Paleoperformance: Investigating the Human Use of Caves in the Upper Paleolithic

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This chapter is dedicated to the memory of John E. Pfeiffer.

Based on discrete lines of archeological evidence, the author believes that the deep caves of Southern France and Northern Spain were used primarily as loci for initiatory procedures in the Upper Paleolithic (c. 35,000 to 8,000 B.C.). To support this point of view, the author introduces the concept of Paleoperformance as a means to reconstruct performative behavioral patterns based on archeological remains. The author endorses the use of ethnographic analogy as a valid methodological process to investigate the human use of caves in the Upper Paleolithic. While acknowledging the multifunctional nature of a deep cave and the variety of supporting evidence, the author presents one such function based on a specific line of evidence centered primarily around the sound-making artifacts found in many Upper-Paleolithic locations. In light of this, initiatory procedures will be shown to offer a series of structural characteristics, which help articulate the following hypothesis: throughout the 25,000-year span of the Upper Paleolithic, the decorated deep caves functioned as cultural containers where liminal[1] activities were performed and systematized and esoteric knowledge was archived.

INTRODUCTION

According to archeological evidence, the so-called cavemen rarely lived inside caves. Admittedly, there are a few exceptions[2] where hearths and traces of economic activities have been found in caves. But for the overwhelming majority of cases, occupation was restricted to open-air rock-

Berghaus, G. (Ed.). (2004). New perspectives on prehistoric art. Bloomsbury Publishing USA.
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shelters and the mouth of caves. Furthermore, it has been established that hominids lived in or near the caves' openings for thousands of years before exploring their tantalizing subterranean depth.

In the cave, cognitive processes have been either intentionally recorded or unintentionally imprinted. The traces left behind point toward behavioral patterns by which humans in the Upper Paleolithic lived. As a cultural reservoir, the cave was a place where myths were generated and recorded. The cave functioned as a book in which specific facets of cognition were encoded in the forms of mnemonics on the cave wall. It served as a classroom where specific hunting techniques were taught in the safety of the subterranean environment. It was also used for healing purposes, where the shaman transcribed his or her diagnostic on the cave wall. It was a sanctuary, where increase ceremonies were performed. It was a place where initiated men returned to receive higher a degree of esoteric knowledge and expertise. More to the point, the cave was used as a ceremonial locus, where individuals submitted to the ordeals of initiation. Ultimately, the cave, as reservoir, was a container for human activities of a pedagogical and initiatory nature.

THE HUMAN USE OF CAVES IN THE UPPER PALEOLITHIC

In his monograph, *Beyond the Bounds of History* (1949), Henri Breuil presents a collage of 31 scenes from the Stone Age, each accompanied by an illustration "showing the stages of development of Fossil Man and his civilizations."[3] Breuil displays a colorful prehistoric theater where exotic hominids share the stage harmoniously with the animal world.

For example, Scene 25 has as its title *The Sanctuary of Trois Frères at Montesqieu-Avantès (Ariège)*. Breuil's narrative transports us into the Reindeer Age, when men ventured deep into the uncharted galleries of subterranean caverns, where they left imprints of their peregrinations as far as 1,650 meters from the entrance. Along the narrow corridors are the traces (engravings) of many passages which, according to Breuil, "makes it clear that the actors in these ceremonies passed that way, perhaps shouting or singing in such a fashion that the initiates would think the cries supernatural."[4] This spatial appropriation is signaled by identifiable markings on the cave wall. Were these engravings a manifestation of territorial concerns? Apparently, Ice Age populations resided at the mouth of the cave and not in the dark galleries. The latter were reserved for tribal initiation ceremonies and fertility rites. While cold winds gusted across the landscape, the caves offered a relatively warm and dry environment (approximately 11 degrees Celsius, or 52 degrees Fahrenheit). Breuil is unequivocal: Winter was the chosen season for tribal initiation. In the deep galleries, young initiates would be instructed about their societal obliga-

tions and the tribal traditions. For the occasion, secrets were revealed in carefully choreographed mask-dances and invocations of spirits. The initiate would learn the spiritual skills to cope with demons and to increase the game by willed multiplication. In Breuil's illustration, the initiates seem to be mesmerized by the ritual performance, center stage, of an impersonation of the well-known engraving of a man-bison playing a musical bow (also interpreted as a nose flute), a mythical ancestor in Breuil's terminology. Scene 25 ends with resonating screams from a hidden sorcerer accompanied by the roaring sound of a bullroarer announcing transformation for a group of anxious initiates.

Such ceremonies, according to Breuil, took place in the cave of the *Trois Frères* for thousands of years. It is my intention to assess the feasibility of Breuil's approach by discussing some of the evidence that supports the existence of such performative events in the Upper Paleolithic.

A BRIEF DISCUSSION OF ANALOGY

To assess the human use of caves in the Upper Paleolithic, recent researchers have relied almost exclusively on empirical processes. Few have expanded their investigations beyond the quantitative analysis of artifacts and archeological remains. The leap toward a more theoretical (and therefore speculative) ground seems to be, in many cases, considered either futile or unscientific. Borrowing Lewis-Williams's terminology, the empiricists operate under the false assumption that their investigations are, if nothing else, objective. Although there has been a healthy debate on the dyad objectivity/subjectivity in the discipline of anthropology, this is often deemed to be irrelevant to the field of prehistory. In fact, no matter how far removed from the evidence the researcher might be, his or her reading will always be subjected to a series of inherent constraints ranging from the researcher's level of expertise to his or her awareness of all the possible relationships between the evidence and the context.

Lewis-Williams writes that the Upper Paleolithic "must not be homogenized into a replica of any single ethnographically observed society: Multiple analogies and interpretations will be required to build up a multi-component mosaic that fits the highly diverse empirical evidence of Upper-Palaeolithic art."[5] Perhaps the most criticized methodology in the field of prehistory has been the use of analogy to recontextualize archeological remains. While it is undeniable that an artifact in context will generate a set of reliable premises, the problem seems to lie in the notion of conclusion. In many of the arguments against the use of analogy it is assumed that analogical reasoning is systematically conclusive.[6] It is true that in the field of prehistory there is a historical precedent for an interpretive discourse where analogies were indeed conclusive, but the hermeneutic excesses of these pioneers have opened a way toward understanding life

in prehistoric times. In their footsteps, I wish to rehabilitate analogy as a grounded investigative component for the prehistoric discourse. Ethnographic relevance (rather than the classic accumulation of ethnographic precedents) is an adequate analytical framework for analogical reasoning.[7] I will approach analogy as an analytical tool to project into the past a set of societal aspects drawn from relevant ethnographic sources.

