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Paleocybernetics: Technology and the prehistoric imaginary in American art of the 1960s and 1970s

Larisa Dryansky

Toward the end of *Sapiens* (2011), Yuval Noah Harari's recent popular history of the human species from the first appearance of *Homo sapiens* up to the present, the author evokes the possible "return of the Neanderthals" as a consequence of the reconstruction of the fossil hominid's genome.¹ This mention occurs in a chapter devoted to the conceivable demise of *Homo sapiens* in which Harari details how humankind at the turn of the twenty-first century is about to transcend its biological limits through different means of intelligent design, which herald the possibility of a godlike species emerging in our place.² In this context, the evocation of the resurgence of the Neanderthals not only serves to illustrate scientific ingenuity but, more importantly perhaps, underscores the book's central tenet, which is that, as it reaches its most advanced technological stage, humanity's fate is to become quite literally a prehistoric fossil. The mix of pessimism and awe contained in this account of evolution perfectly captures the mood of the day with respect to technology, and the publication's success is easy to understand. But, unbeknownst perhaps to its author, *Sapiens* also rehearses a topos that already has its own archaeology.³ In the 1960s and 1970s, as the electronic revolution was just beginning, futuristic

I would like to express my gratitude to Amy Plumb Oppenheim, Steina and Woody Vasulka, Dave Hanson, Maggie Creshkoff, Chelsea Spengemann, and Jean-Marie Dallet. My thanks as well to the anonymous peer reviewer of this essay whose comments were very helpful, and to the editors of this issue, Maria Stavrinaki and Stefanos Geroulanos.

¹ Y. N. Harari, *Sapiens: A Brief History of Humankind* (London, 2011), 451–53.

² Harari, *Sapiens*, 445–64.

³ I am using the term "topos" here in the media archaeological sense defined by Erkki Huhtamo. E. Huhtamo, "Dismantling the Fairy Engine: Media Archaeology as Topos Study," in *Media Archaeology: Approaches, Applications and Implications*, ed. E. Huhtamo and J. Parikka (Berkeley, 2011), 27–47.

visions were often coupled with the prehistoric imaginary. Indeed, while in the aftermath of the two world wars the horrors of modern technological warfare fostered a “regressive analogy between prehistory and modernity,”⁴ with the advent of the “information society” a concurrent paradigm took hold, grounded in the idea that mankind was on the brink of an evolutionary leap as momentous as that which saw the emergence of *Homo sapiens*. As today, this pre/posthistoric vision generated both anxiety and excitement. Yet, by throwing a bridge across the abyss of time between the dawning electronic age and the dawn of mankind, this approach also suggests that the binaries of progress and regress, of techno-euphoria and technophobia are not sufficient frameworks for engaging with the temporal complexity of technology. Excavating this moment—our own immediate prehistory—encourages us to read the present moment of technological upheaval against the grain and complicate the dialectic between human and technological evolution.

As paleontology reminds us, the onset of tool-making marks the real beginnings of humankind and technics are thus integral to the definition of humanity.⁵ It is true that the rise of the computer age constituted a crucial turning point in this respect. The art theorist Jack Burnham, a key advocate for the alliance of art and technology in this period, summarized the problem well when he distinguished between *homo faber* and what he termed *homo arbiter formae*: “As a culture producer, man has traditionally claimed the title *Homo Faber: man the maker* (of tools and images). With continued advances in the industrial revolution, he assumes a new and more critical function. As *Homo Arbiter Formae* his prime role becomes that of *man the*

⁴ M. Stavriniaki, “‘Enfant né sans mère, mère morte sans enfant’: Les historiens de l’art face à la préhistoire,” *Les Cahiers du Musée National d’Art Moderne*, no. 126 (Winter 2013–14): 10.

⁵ See K. P. Oakley, *Man the Tool-Maker* (London, 1949), and A. Leroi-Gourhan, *Le geste et la parole*, vol. 1, *Technique et langage* (Paris, 1964).

maker of esthetic decisions.”⁶ Burnham embraced this change, but the 1960s were also a time when automation caused great concern about the loss of the most basic manual skills. For artists, in particular, invoking prehistory could serve as an appeal for a lost authenticity, “a need to see art become *useful* again, beginning with a recognition of the insights it can provide into life and nature—their human significance in an age of dehumanized technology.”⁷ Yet references to prehistoric times may also be viewed, perhaps more fruitfully, as an invitation to reconnect with the primordial nature of technics and, rather than positing technology as an alien force, make it natural again, so to speak.

