

Visualizing Antarctica as a Place in Time

From the Geological Sublime to “Real Time”

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*This article presents a **chronogeographic account of the Antarctic spatialities that are inflected through the image of the RADARSAT map**. Focusing on time as a spatializing operation within the visual geography of globalizing and globally available cartographies, the author questions the **multiple geographies that must be considered in a geopolitical account of such a mapping**. The subject of this topology is the “event” of the NASA RADARSAT map of Antarctica exhibiting the effects of global warming as a scientific and media event on the Web. Specifically the RADARSAT map documents destruction and also renders it innocuous through technologies of distance. This realization of geopolitical imperatives through **scientific visualization** reveals particular tensions and operations within Antarctic and global visual cultures. As a narrative cartography, it exhibits how geographic information systems operate in a plurality of visual regimes. The author concludes that the **politics of visualizing Antarctica** is embedded in the histories of its media production and in this reveals how time has a chronogeographic operation.*

Keywords: Antarctica; visual geography; scientific visualization; mapping

This *chronogeography* examines the American-led RADARSAT (Figure 1) mapping of Antarctica. From the late 1980s onward, Antarctica was referred to as a key site in the negotiation of global environmental politics. This shifted the metanarrative of Antarctic spatialities from a robust and challenging space of action during the heroic era (1890s to 1910s) and the International Geophysical Year (IGY) (1957 to 1958) to a

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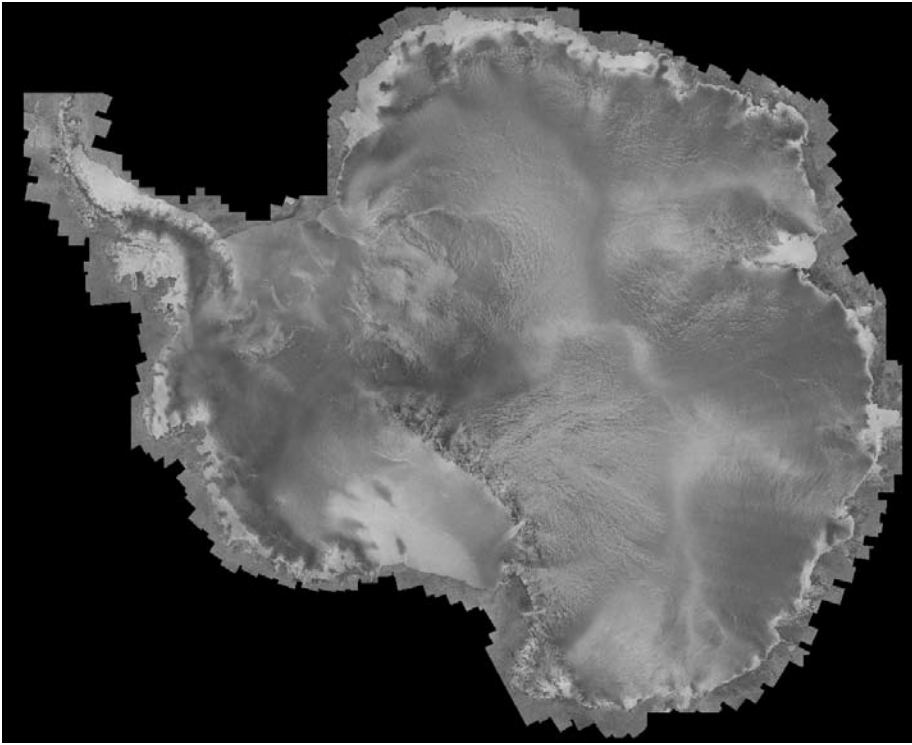


Figure 1. RADARSAT Composite Map Mosaic

Source: NASA/Goddard Space Flight Center: Scientific Visualization Studio/Canadian Space Agency, RADARSAT International Inc.

fragile, threatened space on the verge of catastrophe. In light of America's nonratification of the Kyoto climate-change agreements of 1997, this topology serves to highlight how the advancement of scientific knowledge and industrial practices through visualization form a mutually constitutive but often contradictory relationship with responsive environmental practice. By tracing the movement of the map from the secret cartography of *cold war politics* to the *hot war of environmentalism* (under the Clinton-Gore administration), the topology highlights how politics are inflected through the image. The visibility of Antarctic political spatialities is discussed with regard to how the politics of visualizing Antarctica has affected the political forces of images to historically shape Antarctic politics. Through an examination of American visual culture and American-Antarctic relations, I discuss how narratives of global warming that are sited in Antarctica can have the effect of giving visibility to the Antarctic and simultaneously displacing it, resituating it as the site of a media event.

Globalizing Visions

O, how glorious would it be to set my heel upon the Pole and turn myself 360° in a second!



Figure 2. The “Albatross’s” View From a U.S. Hercules Flying to Ross Island, Antarctica, 1999
 Source: Kathryn Yusoff.

—Joseph Banks (70South, 2005)

When the southern continent was no more than a utopian dream, the English botanist Joseph Banks wanted to curve the world around his vision and mold the geography of space to his gaze. His fantasy was the privileged optical viewpoint of the pole, where he could see and be seen, making the 360° of space obey the centrality of his subject position. Banks voyaged with Captain Cook to confirm an absence of place, thereby closing the world map, putting pay to the speculative geographies of terra incognita. On January 30, 1774, at 71°S, the expedition reached its farthest point south and confirmed that no temporal zone was to be found. This same drive for a globalizing vision that Banks had pursued led directly to the satellite technologies that in 1997 produced the first “complete” satellite map of Antarctica.¹ By the time of the second mapping mission in 2000, the global vision that the technology enabled was an image of global destruction. The view came in the form of the collapse of the Larsen B ice shelf, a document of global climate change.