PALEOPERFORMANCE

Although suspiciously dramatic, Breuil's description of the human activities, which possibly took place in the cave of Les Trois Frères during the Upper-Paleolithic period, does not seem so farfetched after all. His narrative is substantiated by sound archeological evidence. Breuil's effort to reconstruct the initiatory procedures that may have taken place in this particular cave (and in many others) is commendable. Of course, critics might point out a myriad of inaccuracies in Breuil's account and a variety of iconographic elements that do not belong there. But a close examination of Breuil's approach reveals a complex bricolage of evidence. His intention is clear—to demonstrate that human use of caves was primarily initiatory in nature. Breuil's hypothesis is as relevant as any other formulated since then. But what is lacking in his approach is a methodological framework to establish the performative nature of these ceremonies. Still, his carefully manufactured mise-en-scène opens the door to another perspective—a behavioral point of view, which I have termed Paleoperformance.

In an attempt to answer the question "What is Paleoperformance?" I offer the following definition: Paleoperformance refers to a set of restored human behaviors from the Paleolithic based on recovered artifacts, which offer material evidence for activities that are both intentional and liminal. The liminal, or marginal, nature of these intended activities places them somewhat at odds with the empirical expectations inherent to archeological investigations. Paleoperformance offers a dynamic approach to archeological remains by focusing primarily on the reconstruction of potential cultural activities and the inherent performative, kinetic patterns associated to the products of these activities. I wish to establish Paleoperformance as a genuine part of the Upper-Paleolithic investigation, even though its field of research is as marginal as the liminal activities it investigates.

Looking at the archeological evidence from the Upper Paleolithic, one recurring characteristic is the *intentional* nature of many of these remains. It is undeniable that the manufacturing aspect of an artifact is inherently intentional. For example, the technological lineage between a Lower-Paleolithic chopper and a modern table knife is a testament to intentional improvement of what was once an accidental innovation. To develop this

analogy further, I wish to show that the manufacturing aspect of an artifact is also inherently performative. The *chaîne opératoire* associated with the manufacture and use of a chopper or a knife can be reconstructed into a series of precise kinetic patterns that are restored every time the tool needs to be reproduced or utilized. These restored behaviors are the *sine qua non* conditions for an efficient use of the tools, and their systematization a mnemonic guarantee for their persistence beyond the stage of innovation. By approaching prehistoric material culture in terms of performance and intention, the artifacts cease to be inert fossils, but are projected back into a dynamic recontextualization.

Perhaps the most convincing argument for performative and intentional behavior comes from the realm of acoustics. Researchers have speculated on the relationship between points of high resonance and imagery, and have discovered that Upper-Paleolithic humans were sensitive to such acoustics and made their choice of paths based on carefully mapped sonic routes. The consequences of a performative and intentional action can be identified by two correlated phenomena: effect and affect. Effect and affect were, seemingly, two specific concerns for the prehistoric individual. But why would these two phenomena be of concern for cave users? To address this question, we need to approach the cave as a locus for initiatory activities designed to fulfill a variety of discrete functions. These include the storage of exoteric and esoteric knowledge as well as the learning of skills during initiatory procedures.

Throughout this chapter, I will consider initiation to be a performative behavior characterized by the following features:

- it involves an initiate whose ordeal anticipates the presence or absence of a potential observer;
- the initiate is processed through staged ordeals;
- the initiate's ordeal is transformative and psychologically destabilizing;
- the initiate's actions are imbued with a high degree of intentionality;
- the initiate is carefully maintained within a frame of anticipated behavioral patterns: restored behavior; and
- staged effects are used to emphasize the process of alienation for the initiate.

These manufactured effects for the staged ordeals affect the initiate to such a degree that the anxious individual is quickly conditioned and easily manipulated. This is a behavioral constant, which also provides a paradigmatic skeleton for Paleoperformance.

INITIATION CEREMONIES

The notion that caves served as repositories for social impulses of the art-for-art's-sake variety quickly collapses under the weight of the evi-

dence for intentionality in the Upper Paleolithic. The caves acted as cultural reservoirs, where the organization of space resulted in a complex articulation of iconographic and archeological remains. Ultimately, the intention seems to have been to inform and initiate, at variable degrees, selected youths in order to fulfill social requirements.

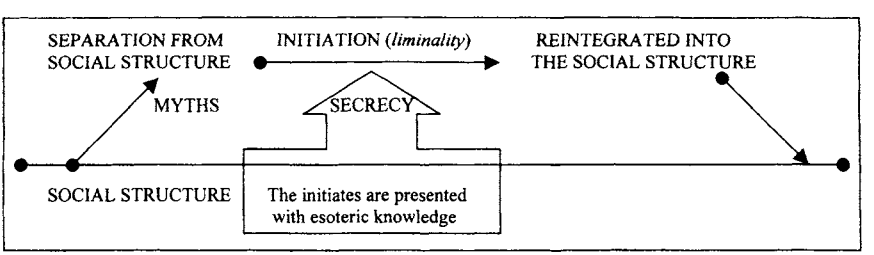
Initiation is performative, that is, it expands the social activities on the margins of the necessary. Arguably, it is on these margins that performances such as music and dance find their roots as well as their societal validation.

It seems reasonable that our ancestors would have used every possible device, including singing and dancing, to help get the message across. There is evidence for this, both in the caves themselves and in the customs of present-day hunter-gatherers. Singing and dancing also may be accompanied by the low-throaty growl of bullroarers—carved boards twirled on cords. Such performances are pure theater.[8]

The following schema (Figure 1), borrowed from Van Gennep's seminal work, *The Rites of Passage* (1960), offers a workable format for analyzing initiation. It begins with the initiate's traumatic separation from the social structure (and the mother); the initiate is then monitored through an unfamiliar environment (a cave, for example) for an undetermined period of time (hours, days, months perhaps). This is followed by a reintegration into the social structure (often marked by a complete abandonment of the mother figure). The collective expects the subject to stabilize and behave in accordance with the social norms incumbent to his or her new status.

A preliminary classification of initiation, based on data collected from eHRAF's (Electronic Human Resource Area File) Collection of Ethnography,[9] is offered here in order to simplify what would otherwise be a complex discussion. It is important to note that all the initiations described in eHRAF show distinct variability and regional differences in forms and contents in terms of initiatory procedures. To avoid a trivial homogenizing of a complex notion such as initiation, the author will offer no narrowly prescriptive definitions. However, the recurrence of paradigms across the

Figure 1
Initiatory procedure inspired by Van Gennep tripartite structure.