In *How We Became Posthuman* (1998), her essential study of the human-machine interface in the age of information, N. Katherine Hayles details how, starting in the postwar period, the assumption that information is disembodied has fed the fantasies about the advent of a posthuman species superseding humanity. Against the materiality/information divide, Hayles focuses on the history of science and on examples drawn from literature to show the continued dynamic tensions between human embodiment and the idea of a disembodied technology.⁸ Hayles does not refer to the “prehistoric idea,”⁹ nor does she address other areas of culture outside of literature. But, as just mentioned, in approximately the same period in which she

⁶ J. Burnham, “Systems Aesthetics” [1968], in *Great Western Salt Works: Essays on the Meaning of Post-Formalist Art* (New York, 1974), 24. On Burnham, see E. A. Shanken, “The House That Jack Built: Jack Burnham’s Concept of ‘Software’ as a Metaphor for Art,” *Leonardo Electronic Almanac* 6, no. 10 (1998), www.artextra.com/House.pdf; L. Skrebowski, “All Systems Go: Recovering Jack Burnham’s ‘Systems Aesthetics’,” *Tate Papers*, no. 5 (2006): <http://www.tate.org.uk/research/publications/tate-papers/05>; L. Skrebowski, “The Artist as *Homo Arbitrator Formae*: Art and Interaction in Jack Burnham’s Systems Essays,” in *Practicable: From Participation to Interaction in Contemporary Art*, ed. S. Bianchini and E. Verhagen in collaboration with N. Delbard and L. Dryansky (Cambridge, MA, 2016), 39–54.

⁷ L. R. Lippard, *Overlay: Contemporary Art and the Art of Prehistory* (New York, 1983), 8.

⁸ N. K. Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago, 1998).

⁹ M. Stavriniaki and R. Labrusse, “Editorial,” *Les Cahiers du Musée National d’Art Moderne*, no. 126 (Winter 2013–14): 3.

begins her study, artists interested in the intersections between art and science and in the artistic potentialities of new media engaged with these same issues. The phenomenon was not limited to the United States, but, because of the country's technological advance and because artists' access to new technologies was earlier and more widespread there, the American art scene offers an exemplary case to investigate this topic. In this context, I argue, the prehistoric imaginary was one of the privileged sites for engaging with the issue of disembodiment. If, on the one hand, the coupling of futurism with the prehistoric imaginary promoted a "cool," abstract vision of prehistory, on the other, artists also drew on the idea that the sensibility of the prehistoric world was predominantly tactile to bring out by comparison the haptic dimension of modern technology.

This was most explicitly the case in the discourse surrounding the then nascent medium of video art, the first full-fledged form of electronic visual art. Video, despite its name, is not primarily an optical medium. It is a signaletic technology in which sound is just as likely to occur as images.¹⁰ In this respect, video could be apprehended as breaking with the ocularcentrism associated with the art of modernity, whether it be the perspectival tradition that emerged during the Renaissance, or, its apparent anti-model, the disembodied opticality of high modernism as theorized by Clement Greenberg in the postwar period. In addition, the temporality of video had the unprecedented appeal of immediacy. Contrary to film, video is not constituted by a series of still images, but by a continuous stream of electronic impulses. Its time in this regard is that of a ceaselessly ongoing present, which in effect appears to dissolve the linear succession of historical time.

¹⁰ I. Blom, *The Autobiography of Video: The Life and Times of a Memory Technology* (Berlin, 2016), 20.

According to Pamela Lee, this aspect of video renders it one example among many of “chronophobia,” which in her account of time in the art of the 1960s is a defining characteristic of the period. Although Lee does not address the theme of prehistory directly, it works as a good illustration of her thesis that artists’ “increasingly fraught confrontation with technology” in a world dramatically reshaped by technological acceleration translated into “an almost obsessional uneasiness with time and its measure” and a sense of “noncontemporaneity, of not being with the time.”¹¹ However, if the chronological disjunctions attached to the prehistoric imaginary could function as temporal evasions, they also could work as a reminder of the multidimensionality of time in a moment obsessed with the new. In approximately the same period studied by Lee, the paleoanthropologist André Leroi-Gourhan summarized this question well, stating that “[t]echnology, a word with a specific meaning in modern industrial terminology, spreads progressively from the television set to the chipped flint tool.”¹² With this deliberately counter-chronological description of the connection between the Stone Age and the electronic age, Leroi-Gourhan invites in effect an illuminating reversal of perspective: rather than looking at modernity through an archaic lens, with all the technophobic biases this view can entail, discovering prehistory itself as already “technological.”