Antarctic visions have traversed many different viewpoints as a result of technological innovation and political aspirations, from the “albatross’s view” (Figure 2) offered by the airplane to the globalizing vision of satellites. With the Amundsen-Scott South Pole Station in place² and a sign hung over the door that reads “United States welcomes you to the South Pole,” bodily and aerial possession of the landscape has now been obtained. American activities in the Antarctic increasingly occupied the interior³ and spiraled out from the mythological center of the pole across the entire continent. Dispensing with the horizon,⁴ America has sought a higher and higher viewpoint, to find a new virtual frontier of Antarctica *out of place*. Ironically, even though American mapping reached far into space, Antarctica remained unmapped by remote sensing until 1997 because of climatic conditions. While geographic information systems



Figure 3. Soviet Souvenir Postcard of Sputnik “Launching” Off Antarctica (with Russian flag at the South Pole), International Geophysical Year (IGY), 1958

Source: Kathryn Yusoff.

(GISs) translate specific places into a topology of digital values, ironically, the obscuring effect of weather highlights the tensions between the abstraction of GISs and the transformation of dynamic environments into information.

Antarctica exists as a remainder to modernity’s incomplete project of global mapping and can be framed within its utopic dreams and failed horizons in the contemporary era. The ambitions of global mapping reveal the increasing cost of progress, which registers in Antarctica in the stores of scientific information on pollution in ice cores to the location of the ozone “hole at the pole.” As the technological eye of RADARSAT probed into Antarctic space, it was to reveal the effects of global warming and thus visibly located Antarctica as the dramatic site of the failed narratives of unlimited industrial production. As Antarctica was environmentally marked by modernity’s progress, as the last blank space on the map, it simultaneously provided an imaginary respite from the problems of disorder.⁵ David Trotter (2001) makes a convincing argument for modernism’s paranoia as the recognition of the problem of disorder, which he sees as *trauma theories* written against a world of in-

creasing chaos. Viewed as a trauma theory, Antarctica’s ordering seemed to offer a last space of uncomplicated representation, as spaces of representation were fracturing in Europe at the beginning of the new century.⁶ As a phantasm of the furthest terrestrial territory, Antarctica offered a global visualization that could be viewed as symptomatic of anxieties over the increasing closure of the globe. In the RADARSAT map, a similar anxiety can be witnessed, over a space unenclosed by the American imperial eye, a space that until 1997 thwarted the project of planetary enclosure. Yet this global mapping, rather than offering a homogeneous global artifact, has revealed the trauma of an ecological disaster narrative.

The RADARSAT eye establishes a new frontier on Antarctica by occupying the reaches of another visual space to generate a vision of place. It directs a dual colonizing gaze toward both Antarctica and outer space. Rather than move the tactics of empire from Antarctica to outer space, the achievement has been to occupy both simultaneously, neatly joining the American concerns for Antarctica as a model for outer space. This concern to make Antarctica a model for the occupation of outer space was by no means simply an American desire, as one 1958 Soviet IGY postcard of the Sputnik satellite “launching” off Antarctica demonstrates (Figure 3). Rather, during the cold war period, Antarctica and outer space were joined as territorial remainders in a global vision that was increasingly predicated on a satellite mentality. More pragmatically, Antarctica was the “awkward” testing ground for new technologies to be used in outer

space. Paul Virilio (1989, p. 2) comments that this “cybernetics of the heavens” directly descends from the history of the military line of aim: a line of vision that strategically and symbolically delineates a territory. Yet there is no simple scopic regime that denotes this territory. The technical eye of RADARSAT beamed images of satellite surveillance to the laboratory of the Byrd Polar Research Center at Ohio State University,⁷ yet the satellite is Canadian, so it cannot be understood solely as a nationalized vision of place.⁸ However, viewed as a product of NASA that circulates in the global media, it is appropriate to consider the map within the context of American visual culture.

The complexities of the visual regimes that produced the Antarctic map are located in the modalities of global scientific visualization, the mode of representation employed on NASA’s Web site, and the circulation of these images in American visual culture. The politics of visualizing place that arise are intractable from the histories of the media in which they are embedded. Within the differing media that characterize the conditions of viewing this map are different mythologies of time, which Kittler (1999) argued “are no longer history” (p. 115). As new technologies significantly depart from traditional media in their narratives of time and geographies of circulation, they also build on existing narratives of landscape to visualize virtual places.⁹ The chronogeography of satellite technology and the circulation of the Antarctic map in global media both invoke and erase historical geographic perspectives. To situate the RADARSAT map within the tensions of this exchange, I briefly discuss Antarctica’s ordering in American visual culture.

Ordering Antarctica in the American Imagination: From Cold War to Global Warming

In the lexicon of the American cultural imagination, the Antarctic has a significant, albeit marginal, historical place, unlike the Arctic (a clearly “productive” landscape of capital). In 1837, Jeremiah N. Reynolds¹⁰ fantasized that Americans should

circle the globe within the Antarctic circle, and attain the Pole itself; yea, to cast anchor on that point where all the meridians terminate, where our eagle and star spangled banner may be unfurled and planted, and left to wave on the axis of the earth itself! (Lenz, 1995, pp. 120-121)

At work here in the desire to “circle the globe” is a globalizing imaginary of American Antarctic policy that will find its expression, finally but not irrefutably, in the RADARSAT map.

Throughout the 19th century, Antarctica remained at the margin of U.S. interest as an imperial and literary spatiality until the shifting politics of concern, from the cold war to global warming, saw a change in America’s strategic interests in Antarctica. The military imperatives of spy satellites that had mapped and hidden in Antarctic space in the mid-1970s and early 1980s neatly translated into *new* images for the environmental frontier that was delineated in the Antarctic after the Protocol on Environmental Protection to the Antarctic Treaty of 1991 and in domestic American politics. This shift represents not just a change in political imperatives but also a change in how the visual politics of Antarctica were managed, from the secrecy of the cold war period to the confident deployment of the technologies of visibility in the mapping of environments. The Clinton administration brought Antarctica in from the cold periphery. On

September 15, 1999, the president delivered a speech titled "Protecting Antarctica and the Global Environment" at the International Antarctic Centre in New Zealand to coincide with the declassification of modified satellite images of the Antarctic Dry Valleys (from the cold war era) to "help scientists measure environmental fluctuations."