95 hunter-gatherer cultures investigated offers a sound analytical frame. For our purpose, I have isolated the following four patterns:

- seclusion (anxiety)
- ordeals (affirmation of subordination)
- secrecy (revelation and deception)
- esoteric knowledge (skills and status)

The seclusion of the initiates is a traumatic time of separation. It generates a high degree of anxiety among the initiates. This liminal stage varies considerably in length and location. Pfeiffer argues that

> the more I have investigated the caves, the more obvious and elaborate and systematic the planning appears to me. It involved three stages: 1) leading the uninitiated through eerie and difficult route, a kind of obstacle course to soften them up to indoctrination; 2) catching and holding their attention with shocking and frightening displays; 3) finally, using every trick to imprint information intact and indelibly in memory.[10]

In many cases, terrified initiates are brutalized and humiliated in a series of planned interventions by the initiators. This period of seclusion is often equated to a symbolic death. The initiates develop psychotic behaviors, which are channeled through a series of voluntary ordeals and punishments. The fear of abandonment by the mother is, perhaps, one of the most studied psychotic manifestations proper to initiation rites.[11] The anxiety provoked by the forced separation of the initiate from his mother is the essence of initiation. To a large extent, the mise-en-scène of the initiation depends on the successful exploitation of this psychological phenomenon. Places for initiatory procedures are usually selected for their dramatic character. Alienated from the habitual, the initiate becomes a liminal presence: an absence.

To orchestrate a successful initiation, the initiators regiment the initiates with terrorizing behavior and brutal attacks. The initiate is surrounded by an unsettling atmosphere of danger and submits passively to aggression. It is important for the initiates to perform without complaint and with subordination. The initiate's ambiguous liminal status marks the unstable crossing of a threshold where boundaries are indicated by blood-stained trials. This threshold is a space where initiates demonstrate their fitness (physical and psychological) and their determination to belong to the collective. The expected total submission to an extreme form of authority and punishment marks the initiates' acceptance of the established authority. It is important to note that initiates are "at various stages of physical maturity; moreover, in many societies the rites are held well before, or after, the age of physical maturation."[12] Despite some noticeable

age difference, initiates seem to be processed through the same degree of ordeals and expected to show the same level of obedience. It is not uncommon for initiates to lose their lives during initiation.

Hunter-gatherer initiations are often constructed around a secret. The semantic of initiation is a playful and deceptive discourse in which men's frustrations are shrouded in layers of secrecy and their factual lies are forbidden to women and children. The deceptive tactics used by the male cults bring initiation one step closer to the premeditated and fictitious world of performance.

If it were only a question of revealing a fabricated secret, initiation would have quickly been absorbed into other societal venues. Beyond the brutality and deception, initiation offers another aspect which is key to our understanding of initiatory procedures (and the human use of caves in the Upper Paleolithic). The diffusion of esoteric knowledge (tribal lore) during initiation is a well-established fact.[13] For our purpose, it is important to note that this esoteric knowledge is usually orally transmitted but in many cases can also be supported by visual mnemonics. The amount of information dispensed to initiates is contained into segmented and inconspicuous mnemonics associated with graphic patterns or simple images. The degree of revelation determines the degree of knowledge gathered by the initiates. Upon reaggregation, the initiates are systematically inducted into some preempted social roles. According to Gilbert Herdt, "the creators of cosmology and initiatory rites have almost certainly been those who had access to the innermost kernel of then-prevailing esoteric knowledge—which they modify and elaborate in ways that cumulate across generations."[14] This accumulation of cognition has, I will argue, left visible traces on the cave walls and floors.

ARCHITECTONICS AND ACOUSTICS

If the human use of caves was primarily initiatory, then it is our task to find archeological remains that will support this hypothesis. The potential archeological evidences are of three types:

- direct evidence: surface material remains, such as hearth, footprints, fossil images, engraved portable artifacts, hand-held lamps, and lithic material;
- indirect evidence: excavated material with a determined spatial and/or temporal link with the archeological remains under investigation;
- analogous evidence: comprehensive analysis of material evidence or behavioral evidence using parallels from ethnography, sociology, and psychology, among others.

The difficulty of finding archeological evidence to support my hypothesis lies in the fact that the majority of cave floors have been excavated to

such an extent (and in such a way) that their reconstruction will always suffer from an unavoidable state of incompleteness. For this reason alone, the recontextualization of artifacts and behavior will always be biased and subjective. However, by analyzing the morphological and archeological components, such as architectonics (principles of architecture), acoustics (sound), and sound-producing artifacts, a great deal of information can be gathered and behavioral reconstructions can be attempted. Indeed, in the unfamiliar landscape of a deep cave, the senses are challenged and a series of behavioral responses can be expected. I would suggest that sensorial defamiliarization and anticipated behavioral responses would be instrumental in the process of indoctrination.

> The rock formations, the dripping or flowing water, the utter blackness, the often total silence, the change in temperature, the loss of sense of direction in the sometimes labyrinthine passages, and the fear of being abandoned, lost and alone in the dark must all have combined to prepare apprehensive initiates for anything and make them vulnerable for indoctrination.[15]

If visibility was of concern for prehistoric individuals, so was audibility. Caves offer a great deal of variation in their ability to reflect sound.[16] Recent research into cave acoustics has confirmed the notion that pictorial manifestations were often situated in places with noticeably good acoustics. In other words, the use of the cave architecture depended on both scopic and sonic values. Arguably, Paleolithic initiators were well aware of the auditory and visual potentials, and, I might add, exploited these architectonic features to instill specific psychological stages in the initiates. Again, it is possible to assume that different routes were intentionally designed to reveal different levels of information according to the initiatory stages or individual status. Approaching the systematization of knowledge in terms of routes helps us understand why we find so many blank spaces between zones of minor or intense activity. These were calculated interruptions[17] manufactured to isolate specific areas allocated to discrete initiatory stages.

To resume, my research suggests that the cave was a cultural reservoir, where information was strategically laid out along pedagogical routes for the initiates. This inclination for staged sound would suggest that there is a potential for the use of sound-producing artifacts in the deep caves. Musical instruments as means of transformation emerged well before the human use of caves.