Coding prehistory: The cybernetic model

The equation between modern technology and prehistory is not recent, in fact, but has its roots in the time of the industrial revolution. To the Victorians, railroads, for instance, were evocative of dinosaurs, a comparison facilitated by the prehistoric relics unearthed in the process

¹¹ P. M. Lee, *Chronophobia: On Time in the Art of the 1960s* (Cambridge, MA, 2004), xx, xii, 223.

¹² A. Leroi-Gourhan, *Évolution et techniques*, vol. 1, *L’Homme et la matière* [1943] (Paris, 1971), 316.

of building the rail tracks.¹³ This analogy was perhaps best captured by Lewis Mumford, who, borrowing a term coined by Patrick Geddes,¹⁴ defined the nineteenth century's industrial revolution as a "Paleotechnic" phase sustained by an energy source dating from the carboniferous period: coal.¹⁵ Drawing on the stereotype of prehistory as an era dominated by brute force, Mumford also used this comparison to condemn the industrial age, decreeing that the Paleotechnic age generated a new form of barbarism.¹⁶

With the 1960s, however, a new revolution was underway. Heavy industry was losing ground to informatics, "carbon" giving way to "silicon"¹⁷—a shift vividly reflected by the film critic Gene Youngblood in 1970:

We're in transition from the Industrial Age to the Cybernetic Age, characterized by many as the post-Industrial Age. But I've found the term *Paleocybernetic* valuable as a conceptual tool with which to grasp the significance of our present environment combining the primitive potential associated with Paleolithic and the transcendental integrities of "practical utopianism" associated with Cybernetic. So I call it the Paleocybernetic Age: an image of a hairy, buckskinned, barefooted atomic physicist with a brain full of mescaline and logarithms, working out the heuristics of computer-generated holograms or krypton laser interferometry. It's the dawn of man: for the first time in history we'll soon be free enough to discover who we are.¹⁸

It is likely that Youngblood conceived the neologism "Paleocybernetic" on the model of Mumford's "Paleotechnic." Like Mumford, Youngblood plays on the clichéd perception of prehistory as a time peopled by primitive, still animal-like human beings. But unlike Mumford's apocalyptic vision, Youngblood's picture is utopian. Placed at the beginning of Youngblood's influential book *Expanded Cinema* (1970), it sets the tone for his visionary survey of recent

¹³ M. Freeman, *Victorians and the Prehistoric: Tracks to a Lost World* (New Haven, 2004), 4–5, 9–10, and 41–51.

¹⁴ P. Geddes, *Cities in Evolution: An Introduction to the Town Planning Movement and to the Study of Civics* (London, 1915).

¹⁵ L. Mumford, *Technics and Civilization* (London, 1934), 151–211.

¹⁶ Mumford, *Technics and Civilization*, 154.

¹⁷ G. Deleuze, *Foucault* (Minneapolis, 1988), 131.

¹⁸ G. Youngblood, *Expanded Cinema* (New York, 1970), 41.

artistic uses of technological images, from light shows and experimental film to video art, computer generated imagery, and holographic cinema. The prehistoric imaginary occupied a central position in the development of expanded cinema, a point I will return to. For now, it is necessary to turn to the field of cybernetics, which, according to Youngblood, displaced industry while opening the possibility of a radical new beginning for humankind.

The term “cybernetics” was coined by the mathematician Norbert Wiener to designate the theory of communication and control in living organisms and machines, which evolved out of the work he and his fellow scientists, Arturo Rosenblueth and Julian Bigelow, conducted for the American military during the Second World War on anti-aircraft artillery. Their aim was to improve the efficiency of the weapons by finding a method for the control apparatus of the gun to predict the future position of its target.¹⁹ They found the solution to this problem in the function of “feedback”: “the property of being able to adjust future conduct by past performance.”²⁰ The notion of feedback initially applied to mechanisms, but Wiener extended it to nervous systems. In 1950, Wiener first published his popular introduction to cybernetics, *The Human Use of Human Beings: Cybernetics and Society*. The concept of cybernetics soon was adopted, often indiscriminately, by a wide variety of disciplines beyond mathematics and information theory, and the name itself became a sort of umbrella term for the most advanced technology. In particular, the way in which Wiener’s investigations put on a par living organisms

¹⁹ N. Wiener, *Cybernetics: or Control and Communication in the Animal and the Machine* [1948] (Cambridge, MA, 1961), 5.