The release of the satellite images connects very clearly the shifting territory of the technologies of war to the territories of environmentalism. In this sense, the hidden gaze of surveillance becomes the scrutinizing gaze of new geographies of fear. As a British Antarctic Survey (2002) press release later declared (after the release of the Larsen B ice shelf collapse), "satellite spies on doomed Antarctic ice shelf." The decision to make these images available coincided with the increased desire for America to be seen as an environmental steward in Antarctica, reflecting a husbandry approach to "wilderness" rather than an overtly colonial model of settlement. Unlike the claimant states in the Antarctic (such as Argentina, New Zealand, and Britain), American Antarctic policy has been characterized by an ambiguous approach toward ownership claims, as Christopher Joyner and Ethel Theis (1997) identify:

The ingenious solution of "freezing" claims to territory has served U.S. Antarctic interests well. By removing sovereignty as an issue, the United States was relieved of its own sovereignty dilemma. This also permitted the United States unrestricted access to the entire continent. (p. 37)

So whereas claimant states are constantly in the process of defending the cultural and physical possession of their self-designated sectors, America has freely wandered across the Antarctic, occupying its center and its peripheries as well. America's occupation of the South Pole symbolically, if not strategically, provides a continuous territorial claim. As Joyner and Theis (1997) note, "a claim could therefore diminish American freedom to move and establish bases anywhere on the continent" (p. 40). As is the convention with areas designated under the common-heritage-of-man principle, in reality, dominance is secured by the largest financial and logistical investment: "From the late 1920's to the time of the signing of the AT, the US flew more planes, mapped and photographed more territory, and sent more expeditions to Antarctica than any other state" (p. 225).

Through dominance in the air and on the ground, and the largest investment in cultural activities, such as the Artists and Writers Program, America seemed to achieve the much desired global reach. The accumulation of information, alongside a physical and virtual presence in the landscape, secured ascendancy. Through physical and cultural mapping, and declining to formally "claim" a territory, America secured an implicit dominance in Antarctic politics.

What characterized this period of the Clinton and Gore administration (1993 to 2001) was not only the clear links made between global warming (Antarctica New Zealand, 1999)¹¹ and the changing Antarctic environment, but their personal interests in the Antarctic and a commitment to financially investing in that future.¹² In his speech at the Antarctic Centre, Clinton expressed his disappointment that "he was not able to fulfill a lifelong desire to go to Antarctica." And Al Gore (1992), in his book *Earth in the Balance*, locates his personal experience firmly in an American cultural conception of the world's geography:

At the bottom of the earth . . . I stood in the unbelievable coldness and talked with a scientist . . . about the tunnel he was digging through time. . . . At the bottom of the world, two

continents away from Washington DC, even a small reduction in one country's emissions had changed the amount of pollution found in the remotest and least accessible place on earth. (p. 21)

The world Gore imagines is reconfigured around a U.S. military gaze, its plastic geography, molded around a conception of the *reach* of U.S. power, from the center (Washington, D.C.) to the bottom of the world and back. Although this belies a model of cold war notions of near and far, it also firmly connects a line between U.S. environmental policy (the Clean Air Act, in this case) and environmental effect, a line that was to be erased by the next administration of George W. Bush.

The Aesthetics of Destruction

In the context of the nonratification of the Kyoto climate-change agreements of 1997,¹³ the RADARSAT map, as the product of American mapping technologies, presents a troubling visual representation of disintegrating Antarctic environments. The image of fracturing ice is a popular visual signifier for global warming that makes explicit the connection between CO₂ production and the destruction of polar environments.¹⁴ As one image of melting ice imaginatively chases another, the political stance of America¹⁵ over climate control ironically produces Antarctica as isolated and remote from human impact, in precisely the same way as the map's aesthetics collude to produce a decontextualized environment of a "floating" continent.

Conceptualizing the RADARSAT map within the rhetoric of an "aesthetics of destruction" ties the map firmly to the visual technologies of war that proceed this visual simulation and the contemporary politics of global warming.¹⁶ American visual culture has relentlessly engaged in the spectacle of destruction in all areas of cultural and military production, characterizing the language of both the cold war and the contemporary period. As Jean Baudrillard and Virilio have argued, America's self-identity is intimately bound up in the rhetoric of the cinematic. Contextualizing the map within a cinematic aesthetics of destruction elucidates on the topologies of American landscape narratives that the map builds on (and competes with) as an image circulating in mass media. Viewed on NASA's Web site (Figures 4 to 8), the fragmentation of the Larsen B ice shelf¹⁷ over a 7-year period unfolds within the dynamics of movie time (270 frames in 15 seconds). One can experience the compression of the reality of time and space within this simulation, in which the predominant narration becomes about witnessing the spectacle of change. The accelerated narratives about Antarctica and its imagined place in time invoke American cinema's insistence on a "landscape of events" (Virilio, 2000). Similar to a plethora of American disaster movies, the emphasis is on the dénouement: the moment when disaster strikes. As the accompanying text directs, the "main collapse can be seen in the last scenes." Antarctica, the sublime sign of the beginning of time, of geological origins, is visualized as fragmenting, heralding the breakup of an estimated 12,000 years of stability, conceptually signaling the end of time through ecological catastrophe.