> There is some evidence that a proclivity for making musical sounds and using musical effects started during the Mousterian, developed and flourished during the Solutrean and later, combining rhythm, sound, image, and symbol in order to

create an emotional impact on the participants or the audience in some kind of ritual ceremony.[18]

LINES OF EVIDENCE: SOUND-PRODUCING ARTIFACTS

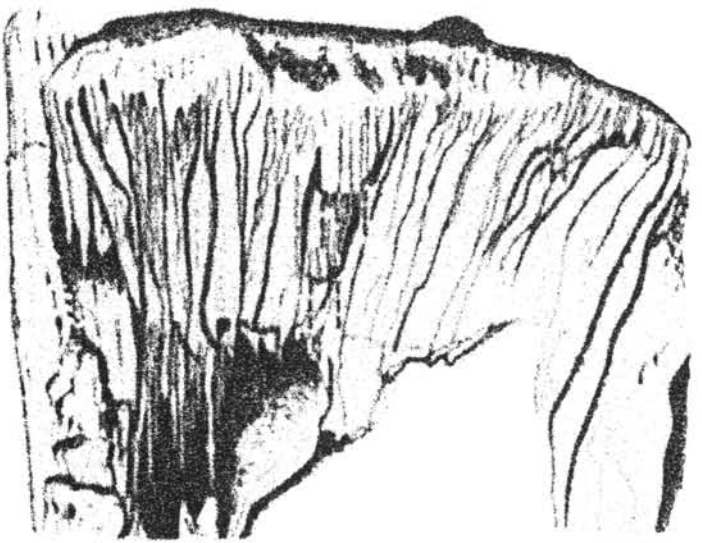
The following review of most of the known archeological evidence for sound-making devices in the Upper Paleolithic should help confirm the notion that these instruments might have been used (in conjunction with iconographic manifestations) during initiatory procedures performed in deep caves throughout the Upper Paleolithic. The question I wish to tackle is: What sort of archeological remains would sound-producing behavior, in the context of initiation in the Upper Paleolithic, leave behind?

The acoustic environment in the Upper Paleolithic determined the evolutionary task to recognize and index the spectrum of natural sounds and to manufacture distinct acoustic signals in order to channel modes of communication (and deception) that contrasted sharply with the sonic background. It is undeniable that man's first instrument was his voice. But the human voice is limited in terms of sound production. So, in order to expand the voice's tonal pitch and range, artificial means had to be developed. After experimenting with rudimentary tools (hands, plant stems, etc.), humans began to manufacture more complex instruments such as whistles and flutes (aerophones). If the voluntary clapping of hands is the mark of rhythmic kinetic, it must also be the precursor for the struck, scraped, or plucked instruments, such as Upper-Paleolithic lithophones and musical scrapers (idiophones).

It is important to note that the perspective we have on the origin of sound-producing artifact is inescapably biased by the simple fact that instruments made of perishable media, such as reed, wood, horn, and skin, are not present in the archeological record. No recognizable, intelligible transcription of musical scores has survived, thus limiting this discussion to typology. Paleolithic aerophones and idiophones have been found in varying degrees of preservation,[19] and interesting experiments have been made to reconstruct the sounds of the Upper Paleolithic.[20] (See Figure 2.) In the following section, I shall review the types of archeological remains which have been identified as "musical instruments" by ethnomusicologists and archeologists.

Recent work by Ian Cross, Ezra Zubrow, and Frank Cowan on what they have termed *lithoacoustics* has brought the study of the origins of repeatable sounds (music) beyond theoretical speculations and into the concrete realm of experimentation. Although this is still work-in-progress, it has already produced well-grounded hypotheses. To tackle the question, "What traces would musical behaviors leave behind?" they reviewed the available evidence for musical behavior in the archeological record and

Figure 2
Lithophone from Réseau Clastres (Ariège). Redrawn from Xavier Boutillon and Dauvois Michel, "Caractérisation acoustique des grottes ornées paléolithique et de leurs lithophones naturels," in *La Pluridisciplinarité en archéologie musicale: IV^e rencontres internationales d'archéologie musicale de l'ICTM. Saint-Germain-en-Laye, 8–12 Octobre 1990*, eds. Catherine Homo-Lechner and Annie Bélis (Paris: Éditions de la Maison des Sciences de l'Homme, 1994), 229.



decided that the most suitable protomusical form to investigate was the percussive, rhythmic, and disharmonic sound produced by the skillful process of flint knapping (lithophonic). They concluded that the sounds generated by striking two blades together could be classified as musical, and that, archeologically speaking, it was possible to identify specific-to-the-experiment marks, which they found on lithic material from the Upper Paleolithic. The unambiguous nature of the evidence supports the notion that some lithic materials were used, among other functions, as sound-producing devices.[21]

From hand clapping to blade knapping, a noticeable evolutionary development has taken place: one hand supports while the other strikes. This innovative gesture must have generated a spectrum of technological innovations and undoubtedly helped increase the level of skills in the Paleolithic. One remarkable manifestation of this kinetic shift is a natural sound-making device called a lithophone that archeologists believe to have been employed to make sounds. Lya Dams defines a lithophone as "a natural limestone or calcite configuration which has been subjected to percussion by striking, in order to obtain musical vibrations."[22] Such lime-

stone and calcite configurations showing human traces are found in many caves in association with remains from the Solutrean and the Magdalenian: Nerja (Malaga, Spain), Roucadour (Thémines, Lot), Cougnac (Gourdon, Lot), Pech-Merles (Cabrerets, Lot), Escoural (Portugal), Les Fieux (Miers, Lot), Gargas (Haute-Garonne), Le Portel (Ariège), Réseau Clastres (Ariège), Trois-Frères (Ariège), and Bédeihac (Ariège).

Lithophones offer a wide range of tones and may have been played simultaneously, offering a rich sonic dialogue. One remarkable archeological characteristic about these lithophones is the series of red and black signs painted on their surfaces. It seems too random to be a system of annotation, but it recurs often enough to be considered some kind of mnemonic aid. This distinct sonic spacialization supports the notion of a sonic route; indeed these so-called signs might have been used as an efficient way to map the cave acoustically using a mnemonic index that could have been understood by specific individuals. Perhaps, the lithophones were marked thus to provide tonal information to potential users. With the lithophone, the cave becomes an effective sound box, a very potent agent of transformation for the initiates.

To diversify the spectrum of sound, the Upper-Paleolithic population must have experimented with all sorts of media, of which only a small sample survived. Carved in durable material, the scrapers seem to have survived as a portable sound device throughout the Upper Paleolithic. They probably originated from multifunctional tools, which Australian Aboriginals are still manufacturing today (a boomerang for example). These friction-based rhythmic instruments generate a distinct sound by running a hard stick or bone up and down over the grooves (see Figure 3). The sounds of these scrapers in a cave are very effective and systematically reconfigure the soundscape into an anxiety-producing environment. They are found on a wide range of utilitarian objects, such as spears and harpoons, dating from the Aurignacian to the Magdalenian periods.