²⁰ N. Wiener, *The Human Use of Human Beings: Cybernetics and Society* (Boston, 1950), 33.

and machines led to futuristic speculations on the emergence of “cyborgs,” technologically ameliorated versions of the human species.²¹

Wiener’s own vision was, however, much bleaker. As mentioned, cybernetics was born during World War II, and in Wiener’s writings it retains the impress of this apocalyptic time, which concluded with the atomic bomb. The notion of entropy was central to Wiener’s theory: the idea that all systems tend to deteriorate and lapse into a state of chaos and sameness. The purpose of feedback is to fight entropy. Yet, in the end, nothing can prevent the fact that “[i]n a very real sense we are shipwrecked passengers on a doomed planet.”²² The specter of heat death looms large over Wiener’s world, and if there is a prehistoric element about cybernetics as he defined it, then it stems from a conception of prehistory akin to H. G. Wells’s portrait of the ultimate return of the universe to original chaos in *The Time Machine* (1895) and not to the techno-futuristic fantasy described by Youngblood.

To better understand the conflation of cybernetics and the Paleolithic, it is instructive to see how the image of prehistory itself was modified during this period. The traditional conception of prehistory as a brutish era did not subside in any way, as exemplified by Youngblood’s own text. But, alongside it, a cooler, more technological projection took hold. I use the term “cool” here deliberately to reference Marshall McLuhan (Youngblood’s other major inspiration along with Buckminster Fuller). The media theorist’s writings were indeed crucial in popularizing the notion of the age of information as a new prehistoric era. McLuhan himself drew on Wiener, deriving from the scientist the idea of the preeminent role played by communication technologies in shaping culture as well as the analogy between technological and

²¹ The term “cyborg” first appeared in 1960 in an article by Manfred E. Clynes and Nathan S. Kline. M. E. Clynes and N. S. Kline, “Cyborgs and Space,” *Astronautics*, September 1960: 26–27 and 74–76.

²² Wiener, *The Human Use of Human Beings*, 40.

physiological operations. But McLuhan discarded Wiener's mathematical theory of information, bending the scientific framework of cybernetics to his interests in literature and art.²³

Significantly, as Fred Turner reminds us, McLuhan discovered cybernetics at the same time that he was engaging with ethnography and so-called primitive art through his collaboration with his colleague at the University of Toronto, the anthropologist Edmund Carpenter.²⁴ Their exchanges resulted in a joint seminar on the new media of communication and in the interdisciplinary journal *Explorations: Studies in Culture and Communication* (1953–59). Echoes of McLuhan's dual interest in tribalism and communication run through his work, particularly in the parallels between the preliterate man of prehistory and the post-historic man of the electronic age.

According to McLuhan, the speed of electric means of communication, abolishing both temporal and spatial distances, collapsed the rational and mechanistic world that arose with the invention of Gutenberg's printing press and reached its apogee in the industrial age. In its place a new era was emerging, one characterized by a "retribalization" of the world linking humanity across the globe and by a resurgence, through the most up-to-date audiovisual technology, of a culture of orality characteristic of both extinct prehistoric cultures and surviving preliterate societies.

In McLuhan's system these cultures are also designated as "cool." The categories of "cool" and "hot" are pillars of McLuhan's media theory. "Hot" media belong to the preceding "age of literacy." High in definition, they leave little for the audience to complete. Such are the

²³ On Wiener and McLuhan, see D. F. Theall, *The Virtual Marshall McLuhan* (Montreal, 2001), 30 and 127; F. Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago, 2006), 52–53; and J. Bonnett, *Emergence and Empire: Innis, Complexity, and the Trajectory of History* (Montreal, 2013), 329–30n29. According to Nam June Paik, whose work I look at in the following pages, McLuhan's optimism put Wiener's pessimism "inside-out, as Marx put Hegel upside-down." N. J. Paik, "Norbert Wiener and Marshall McLuhan: Communication Revolution,"

Kyoto Prize lecture, 1998: http://www.kyotoprize.org/en/laureates/nam_june_paik/.

²⁴ Turner, *From Counterculture to Cyberculture*, 53.

movies, the radio, and the printed word. “Cool” media, on the other hand, are characteristic both of the age of information and communication introduced by electricity and of preliterate worlds. Sacrificing definition for speed, they require intense participation from the receiver who needs to fill in the missing data. The television and telephone are for McLuhan prime instances of “cold” media, as is the aboriginal medium of speech itself or, in a different way, the prehistoric stone axes still found among “Australian natives” in modern times.²⁵