Temporally and contextually, the image is dislocated to become an *event* for a moment's entertainment that can be replayed over and over again in senseless repetition, unlike the corresponding reality of the simulation. This repetition has two modalities: It offers the psychic fantasy of starting over and assuages terror through the banality of such repeatability. This neutralizes the power of destruction as a psychological impera-

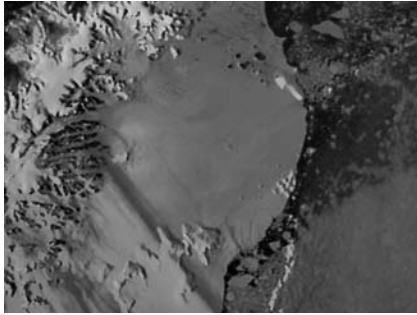


Figure 4. Larsen B Ice Shelf Collapse (1993 to 2000): December 26, 1993

Source: NASA/Goddard Space Flight Center, Scientific Visualization Studio/Canadian Space Agency, RADARSAT International Inc.

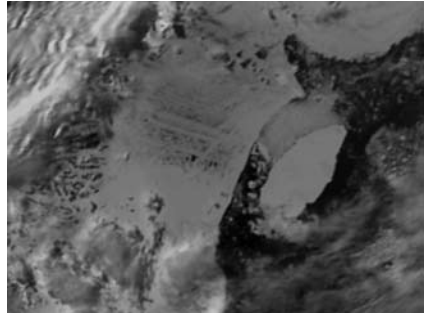


Figure 5. Larsen B Ice Shelf Collapse (1993 to 2000): February 13, 1995

Source: NASA/Goddard Space Flight Center, Scientific Visualization Studio/Canadian Space Agency, RADARSAT International Inc.

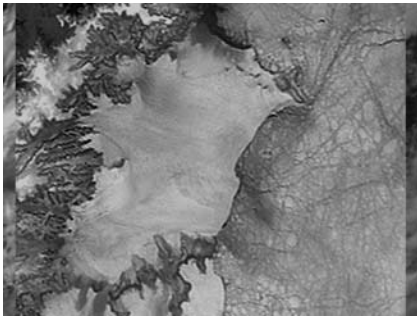


Figure 6. Larsen B Ice Shelf Collapse (1993 to 2000): March 21, 1998

Source: NASA/Goddard Space Flight Center, Scientific Visualization Studio/Canadian Space Agency, RADARSAT International Inc.

tive to act. In this simulation, Antarctica is envisaged as an aesthetic space of the cinematic, both as the nemesis of American culture and as the extension of its fantasies about time, and the end games of time. As still images, the RADARSAT maps become fetishistic fragments of destruction. The maps engage with the protofilmic in the partiality of images taken on sweeps of the landscape and then electronically “sewn together” to be cast into the fiction of one time. Locating the RADARSAT images within American popular visual culture, it is useful to consider Warhol’s *Death and Disaster* series, which calls forth a fascination with death and the aesthetics of destruction that had been

building in America in the 1950s and 1960s (such as *5 Deaths 17 Times in Black and White*, 1963). Warhol’s repetition of virtually the same casts us into a relationship with the filmic; the image as *mechanical reproduction* makes it not a representation but a still, an image within an imaginary form inherently embedded in the machines’ movement of time.

Warhol’s images of car crashes, made at the height of the cold war, suggest an emergent obsession in the American popular culture with the catastrophic *event* and its documentation. The series, whose aesthetic appearance the RADARSAT map echoes, indicates the estrangement of events and their representation in the visual culture of catastrophe. The single event, documented as the same again, becomes one event happening over and over, such as fracturing ice shelves as a signifier of environmental disaster or, as one British Antarctic Survey (2002) press release reads, “The collapse of the . . . ice shelf is the latest drama in a region of Antarctica that has experienced unprecedented warming.” Like Benjamin’s (1992) image of the angel of

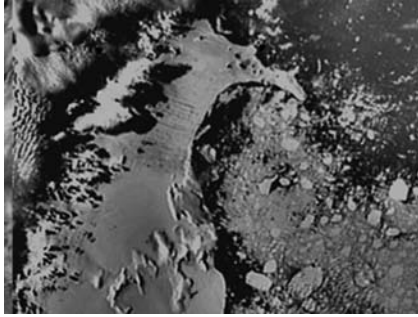


Figure 7. Larsen B Ice Shelf Collapse (1993 to 2000): November 21, 1998

Source: NASA/Goddard Space Flight Center, Scientific Visualization Studio/Canadian Space Agency, RADARSAT International Inc.

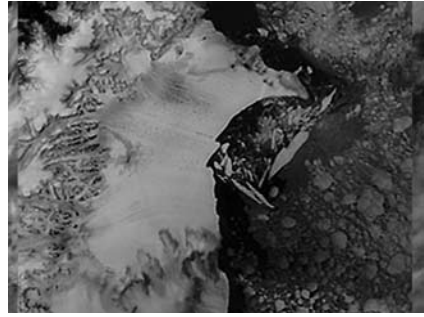


Figure 8. Larsen B Ice Shelf Collapse (1993 to 2000): March 2, 2000

Source: NASA/Goddard Space Flight Center, Scientific Visualization Studio/Canadian Space Agency, RADARSAT International Inc.

history, “he sees a single catastrophe which keeps piling wreckage upon wreckage” (p. 259). Imaginatively, the visual memory of photographs of breaking ice, and warnings over global warming, collide together into the spectacle of destruction. And as Virilio (1989) comments, “the audience itself no longer knows whether the ruins are actually there, whether the landscape is not merely simulated in kaleidoscopic images of general destruction” (p. 49).