The process of grooving these bone implements could have very easily led to a complete perforation of the material, and thus to a very powerful set of sound-producing instruments (see Figure 4). Indeed, evidence re-

Figure 3
Musical scraper from Pekarná (Moravia). Redrawn from Michel Dauvois, "Les témoins sonores paléolithique," in *La Pluridisciplinarité en archéologie musicale*, eds. Catherine Homo-Lechner and Annie Bélis, 173.

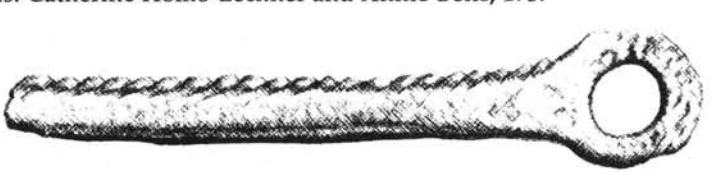
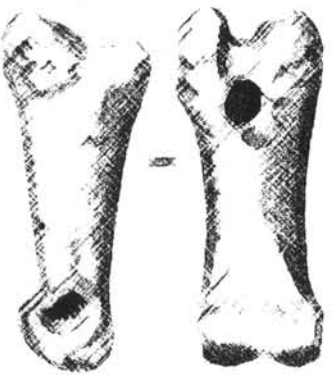


Figure 4
Whistle from Aurignac (Haute-Garonne). Redrawn from Michel Dauvois, "Les témoins sonores paléolithique," in *La Pluridisciplinarité en archéologie musicale*, eds. Catherine Homo-Lechner and Annie Bélis, 159.



flects this transition and Upper-Paleolithic craftsmen introduced the bone-made whistle into their instrumental kit, known today as aerophones. The conceptual triad of an air strip blown through the lips, a bevel (the tip), and a resonator (the hollow bone) marks an important milestone in the understanding of acoustics in the Upper Paleolithic. Archeological evidence shows that Paleolithic populations have consistently manufactured a vast quantity of whistles.[23] By partially concealing the hole with the finger, the whistle-blower can produce a wide spectrum of distinct (and repeatable) sounds. These sound-producing artifacts have a particularly interesting range of frequency—between 1,500 and 4,000 Hertz. This particular range of frequency is easily detectable from the surrounding acoustic environment and is also a very effective simulation of reindeer calls.[24]

Tests have been conducted using reconstructed bone whistles from the Upper Paleolithic and hunting whistles from present-day Mackenzie Indians in Northwest Canada.[25] Both whistles provoke a state of curiosity in reindeers. After scanning the landscape to find the sound source, the reindeer will approach the hunter, somewhat mesmerized. Repeated blowing of the whistle provokes a state of relaxation, followed by a complete loss of the defense mechanism. The reindeer lies on the ground in a complete state of trust and allows the hunter to strike. This phenomenon of rupturing the natural soundscape with artificial tones, forcing the listener (animal and human) to stop, scan, and anticipate another sound manifestation, would have been well-known to prehistoric humans. In terms of initiation, this potential to sonically prompt initiates into action was another effective way to raise anxieties and provoke the loss of rational responses.

At the Mousterian site of *La Quina* (Les Gardes, Charente), archeologists have excavated a hybrid whistle with two holes, probably used to introduce initiates to esoteric hunting skills. From this object to the concept of a flute may only be only a small step, yet it was a giant leap in terms of sonic effectiveness (see Figure 5). As it happened, the sound spectrum was further expanded when the ulnas (cubitus) of eagles and vultures were intentionally perforated in naturally hollowed bone tubes and converted into flutes.[26] Some of these have been found in archeological layers dating from the Mousterian to the Magdalenian, the best known stemming from Isturitz.[27] Despite its fragmentary state, it is complete enough to be reconstructed and tested for frequency and tones. Based on a series of acoustic analyses, Francesco d'Errico and his collaborators concluded that

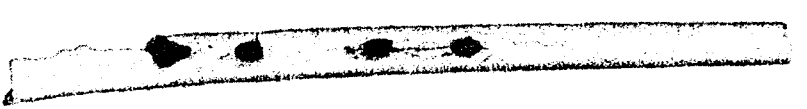
- the holes drilled into the bone were purposefully situated so as to produce melodic continuity;
- the length of the flute seems to have been predetermined to correspond to precise acoustic expectations; and
- small notches seem to have helped the flute maker in determining length and positioning of the holes.

For our purpose, I wish to emphasize that the flute produces a wide spectrum of artificial sounds, which, I believe, was crucial for creating a sonic environment conducive to transformation (neurological, psychological, and physiological) in the cave.

Flutes have been used in rites of initiation worldwide. New Guinea offers the best analogy.[28] Gilbert Herdt writes about the ceremonies in the mountain-dwelling Sambia tribe, who regard flutes as an embodiment of mystical spirits (demons). The flutes are long hollow tubes and have no lateral stops to control pitch, and the interval between the notes is too wide for harmonic sequences. This structural handicap is overcome by pairing flutes and playing repetitive, antiphonal tunes.[29] For the Sambia, the flutes are, in most cases, the revelation of the initiation.

Except for learning that the flutes are sounded by men rather than by spirit-being voices, the initiates are not told much more about them at the time, a very strong

Figure 5
Perigordian Flute from Isturitz (Pyrénées-Atlantique). Redrawn from Dominique Buisson, "Les Flutes paléolithique d'Isturitz," in *La Pluridisciplinarité en archéologie musicale*, eds. Catherine Homo-Lechner and Annie Bélis, 269.



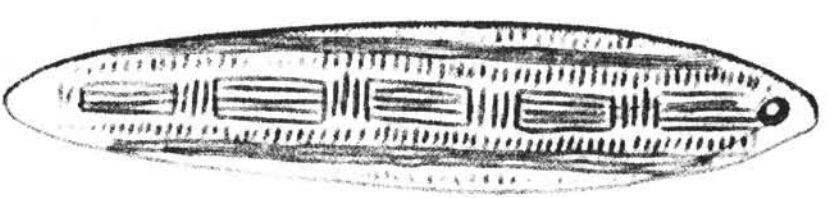
injunction is placed, however, on revealing their nature or exposing them to women or the uninitiated . . . "You must never play with them in the village. If . . . two of you play the flutes in front of children you will be killed."[30]

The flutes are heard but not seen by noninitiates. The mystical nature of the unseen phenomenon allows the initiates to terrorize the noninitiates. This point is important as it might help explain the recurring phenomenon of small sanctuaries in Upper-Paleolithic caves, which seem to have hosted transient passages entirely different from those that took place in the large halls. In other words, the hall was secular and visited indiscriminately, while the so-called sanctuaries were sacred loci reserved for initiation. Here, again, the sound of instruments used in the initiation may have been heard, but not necessarily seen. By projecting the kind of secrecy surrounding the instruments in New Guinea today into the Upper Paleolithic, we begin to see a confirmation of intentionally manufactured effective affects and affected effects. If indeed these bone flutes were used in a cave, they would have made a tremendous and unquestionable impact on potential initiates.

