continent of Africa brought with them, intermingled with elements of Catholicism and indigenous cults, has been transformed into a syncretic religion of the Haitian voodoo.¹

Along with voodoo priests, there were *bokors* – malevolent voodoo sorcerers, who practised black magic. One of the rituals they performed (and, as Haitians believe, still perform) was *zombification*, or transforming of someone into a living dead. According to the pharmacological description of this practice, the bokor gives to his victim, an ordinary person, some strong neurotoxic drug, made likely of pufferfish and other elements (see Davis 1985: 117). Poisoned by this substance, a person falls into a cataleptic or lethargic state and is buried alive. Upon her 'awakening', the person, who was not dead in a proper sense but who lost some basic 'human' capacities, such as reasoning or memory, is now only able to obey orders, and becomes an undead slave of a sorcerer; someone who could, for example, continue working at sugar cane plantations at night. The other hypothesis points not to the chemical, but to the psychic and social origin of the walking dead, the zombie.

Thus, before invading popular culture as dangerous, destructive undead corpses

which wander around seeking human flesh, zombies were slaves. Even now, Haitian people are not afraid of a zombie – they are afraid of becoming one. In colonial times, the people of Saint Domingo considered death as the only escape from slavery, to which they were condemned by life. Death meant a return to the mother Africa, a passage to a second life of the soul. That's why zombification is the worst of all punishments: it turns one into a slave for ever, without a possibility of dying properly, that is, finally being set free. Slavery as a universal condition of being of Africans in Haiti was thus extended to their afterlife (see Cohen 1972: 60). In today's Haiti, to raise the dead is officially a criminal offence, and zombies, who emerge as a result of the synthesis of the black magic and the black slave market, are considered as victims. How can we not compare it with the non-random fact that in ancient Egypt 'killed-living' was the name for the captives who, instead of being destroyed physically, were killed symbolically by slavery?

From here, the second season of zombies arises, in which they appear not as real-life entities, but as a *social metaphor*, pointing at individuals and groups of people who are deprived of freedom or free will. Interpolated by the symbolism of modernity, the zombie as an automaton which only obeys orders remains for the proletariat, transforming her living labour into dead capital in the process of alienation. The thing she produces and elaborates does not belong to her; the wages she gets immediately go to the reproduction of her function in the production processes where she is just a means. Structurally, for Marx, there is no big difference between a proletariat and a slave – both are unfree, and their very human essence is basically reduced to the condition of the living dead (Marx 1844). In the course of the development of contemporary culture, the meaning of this social metaphor

shifts from labour and production to sheer consumption. From the proletariat, the zombie becomes consumer. It embodies the very idea of consumption as such, a non-stop devouring, a thirst which can never be satisfied, a desire with no subject. But the subject matter is still the same: the zombie as consumer remains unfree, submitted to some external forces. Thus, in Russia, people call their TV sets 'zombie-boxes' – something like 'idiot box' but with an additional meaning of television as a means of mass zombification. In fact, the contradiction between the zombie-producer (slave or proletariat) and the zombie-consumer is dialectical: let us appreciate the fact that every consumer by every act of consumption contributes to the processes of the production of value, upon which the capitalist system is based. The civil society ruled by money itself resembles, as Hegel writes in his Jena texts of 1805–6, 'a life of the dead body that moves itself within itself' (Hegel 1979: 249).

The zombie as a metaphor for unfreedom gives birth to the idea that everyone might be or can potentially become a zombie. This generates a kind of fear which contributes to the essential plot of the third season of zombies, who now change their nature and become privileged *cinematic* creatures. In contrast to real-life Haitian zombies, contemporary Hollywood zombies are species that seems to preclude any figure of control. Staying at the border between comedy and horror, they represent pure destruction. Cinematic zombies represent an absolute evil that operates on Earth without any purpose. It is not poisoning, not a magic ritual, which turns one into a zombie, but a contagion, a virus taken from another zombie or elsewhere. Removed from their enslaved and proletarian origins, which linked them to labour, they are now figures of a pure negativity and the main characters of the apocalypse

and the reality that comes after. From their Haitian forefathers, they caricature an appearance that combines staring, unseeing eyes, skin stuck to their bones, and clumsy movements, with physical strength, inertness and insensitivity – making them invulnerable. No doubt, cinematic zombies reflect an old millennial Christian idea of immortality of the soul. In a way, they are immortal souls. Not only their name, zombie, must derive from the Kongo word for the soul, *nzambi*, but their very existence points to the impossibility of dying: zombies are undead souls wandering around within dead bodies which they animate. Think about their brain: in a great many movies, one can only kill the zombie by destroying its brain (Lauro and Embry 2008: 95). A zombie's brain might embody what Christians call the soul. It is an afterlife of the human, whose properly human characteristics have now vanished. Moreover, if we continue to consider it within the framework of the Christian narrative, the zombie is literally the resurrected. She lost everything: her name, her memories, her identity, her entire life, but something else rises up instead, when the dead are awakened.