With ecological destruction as an event marking the fall of modernity, the assumptions about the nature of historical time are most evident: Antarctica as the limit of modernity’s progress and modernity as no progress, only destruction, wherein historical process reveals itself to be a progression only of change. Walter Benjamin (1992) defines the extreme moment of the fascist aesthetic as when “self alienation has reached such a degree that it is capable of experiencing its own destruction as an aesthetic enjoyment of the highest order” (p. 242). Benjamin highlights the potential risks that culture runs when it aestheticizes politics. As Neil Leach (1999) argues,

It is not simply that aesthetics may dress up an unsavoury political agenda and turn it into an intoxicating spectacle. Rather, with aestheticization a social and political displacement occurs whereby ethical concerns are replaced by aesthetic ones. A political agenda is judged, therefore, not according to its intrinsic ethical status but according to the appeal of its outward appearance. (p. 19)

The displacement of ethical concerns for aesthetic ones through aestheticization operates in the event of the RADARSAT map, akin to Warhol’s concern with the surface and appearance of media events that structure the subject’s relation to the image. The simulation of the event of the Larsen B collapse conspires to produce Antarctica as the site of the spectacle of global warming. Yet this same site is relatively absent within a contemporary economy of American environmental practice. Primarily, Antarctica’s appearance is as an aesthetic image rather than an environmental space. The vision of the technical optic is thus haunted by a narcissistic drive to regard destruction and to celebrate this as aesthetic pleasure. The pleasure is heightened by two kinds of distancing: that which the technology affords by reproducing familiar disaster narratives and the geographic distance of placing disaster in Antarctica. Such a visual space, as Virilio

(1996) writes, “operates within the space of an entirely virtualised geographical reality” (p. 16).

The ambiguous collusion of aesthetic imagery and environmental politics is no more evident than in the concluding remarks of Clinton’s (1999) speech:

It is a bridge to our future and a window on our past. . . . Let us vow, in this place of first light, to act in the spirit of the Antarctic Treaty, to conquer the new challenges that face us in the new millennium. (<http://www.nsf.gov/od/opp/antarctic/clinton/start.htm>)

Clinton’s imagery echoes early visual conceits that imagined the unknown—which was often transmuted into the Antarctic—as a symbolic arch of experience to the “untraveled world,” just as RADARSAT imagined a “new window” on the Antarctic continent. Within this conceit, Antarctica is imagined as a *place in time* as much as a geographic place: a temporal bridge into the future and onto the past. Clinton thus clearly ties the declassified satellite images with the *symbolic production of truth*, the visibility of the technological eye seen as the guarantor of the real and thus invested with its symbolic weight. The “untraveled world” is aligned with visual darkness, and Clinton urges the illumination of the images to prompt a “bridge” to positive action. The Christian symbolism of a place of “first light” is connected to the enabling vision of the American gaze into the unknown. Thus, Clinton reinvests the potency of the imaginary spaces of Antarctica, drawing together the technological and the poetical into an idea of the *technological sublime*.

The technological sublime is characterized by a dispassionate aesthetic engagement with mass destruction rather than the possibility of the subject’s destruction that characterizes the Kantian sublime. After Kant, the technological sublime drew together the traditional aspects of awe and elevation with the rationality of a mathematical sublime. Awe in nature was replaced by awe in technological nature, a technology that is productive of its own nature. As such, global warming has a technological sublimity, as it is the event of a nature created through technological expansion, viewed as an aesthetic image generated through technologies of vision.

Topologies of Surface

The RADARSAT map is probably one of the most abstract images of Antarctica ever produced, fearfully large and “unearthly” in its cool coloration, but reassuringly contained within the recognizable dimensions of conventional mapping techniques. The American vision transcended the lines of claimant states across the surface of Antarctica, thereby producing the territory as “whole.” This aesthetic effects a “clearing out of space” for the American imagination by erasing human presence and furnishing investment in another terra incognita unmarked by human activities.¹⁸ Thus, the map enacts the transparent violence of enclosure and the simultaneous opening up of the territory. The uniformity of the satellite vision and the aesthetics of scientific visualization render plastic and homogenize the living skin of Antarctica’s surface. In an age when the dynamics of ice flow and the constantly changing shape of Antarctica’s borders are well known, if not fully understood, the impetus to *promote* a stable view of these shifting boundaries offers a nostalgic search for a coherent unity of vision. The map consists of over 45,000 images electronically sewn together to produce the map in

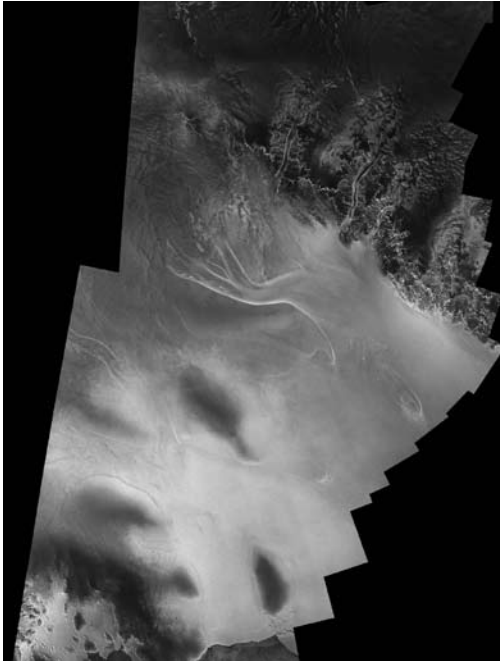


Figure 9. Partial Sweep of RADARSAT Map Mosaic

Source: NASA/Goddard Space Flight Center, Scientific Visualization Studio/Canadian Space Agency, RADARSAT International Inc.

one time. Only at the edges of the projection does the map reveal itself as an incomplete assemblage of vision, and the illusion of coherence slips away (Figure 9).