Pfeiffer writes that "instruments resembling bull-roarers . . . have been found in the caves, and one can only imagine how that unearthly noise would sound deep in the earth, bouncing and rebouncing off the walls of natural echo chambers."[31] Carved in reindeer antler or mammoth ivory, the bullroarer (see Figure 6) has been the sound-making instrument best fitted to produce the low-pitched sound used in initiations. Indeed, the bullroarer is present in the Upper Paleolithic as well as in many historical hunter-gatherer societies (Africa, the Americas, Australia, Melanesia). The bullroarer in its apparent simplicity is actually kinetically challenging. Indeed, two distinct gestures are required to produce the necessary double rotation.

The bullroarer is necessarily foliated and symmetrical. The velocity and size of the bullroarer will determine its tone, an increase in frequency on the ascending half of the circular motion, and a characteristic and impressive roaring on the descending portion. The gyration is irregular and

Figure 6
Magdalenian bullroarer from Grotte de La Roche, Lalinde (Dordogne). Redrawn from Michel Dauvois, "Les témoins sonores paléolithique," 171.



produces noticeable variations, which can be used to anthropomorphize the sound-making device. The faster the gyration the higher the frequency. The bullroarer seemed to have been associated to the bison and the auroch, in that they all emit characteristically low-frequency sounds. The sound of bullroarers in a cave is highly effective.[32] They could easily induce neurological responses in the initiates and would have undoubtedly contributed to their conditioning.

> These sonic reproductions have been more remarkable in an underground location, plunged in permanent darkness, amidst particular spatial acoustics, where the softest sound takes on a more astonishing depth than anywhere else. To this end, the "Salon noir" in the cave of Niaux (Ariège) provides a kind of natural amphitheater with an exceptional acoustic due to its considerable height. The bullroarer's rotative motion provides the listener with an astonishing aerial feeling of verticality and spatialization for the "flying" sound. When the gallery is tighter, the sonic presence becomes closer, and this can be experienced in the caves of Trois-Frères and Le Portel.[33]

In central Australia, these instruments are called *churinga* or *tjurunga*, and Baldwin Spencer described their effect thus:

> Women and children believe that the noise made by twirling the bullroarer is the voice of a great spirit that comes to carry off the boy during initiation and in no case is a woman allowed to see one. This belief, held by the women and children, is apparently widely spread over the whole of Central and Northern Australia and was probably, at one time, universal in its distribution amongst Australian tribes. It is equally true that the youths are, everywhere and always, at the time of initiation, told that the noise is not the voice of a spirit but is made by the bullroarer. They are also warned that on no account must they speak of it to the women and children.[34]

This quote reveals several aspects inherent to sound-making devices used in the context of initiation. The bullroarer embodies a demonic figure whose predilection is to visit initiates unannounced and to terrorize women with shrill and piercing sounds. It is also associated with the rumbling of thunder or the characteristic roar of strong wind. A third and important association is with male genitals (a flatulent phallus[35]). The bullroarer, like the flute in New Guinea, is kept secret and hidden from the noninitiates. In most cases, secrecy is meant to protect the circumcised initiate from the polluting gaze of noninitiates. And like the flutes in New Guinea, the noninitiates are prohibited from seeing the bullroarers. If beheld by noninitiates or shown intentionally by a man to a woman or infant, the punishment is death to all. As already observed, the notion of revelation is as universal as the prohibitions *vis-à-vis* noninitiates. The sound of the bullroarer symbolizes a layer of esoteric knowledge, which

can only be revealed during initiation. What is revealed to the initiates is the deceptive aspect of the initiatory procedure: a secret that there is no secret, no demons, but only a mechanically produced sound. Through this initiatory procedure, the initiate is induced to the art of deception.

The last point I wish to make relates to the potential relationship between the parietal imagery and the sound-producing artifacts. As already mentioned, there seems to be a correlation between zones of iconographic manifestations and points of high resonance. The selection of acoustically suited loci for these images implies a complex planning procedure. This highly developed understanding of the caves' architectonics *confirms* the notion that these places were arbitrarily selected for specific activities and were also approached as cultural reservoirs where mnemonics were archived in formulaic layers. Who were the recipients of this exoteric and esoteric knowledge? How was the archived information transmitted? It is my belief that by gathering all the available lines of evidence we begin to see a faint, but nonetheless informative, behavioral outline.

By articulating three obviously related givens, such as acoustics, sound-producing artifacts, and parietal imagery, the cave becomes the receptacle for specific cultural activities, which have been consistently situated on the margins for the past 35,000 years. There seemed to have been a continuous desire among waves of human cultures throughout (pre)history to contain the unfathomable, the transient, and the altered into secret places. The parietal images in the deep caves were intentionally situated in places where access could be controlled. The revelation of these hidden images was only possible after varying degrees of physical ordeals. By associating the potential effectiveness of revealed images with the mind-altering sounds from sound-making devices, the cave becomes a very effective locus for initiation. In this anxiety-ridden environment, initiates' psychosomatic responses and conditioning could have been carefully monitored. In a group or alone, the transient passage of initiates in specific locations in the caves would have certainly been punctuated by very potent effects. The impact of a revealed image of a zoomorphic configuration with the low roaring of a bullroarer would persist in the initiate's memory. The next step would be to reveal the knowledge contained in the image or the mechanical nature of the bullroarer—in other words to initiate the individual (perhaps at varying degrees) to the core of the belief system which maintained the community as a unified whole.

CONCLUSION

Breuil's narrative was an attempt to reconstruct a past that fit into the expectations of an audience thirsty for exotic primitivism. But behind Breuil's ethnocentric façade is a key concept which was discarded too quickly by his successors: the cave as a place for ordeals, as a reservoir of

esoteric knowledge, as a site of transformation where secrets were revealed to anxious initiates.