By their fourth season, zombies propose an *emancipatory* potential. They are the survivors – not only of the apocalypse, but they are the survivors over themselves. They survived; that is, they left behind, together with their human properties, all of what made them dependent on something. There are no more sorcerers: post-apocalyptic zombies are without a master. They survived their own slavery, be it the slavery of production or the slavery of consumption. They went beyond humanity with its master-and-slave dialectics. Thus,

in George A. Romero's films zombies acquire class-consciousness and, as the lower strata of the oppressed, complete what one might call ahistorical mission of the proletariat – namely, to have done with capitalism. They do what human beings fail to do. They learn how to organize a new type of collective, which does not consist of human individuals, but is only based on the despair of those who have literally nothing to lose: even their bodies have already lost their integrity. Instead of any kind of hope, they are driven by despair, and it is in despair that they do the impossible. They have passed through the stage of an absolute negativity, through the end of the world, through death and decomposition and through hell in order to pave the way for the posthuman revolutionary subjectivity; if someone does not like what it looks like, the zombie does not care.

However, before this, the ambivalence between the zombie as a geohistorically and racially produced figure, and as one formed in the alienation of production under modernity must also be attended to as one in which the history of colonialism is scrubbed from the history of capitalism by this trans-historical and trans-locational shift of the zombie from a culturally contingent practice into one of a culturally produced imagination.

See also Animacies; Animism; Non-human Agency; Static Glow.

Note

1. Research into this phenomenon can be found, for example in Davis 1985, 1988; Cohen 1972.

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FILMS AND VIDEO ARTWORK

2001: A Space Odyssey (1968), dir. S. Kubrick.

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- Asmat – Nomi* (2014), dir. D. Yimer.
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- Blade Runner* (1982), dir. R. Scott, USA, Hong Kong, UK: The Ladd Company, Warner Bros. et.al.
- Cabin in the Woods* (2012), dir. D. Goddard, USA: Lionsgate, Netflix.
- Dawn of the Dead* (1978), dir. G. A. Romero, USA: United Film Distribution Co., DVD.
- Elysium* (2013), dir. N. Blomkamp, USA: Tristar Pictures et.al.
- Entropy Wrangler* (2013), dir. I. Cheng.
- Ex Machina* (2015), dir. A. Garland.
- Frogs* (1972), dir. G. McCowan, USA: American International Pictures, DVD.
- Jaws* (1975), dir. S. Spielberg, USA: Universal Pictures, DVD.
- Limulus*, dir. K. Kramer, 2013.
- Mad Max* series: *Mad Max* (1979), dir. G. Miller, Australia: Kennedy Miller Productions; *Mad Max 2: The Road Warrior* (1981), dir. G. Miller, Australia: Kennedy Miller Productions; *Mad Max Beyond Thunderdome* (1985), dir. G. Miller and G. Ogilvie, Australia: Kennedy Miller Productions; *Mad Max: Fury Road* (2015), dir. G. Miller, Australia, USA: Warner Bros. Pictures et.al.
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- Sharktopus* (2010), dir. D. O'Brien, USA: Syfy, DVD.
- The Asylum*, DVD.
- The Birds* (1963), dir. A. Hitchcock, USA: Universal Pictures, DVD.
- The Blob* (1958), dir. I. S. Yeaworth, Jr., USA: Paramount Pictures, Netflix.
- The Day After Tomorrow* (2004), dir. R. Emmerich, USA: Twentieth Century Fox Film Co. et.al.
- The Day the Earth Stood Still* (2008), dir. S. Derrickson, USA, Canada: Twentieth Century Fox Film Co. et.al.
- The Exorcist* (1973), dir. W. Friedkin, USA: Warner Bros, Netflix.
- The Fly* (1986), dir. D. Cronenberg, USA: Twentieth Century Fox, Netflix.
- The Forgotten Space* (2010), dir. A. Sekula and N. Burch, Doc.Eye Film, <http://www.theforgottenspace.net> [accessed 4 April 2017].
- The Last Angel of History* (1996), dir. J. Akomfrah.
- The Matrix* trilogy, dir. L. and L. Wachowski, USA: Warner Bros. et.al. : *The Matrix* (1999), *The Matrix Reloaded* (2003), *The Matrix Revolutions* (2003)
- Them!* (1954), dir. G. Douglas, USA: Warner Bros., DVD.
- Wall-E* (2008), dir. A. Stanton, USA: Pixar Animation Studios, Walt Disney Pictures.
- Who Does the Earth Think It Is?* dir. The Otolith Group, group exhibition, The Anthropocene Project. Haus der Kulturen der Welt, Berlin, 2014.
- Willard* (2003), dir. G. Morgan, USA: New Line Cinema, DVD.
- World War Z* (2013), dir. M. Forster, USA: Paramount Pictures et.al.