To achieve this unity, techniques of scientific visualization use “isosurfaces,” which give all surfaces the same value. The surfaces are given qualities borrowed from things we are familiar with (transparent/plastic/sensual) and use ambient and direct light to create regimes of viewing, to conform to ideas of what already mythologized landscapes look like (in the case of the Mars images, the North American landscape). In the RADARSAT map, Antarctica floats in a sea of darkness, presenting its sharp boundaries against the flat space of the unknown, refuting the oceanic. The void of the blank color provides a lack of geographical context. The position of elevation means that the map does not mimic the eye, suggesting that our prosthetic sight has become so comfortable that such an embodied space is symbolically redundant. At the same time, this perceived technical/scientific impartiality is propelled by a very human desire to penetrate a territory beyond corporeal exploration. One of

the stated aims of the RADARSAT map was “to simply expand our ability to explore the vast, remote, and often beautiful, southernmost continent” (*RADARSAT-1 Antarctic Mapping Project*, n.d.). Such a statement is evidence of the apparent reluctance to give up the romantic dimensions of terra incognita even at the height of its apparent technological mastery.¹⁹

The role of unknown space can be seen as indicative of the shifting horizon on the globe: an elusive and challenging horizon of meaning and its limits. By completing the global map, we turf out the angels and signal the limits of our imaginative reach. As Baudrillard (2002) argues, “now, the phantasm of the ends of the earth is a phantasm of the territory having some extreme furthest point—the symbol of a possible end and of the outer reaches of thought” (p. 129). However, what the visual technologies of satellite mapping have achieved is not the destruction of those imaginative spaces but their recasting, and thus reinvestment, in the technological sublime. What may well see the eventual destruction of the terra incognita is the erasure (that is also amnesia) that accompanies such an imaginative projection that removes Antarctica from the concept of a global ecosystem by insisting on its “otherness” in time and in space. It is visually and conceptually removed from the harm of our activities elsewhere on the planet.²⁰ Whereas the angels traditionally signaled an unknowable but heavenly place at the edge of maps, the contemporary terra incognita signals an artful distancing, productive of topographies of absence.



The first car at the bottom of the world.

Figure 10. Volkswagen Advertisement for Antarctica #1: "The First Car at the Bottom of the World" (Volkswagen of America, Inc., 1963)

Source: Kathryn Yusoff.

Note: The claim made by Volkswagen is not strictly true; Robert F. Scott took motorized vehicles to Antarctica on his Terra Nova expedition (1910 to 1913). The advertisement highlights how Antarctica became an extreme testing ground for technologies in the postheroic era.

Geographies of Distance

The RADARSAT map presents a complicated vision revealing a territory that opens its surface for the investiture of imaginary projections but is simultaneously inexhaustibly occupied by the disembodied optic of American technology. The NASA-RADARSAT technology carried an image of Antarctica into a realm of factitious topology, in which the surface of the physical landscape is directly present in one time, as an "event" and a globally circulated image. It thus casts out any relation to landscape-based systems of duration (which is a condition of all representations). On this structure, science *presents* itself as an active agent in vision. Rather than debunking the mythic time of terra incognita, this scientific visualization builds on it as it erases, not only through its aesthetic production (the sublime surface) but also through the *availability* and narrative of new technology to present itself actively in time (global circulation). As speed is a metaphor identified with modernity's progress, scientific visualization naturalizes the political territory of Antarctica as a *continent for science* (designated under the Antarctic

Treaty of 1961) through its production of accelerated frontier knowledges. As Virilio writes, "technological space . . . is not a geographical space, but a space of time." It is a space with a history "that is the product of representations" (quoted in Burgin, 1996, pp. 43-44). This, as Doreen Massey (2003) has commented, "is, in effect, to turn space into time, geographical difference into historic sequence" (p. 114). By turning space into time, this scientific visualization is productive of a political chronogeography of Antarctica. Thus, it is appropriate to consider scientific visualization in the context of Antarctica as imperial science, because science is the primary practice and instrument of making national claims in the Antarctic (designated under the Antarctic Treaty).

These constructions of Antarctica *in time* may be viewed as ideological, in the way that Roland Barthes speaks of ideology as the "imaginary of a time, the cinema of a society" (quoted in Burgin, 1996, p. 264). The imaginary of terra incognita is inflected through the image, yet, as I have argued, it is not inscribed in the image as a stable ideological meaning but through the image's geopolitical moment. The movement of images from one context to another makes it impossible to view the map as an ideological product, but as it enters specific political contexts, the map can take on an ideological role. When place becomes predominantly marked as a moment in time, it also runs the risk of becoming a virtuality that allows, and perhaps even promotes, a reckless abuse of environments. The geopolitical moment of the RADARSAT map

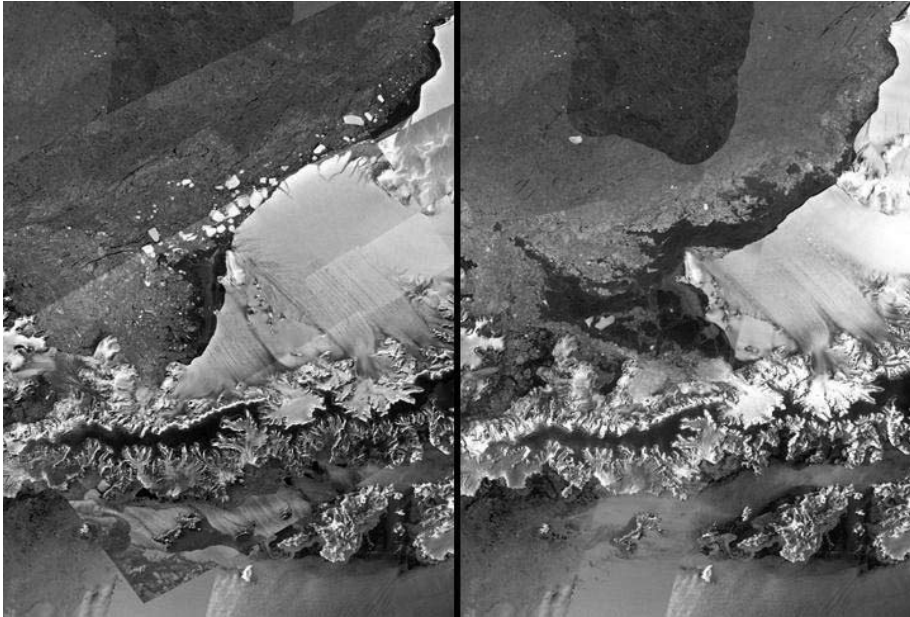


Figure 11. The “Before” (1992) and “After” (1997) of the Larsen B Ice Shelf Collapse

Source: NASA/Goddard Space Flight Center, Scientific Visualization Studio/Canadian Space Agency, RADARSAT International Inc.

suggests that the capacity to bring destruction into view is where power is located, not exclusively in the environmental politics of that view.