Ethnographic models of initiation derived from cross-cultural research contribute to a better understanding of the human use of caves in the Upper Paleolithic. By drawing an analogy with contemporary hunter-gatherer societies, we begin to observe a cultural constant, which survived for thousands of years. I am speaking here of the social necessity to mark life cycles and to initiate individuals to esoteric tribal lore. My discussion has been an attempt to emphasize the performative components inherent to these cultural practices. Ordeals require a prepared set of effects, which are manufactured to influence the individual both physically and psychologically. The premeditated and intentional nature of these procedures requires expertise and skills which do not necessarily belong to a collective's continuum of production. In other words, these ceremonies operated on the margins, and it was on this narrow path in between two worlds that the initiates proceeded with anxiety and fear.

The conditioning of the initiates is a vast subject matter; suffice it to state that initiation requires predetermined formulas that are the domain of experts in deception. These deceptive formulas are designed to create a certain degree of alteration and to emphasize the alienation factor—a traumatic (and dramatic) separation with the habitual. To manufacture this separation with the habitual, the initiators use a variety of techniques. For the purpose of our discussion, I have singled out one transformative phenomenon—acoustics. Changing the soundscape by means of sound-making devices turns the cave into a mesmerizing and terrifying environment. One can easily hypothesize that the revelation of these sound-producing artifacts was, very much like in Papua New Guinea, accompanied by threats and secrecy.

This hypothesis can be substantiated by looking at the cave's architectonics, specifically, the spatial systematization of knowledge by means of existing morphological and topographical configurations. Approached morphologically, the cave becomes a container where anthropogenic traces follow a predictable architectonic logic. The cave presented many opportunities for iconographic manifestations, but despite that plurality of potentially workable surfaces only specific places were selected. I firmly believe, as do some other prehistorians, that the organization of images according to architectonic particularities attests to a well-planned mise-en-scène.[36] Thus, the cave provided a locus where information could be archived according to conventions primarily based on the spaces' suitability for iconographic manifestations, collective gatherings, or individual seclusion.

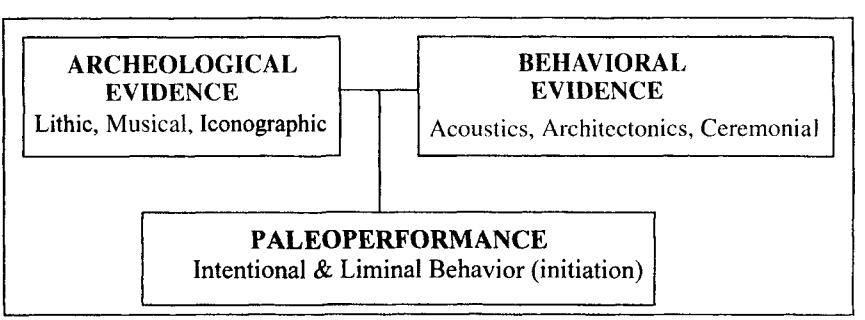
The selection of specific places might have been a more complex process than expected. Indeed, as I have already mentioned, there seemed to have been an acoustic component for the choice of suitable wall surfaces. The

Paleolithic population appears to have had a well-established knowledge in the physics of sound. The dyad image/sound emerges as an empirical fact, to which I should like to add a third element: the sound-making device. Indeed, it is difficult to imagine that sound-producing artifacts were not used to transform the spatial characteristics of a cave. Therefore, the triad image/sound/instrument is offered here as another performative approach for the understanding of Upper-Paleolithic caves that draws on initiatory procedures in contemporary hunter-gatherer societies. This highly choreographed societal behavior on the margin of the habitual is what I define as Paleoperformance.

But is it really a new approach? Of course, the concept of the cave as a locus for initiation has been suggested before. But the notion that prehistoric remains can be methodically reconstructed may now avail itself of a methodology developed in the discipline of performance studies, where human behavior is the primary object of study, along with marginal social practice, and fieldwork in the participant observation mode.[37] In Figure 7, I have summarized the main fields currently under investigation. Linking these areas and their evidence offers a methodology that will contribute to the establishment of Paleoperformance as a genuine approach for our understanding of the human use of caves in the Upper Paleolithic.

I am convinced that, without incorporating the behavioral component into our interpretations, our understanding of prehistoric caves and their iconographic manifestations will always remain in the limited realm of the quantitative. Numbers are important, but the gestures behind the artifacts are also fundamental; fortunately, the one does not exclude the other. By comparing some contemporary initiatory procedures with the available archeological evidence from the Upper Paleolithic, I hope to have shown that not only was the cave a liminal locus for marginal activities, but that these activities were intentionally so, as well as highly performative, and, as Pfeiffer argued, "pure theater."[38]

Figure 7
Thematic structure connecting various evidence to Paleoperformances.



NOTES

1. From the Latin *limen*, meaning threshold or margin.

2. See, for example, Paul G. Bahn. *The Cambridge Illustrated History of Prehistoric Art*. Cambridge: Cambridge University Press, 1998.

3. Henri Breuil. *Beyond the Bounds of History*. London: Gawthorn, 1949: 16.

4. Breuil. *Beyond the Bounds of History*, p. 83.

5. J. David Lewis-Williams. "Rock Art and Ritual: Southern Africa and Beyond." In *Arte paleolítico*, ed. Teresa Chapa Brunet and Mario Menéndez Fernández. Madrid: Editorial Complutense, 1994: 277–289; quotation from p. 284.

6. See Henri Breuil. *Quatre Cents siècle d'art pariétal*. Paris: Presse de la Sapho, 1952; Salomon Reinach. "L'Art et la magie: A propos des peintures et des gravures de l'Age du Renne." *L'Anthropologie* 14 (1903): 257–266; Weston La Barre. *The Ghost Dance: The Origins of Religion*. New York: Dell, 1970.

7. See J. David Lewis-Williams. "Wrestling with Analogy: A Problem in Upper Palaeolithic Art Research." *Proceedings of the Prehistoric Society* 57 (1991): 149–162.

8. John E. Pfeiffer. *The Creative Explosion: An Inquiry into the Origins of Art and Religion*. New York: Harper & Row, 1982: 41–42.

9. http://www.yale.edu/hraf.

10. Pfeiffer. *The Creative Explosion*, p. 39.

11. See Giza Roheim. *The Eternal Ones of the Dream: A Psychoanalytic Interpretation of Australian Myth and Rituals*. New York: International Universities Press, 1945.

12. See Jean S. La Fontaine. *Initiation*. Manchester: Manchester University Press, 1985: 26.

13. See Roheim. *The Eternal Ones of the Dream;* Bruno Bettelheim. *Symbolic Wounds: Puberty Rites and the Envious Male*. New York: Collier Books, 1962; Audrey I. Richards. *Chisungu: A Girl's Initiation Ceremony among the Memba of Zambia*. London: Tavistock, 1956; Max Gluckman. "Les Rites de passage." In *Essays on the Ritual of Social Relations*, ed. Max Gluckman. Manchester: Manchester University Press, 1962: 1–52; Michael R. Allen. *Male Cults and Secret Initiations in Melanesia*. Melbourne: Melbourne University Press, 1967; Victor Turner. *The Ritual Process: Structure and Anti-structure*. New York: De Gruyter, 1969; Joan Bamberger. "Myth of Matriarchy: Why Men Rule in Primitive Society." In *Woman, Culture, and Society*, ed. Michelle Zimbalist Rosaldo and Louise Lamphere. Stanford: Stanford University Press, 1974: 263–280; La Fontaine. *Initiation;* Chris Knight. *Blood Relations: Menstruation and the Origins of Culture*. New Haven, CT: Yale University Press, 1991.

14. Gilbert H. Herdt. *Male Initiation in Papua New Guinea*. London: Transaction Publishers, 1982: 39.

15. Paul G. Bahn. "Dancing in the Dark: Probing the Phenomenon of Pleistocene Cave Art." In *Human Use of Caves*, ed. Clive Bonsall and Christopher Tolan-Smith. Oxford: Archaeopress: 35–37; quotation from p. 36.

16. See Steven J. Waller. "Sound Reflection as an Explanation for the Content and Context of Rock Art." *Rock Art Research* 10 (1993): 91–101; and "Taphonomic Considerations of Rock Art Acoustics." *Rock Art Research* 11 (1994): 120–121; Iégor Reznikoff. "Dimension sonore des grottes ornées." *Bulletin de la Société Préhistorique Française* 85 (1988): 238–246; and Michel Dauvois. "Sons et musique paléolithique." *Les Dossiers de l'Archéologie* 142 (1989): 2–11.

17. See Marc Groenen. *Ombre et lumière dans l'art des grottes*. Bruxelles: Université Libre de Bruxelles, Centre de Recherche et d'Études Technologiques des Arts Plastiques, 1997.

18. Lya Dams. "Palaeolithic Lithophones: Descriptions and Comparisons." *Oxford Journal of Archaeology* 4 (1985): 31–46; quotation from p. 45.

19. See Michel Dauvois. "Instruments sonores et musicaux préhistoriques." In *Préhistoire de la Musique*. Nemours: Musée de Préhistoire d'Ile-de-France, 2002: 33–45; Marcel Otte. "Regards sur la musique paléolithique." *News 95—Symposium 3A: Rock Art and Musiarchaeology*. <http://www.News95/NEWS95/3a/otte/otte.htm> (2002).

20. The result of his investigation can be found at <http://www.soundcenter.it/>.

21. To learn more about this very interesting work-in-progress, consult the following Web sites: <http://www.mus.cam.ac.uk/~ic108/lithoacoustics/#heading2> and <http://www.mus.cam.ac.uk/ic108/lithoacoustics/BAR2002/BARpreprint.html>.

22. Dams. "Palaeolithic Lithophones," p. 31.

23. See Dauvois. "Instruments sonores et musicaux préhistoriques."

24. See Dauvois. "Sons et musique paléolithique."

25. See Michel Dauvois and Xavier Boutillon. "Études acoustiques au Réseau Clastres: Salle des peintures et lithophones naturels." *Préhistoire Ariégoise* 45 (1990): 175–186.

26. See Dauvois and Boutillon. "Études acoustiques au Réseau Clastres"; Dominique Buisson. "Les Flutes paléolithiques d'Isturitz (Pyrénées-Atlantiques)." *Bulletin de la Société Française* 87 (1990): 420–433; Cècile Mourer-Chauviré and Gilbert Fages. "La Flute en os d'oiseau de la grotte sépulcrale de Veyreau (Aveyron) et inventaire des flutes préhistoriques d'Europe." *Mémoires de la Société Préhistorique Française* 16 (1983): 95–103; Francesco D'Errico, Paola Villa, Ana Llona Pinto, Rosa Idarraga Ruiz. "A Middle Paleolithic Origin of Music? Using Cave-bear Bone Accumulations to Assess the Divje Babe I Bone Flute." *Antiquity* 72 (1998): 65–79; Brago Kunej and Ivan Turk. "New Perspectives on the Beginnings of Music: Archaeological and Musical Analysis of a Middle Paleolithic Bone 'Flute.' " Nils L. Wallin, Björn Merker, and Steven Brown, eds. *The Origins of Music*. Cambridge, MA: MIT Press, 2000: 235–268.

27. Buisson. "Les Flutes paléolithiques d'Isturitz."

28. See Gilbert H. Herdt. *Guardians of the Flutes*. Vol. 1: *Idioms of Masculinity*. Chicago, IL: The University of Chicago Press, 1981; and idem, *Male Initiation in Papua New Guinea;* Yoichi Yamada. *Songs of Spirits: An Ethnography of Sounds in a Papua New Guinea Society*. Apwitihire: Institute of Papua New Guinea Studies, 1997; K.E. Read. "Nama Cult of the Central Highlands, New Guinea." *Oceania* 23 (1952): 1–25; Gregory Bateson. *Naven*. Stanford, CA: Stanford University Press, 1936.

29. See Yamada. *Songs of Spirits*, pp. 241–253.

30. Philip L. Newman and David J. Boyd. "The Making of Men: Ritual and Meaning in Awa Male Initiation" in *Rituals of Manhood*. Berkeley, CA: University of California Press, 1982: 263.

31. John E. Pfeiffer. "Was Europe's Fabulous Cave Art the Start of the Information Age?" *Smithsonian* 11:3 (1980): 90–13.

32. Walter Maioli, personal communication. Also Michel Dauvois. "Sons et musique paléolithique," p. 10.

33. Dauvois and Boutillon. "Études acoustiques au Réseau Clastres," p. 180.

34. Baldwin Spencer. *Native Tribes of the Northern Territory of Australia.* London: Macmillan, 1914: 211.

35. For a comprehensive discussion on the sexual nature of the bullroarer see Alan Dundes. "A Psychoanalytic Study of the Bullroarer." *Man* 11 (1976): 220–238.

36. See Groenen. *Ombre et lumière dans l'art des grottes.*

37. See Richard Schechner. *Performance Studies: An Introduction.* London and New York: Routledge, 2002.

38. See Pfeiffer. *The Creative Explosion.*