Thus, the RADARSAT map offers only a partial vision of the technological landscape it travels in. Time is artificially stabilized in the satellite sweeps of the landscape and is then collaged into a globalized image. Once the image enters NASA’s Web site, it is mobilized into *real time*. As each image of Antarctica floats in its own reality—an electronic pulse without dimensions, remote from place—it calls forth the need to recognize the *isolating potential* within new technologies, *of time* and *of space*. The technological inhabitations that the RADARSAT map affords simultaneously exercise a particular American narrative about time, displaced onto the Antarctic. The technological form, creating discontinuous realities of place, doubles this displacement of narrative over place.²¹

The impact of disaster narratives is a question of scale and duration. The compression of a global atmospheric event into a temporality similar to a car crash renders the event fascinating, while the excitement stems from the *proximity to the real* event. The aesthetics of simulated disaster stimulates because of the reality of that destruction that occurs but is displaced to an abstracted but geographic space. The proximity between the real and the viewing of the real begins to collapse. Proximity to disaster, Freud argued, was an unconscious sublimation of immortality that kept death other by representing it, and insulting ourselves against life. Life regains its fullness in proximity to death, but for this to happen, spectatorship needs to be shaken. I have argued that the repeatability of the destruction is a seduction of the idea that we can begin again, and so defers the subject’s time to that of technological capacity for producing the same again, without challenging spectatorship. When the subject is located by the

shocks and time of the viewing machine, the subject can become (as Benjamin has argued) an effect of the machine's reproductive faculty. By extension, the relation that we accord to place can become simply an effect of the representational faculty. Antarctica as a landscape of events becomes one more American disaster movie.

The political implications of the image are deferred through the normalizing repetition of the aesthetics of destruction and are thus productive of a numbing to the fear of destruction. The illusion of repeatability thus secures the deferral of a responsive political act. Ironically, one recent American disaster movie, *The Day After Tomorrow*, begins on the Larsen B ice shelf. The disaster unfolds with the disintegrating Antarctic, which sets off a chain of catastrophes that lead to the destruction of the Hollywood sign, thereby inverting the narrative of displacement within the medium that constructs it. In this movie, the Antarctic landscape is a computer-generated image. This Hollywood event contrasts Antarctica's "narrative failure" at a political level with its "narrative success" in the visual economy.

Conclusion

We might conclude that there is no historic topology that can adequately account for the geopolitics of this stream of visual data that makes a territory of Antarctica. The RADARSAT map dispenses with the limits of a horizon, yet finds it again in the abstract aesthetic qualities that exhibit an elliptical relation to the completion of a globalizing project. As a global ordering, this ecological disaster narrative has folded into its utopic fantasies of its own, displacing disaster from western inhabitations through a spatializing operation. Simultaneously the Hollywood disaster narrative presumes a shared condition of time between Antarctica and Hollywood, in which landscape is reduced into the same temporality of catastrophe. In this, Antarctica is superseded not only by the technological form of its transmission but by a globalizing American cinematic narrative. The RADARSAT map unhinges a vision of Antarctica, isolating it from the Western world, both aesthetically and politically, while reinstating it as the *product* of an American global reach.

The duration of RADARSAT's long view over the landscape is compressed into the duration of the technological event: a moment of arrest that may or may not have a longer political duration. The continued reception of the map as an environmental event rather than an entertainment event will depend on the political arena that the image is drawn into. The fictional instantaneity of the RADARSAT map may prove to be the nature of its political event, as speed uproots landscape from its duration. If space is contested ground, the contest is to make space somewhere we can inhabit, and not to be virtualized out of our ecological body. By recognizing the types of isolation that new technologies generate, and the geographical sites that these images represent, the floating image may well acquire some gravity.

Notes

1. The "Antarctic mode" provided capability for the first time of *nearly* instantaneous, high-resolution views of the entirety of Antarctica. The dates of the first Antarctic Mapping Mission were September 9 to October 20, 1997. The second mission took place from September 3 to

November 17, 2000 (<http://www.svs.gsfc.nasa.gov/vis.11.12.2000>). The images are now available at <http://svs.gsfc.nasa.gov/stories/antarctica/index.html>.

2. The South Pole Station was created under the program of research carried out during the IGY, and it was rebuilt and enlarged in 1999 and 2000.

3. Bases in Antarctica, from the first permanent settlements at Discovery Point, Cape Evans, and Cape Royds during the “heroic era” (1890s to 1910s), were constructed at the continental margin until the development of flight technologies allowed the possibility of permanent settlement in the interior.

4. Louis Marin (1993) comments,

“The use of the term horizon is attested from the second half of the 13th century. At first the word signified ‘limit, the limit of the gaze, the limit of the sky and earth. . . . ‘horizon’ which originally meant limit, the power of circumscribing a place, came to mean immensity, infinity—such as the limitless horizon of the ocean. . . . Then beyond the horizon, in the imagination, appear Utopias (pp. 7, 813).”

The dispensing of the horizon that had framed the U.S. expansion in the West inverts the limits of perception into utopic fantasy.

5. Klaus Theweleit (1987) argues that modernity’s ordering complexes are gendered masculine: a paranoia that demanded a female abjection predominately articulated in the representational practice and space of landscape. Echoing the sexualization and genderization argued by Gillian Rose (1993, p. 7) as an intrinsic part of geographical practice, the virgin territory of the South unequivocally provided an alternative site for the narrative of exclusively masculine orderings uncomplicated by natives or women. Denis Cosgrove (2001) notes,

“Like the summits of the World’s great mountain ranges, the ‘purity’ of the white, empty Polar Regions acted as imaginative opposites to equatorial ‘hearts of darkness.’ Devoid of disturbing human presence, they were silent stages for the performance of white manhood (p. 217).”

6. European representational space underwent tremendous conceptual changes in response to industrialization and global wars. The extreme point of this was futurism and cubism, which broke the representational planes of perspective and realism. Cubism paved the way for the conceptual art project, which took the destruction of the representational plane to its logical terminus in the dematerialization of the art object.

7. The American Richard Byrd was the pioneer of flight in Antarctica, producing the first aerial maps of the continent, achieving the mythologized “albatross’s view”; but again, at the height (of what was then) technological achievement, Byrd’s utopian, heavenward propensity was strong. He reflected,

“Here is a door ajar through which one may escape a little way and for a short time out of our little world, from the noise and chaos of civilisation into the silence and harmony of the cosmos and for a moment be part of it (quoted in Weiss, 1986, p. 12).”

8. The original scheme of Canada’s RADARSAT mapping did not include mapping Antarctica. Canada’s interest, spurred by the 1970s oil crisis, lay in identifying ice in the Arctic to allow the safe extraction of oil, coal, and minerals. The Canadian Space Agency invited NASA to join the mapping project and to launch the satellite in exchange for certain data rights. NASA was interested in mapping Antarctica, and this led to changes in the satellite technology, because the previous designs had a northward-looking satellite that needed to be turned around and flown backward to map the south.

9. Although the occupation of the landmass has accelerated relatively slowly, in comparison, the visible and invisible communication networks have rapidly increased in the form of Web cams at the South Pole, satellite mapping, and “real-time” images of the continent.

10. Reynolds had previously been a strong supporter of Symme’s hollow earth theory (the idea of a “hole at the pole”), but in his fantasy, he takes command of the hole at the pole. And rather than conceive of it as an edge, he thus sees it as a globalizing axis.

11. “‘The overwhelming consensus of world scientific opinion is that greenhouse gases from human activity are raising the Earth’s temperature in a rapid and unsustainable way’ the President said.”

12. President Clinton requested an increase in funds from \$675 million to \$4.75 billion for the National Science Foundation for 2001; \$136 million of this was for research into biocomplexity in the environment, including Antarctica research (http://www.enn.com/enn-news-archive/2000/02/02162000/nsfunds_10058.asp).

13. The Kyoto Protocol of 1997 set targets and a timetable for 38 nations to control emissions of greenhouse gases (predominately CO₂). Rather than reduce CO₂ output, the U.S. has raised its emissions by about 12% over 1990 levels, and its emissions are on track to rise by another 10% by 2008 (Victor, 2000).

14. Although the connection between global warming and melting ice sheets is contested, not least by those with substantial interests in fossil fuel, scientific consensus does exist on global warming. One of the reasons given for such a polarized public understanding of the problem has been unbalanced media coverage:

“The effect of such coverage may be to encourage the view that no scientific consensus exists on global warming; to position global warming as a hypothesis rather than fact, even though the IPCC [Intergovernmental Panel on Climate Change] has declared there to be a “discernible human influence on the climate system” (Newell, 2000, p. 82).”

The basic document of the IPCC also states that “average sea level is expected to rise as a result of thermal expansion of the oceans and the melting of glaciers and ice sheets” (Ragnar Gerholm, 1999).

15. Internationally, the Bush administration has refused to sign up to the agreed measures of the Kyoto Protocol and has further shunned attempts at global environmental management by refusing to attend the Earth Summit in South Africa (August 26, 2002). Locally, in the Ross Sea region of Antarctica, the U.S. refused to participate with New Zealand’s *Ross Sea Region State of the Environment Report* of 2001 (the first comprehensive environmental report for this region of Antarctica), which includes within its boundaries the largest human settlement (and thus human impact) in Antarctica, McMurdo (a U.S. station).

16. Despite the extensive use of images by environmental campaigners, John Miller (1997) comments that in a desire to gain the widest possible acceptance, the environmental community has “decided that appeals to aesthetics are unscientific,” preferring to advance scientific and economic arguments for environmental protection rather than “to recognise the legitimacy of aesthetics.” In contrast, Miller argues that an aesthetics sensibility is the fundamental “means to bridge the conceptual and emotional gap between the natural and the manmade” (pp. 137, 145).

17. The main collapse of the Larsen B ice shelf was visualized between January 31 and March 7, 2000, when about 3,250 km² of ice shelf disintegrated over a 35-day period, displacing an estimated 720 billion tons of ice that is thought to have existed since the end of the last major glaciation 12,000 years ago. During the past 50 years, the Antarctic Peninsula has warmed by 2.5°C, much faster than mean global warming, including the retreat of five ice shelves (British Antarctic Survey, 2002).

18. For a discussion of “human erasure” in landscape, see Jonathan Bordo’s (1994, pp. 292-294) discussion of portraying “wilderness” in his essay “Picture and Witness at the Site of Wilderness.” Also see Mary Louise Pratt’s (1992) *Imperial Eyes*, in which she argues that the erasure of the human creates an empty place/space a priori for imperial imaginings, “a landscape imbued with social fantasies . . . all projected onto the non-human world” (p. 125).

19. Lyotard “has argued that aesthetics is the transgressive realm where libidinal desires remain uncontained and so reveals the limitations of an ordering theory” (Carroll, 1987, p. 24).

20. This map is a reversal of the integrated systems of the globe, which the eye of the Apollo satellite initially produced. See Cosgrove (1994) for a fuller discussion of the historic geography of satellite perspectives.

21. The discontinuity of what may be called physical space and virtual spaces of engagement is by no means a new phenomena, but the acceleration of those fractures through new technologies are productive of what Frederic Jameson (1992) calls untenable formations.

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