Interestingly, in the field of prehistoric studies itself comparable ideas were being developed at the same time.²⁶ In 1963 and 1964 the British astronomer Gerald Hawkins published two groundbreaking articles on Stonehenge in which, backing up his study with the aid of a computer, he attempted to demonstrate that the Neolithic site was a solar and lunar observatory whose functioning was based on highly complex and accurate calculations.²⁷ A few years later, engineer and amateur archaeologist Alexander Thom published *Megalithic Sites in Britain*, in which he summarized his controversial theory regarding the existence of a prehistoric science of geometry and astronomy.²⁸ Similarly, at the end of the sixties the historians of science Giorgio de Santillana and Hertha von Dechend argued in favor of a megalithic origin of science.²⁹ This revision of prehistory as a scientifically sophisticated period had a lasting impact, as witnessed by *Overlay* (1983), Lucy Lippard’s survey of the prehistoric drive in contemporary

²⁵ M. McLuhan, *Understanding Media: The Extensions of Man* (London, 2001), 24–35. As Jennifer Roberts indicates, McLuhan’s use of the term “cool” echoes that of Claude Lévi-Strauss: J. Roberts, *Mirror-Travels: Robert Smithson and History* (New Haven, 2004), 109.

²⁶ Lippard, *Overlay*, 80–83 and 115–16.

²⁷ G. S. Hawkins, “Stonehenge Decoded,” *Nature* 200, no. 4904 (1963): 306–8. G. S. Hawkins, “Stonehenge: A Neolithic Computer,” *Nature* 202, no. 4939 (1964): 1258–61. Hawkins also published a book based on his findings: G. S. Hawkins, *Stonehenge Decoded* (Garden City, NY, 1965).

²⁸ A. Thom, *Megalithic Sites in Britain* (Oxford, 1967).

²⁹ G. de Santillana and H. von Dechend, *Hamlet’s Mill: An Essay on Myth and the Frame of Time* (Boston, 1969).

art. Casting a retrospective glance at the art scene of the sixties and seventies, Lippard established a connection between the supposed “international preliterate code language of numbers, motions, and measures” of the Neolithic and minimalism’s use of mathematical series.³⁰

Writing during the heyday of minimal art, Robert Smithson chose for his part to go even further back in time, stating of the “new monuments” of minimalist sculpture that they brought to mind the “Ice Age.”³¹ Smithson’s art and writings during this moment are themselves emblematic of a “cool” sensibility sustained by a dual fascination with prehistory and futuristic technology. Eugenie Tsai and Jennifer Roberts have well documented the connections in Smithson’s work between a crystalline form of primitivism and science fiction.³² As Pamela Lee has admirably demonstrated, this interest in futurism also extended beyond fiction to the science of cybernetics, an interest which Lee relates directly to Smithson’s engagement with issues of temporality. Lee thus excavates the essential contribution of Wiener’s notions of feedback and entropy to Smithson’s artistic dismantling of historical time. This connection was enriched by Smithson’s conflation of cybernetic temporality with the recursive model of time put forth by the Mesoamericanist George Kubler in *The Shape of Time: Remarks on the History of Things* (1962), a book that is itself shot through with references to electric circuitry and signaling.³³

³⁰ Lippard, *Overlay*, 82. For Lippard’s discussion of Hawkins, Thom, and de Santillana and von Dechend, see 80–84 and 115–16.

³¹ R. Smithson, “Entropy and the New Monuments” [1966], in *Robert Smithson: The Collected Writings*, ed. J. Flam (Berkeley, 1996), 11.

³² E. Tsai, “The Sci-Fi Connection: The I. G., J. G. Ballard, and Robert Smithson,” in *Modern Dreams: The Rise and Fall and Rise of Pop*, exh. cat. (Cambridge, MA, 1987), 70–75. Roberts, *Mirror-Travels*, 109. See also T. A. Zaniello, ““Our Future Tends to Be Prehistoric”: Science Fiction and Robert Smithson,” *Arts Magazine* 52, no. 9 (1978): 114.

³³ Lee, *Chronophobia*, 219–56. On Smithson and cybernetics, see also M. Maffei, “Robert Smithson et la cybernétique: Langage, technologie et abstraction” (PhD diss., Université Paris 8 Vincennes Saint-Denis, 2016).

Repudiating accounts of art's evolution based on a biological template, Kubler posited a pattern akin to the recursive causality of feedback. According to this scheme, "[art] history moved not forward but backward, and then forward again,"³⁴ an idea vividly captured by Smithson when he stated: "The future is always going backwards. Our future tends to be prehistoric."³⁵

Although Lee does not linger on this theme, the prehistoric imaginary was an important component of Smithson's "chronophobic" use of cybernetics. It is probably not beside the point to recall that in the 1960s the Mesoamerican cultures that were Kubler's objects of study were viewed as prehistoric, a perception to which Smithson himself subscribed.³⁶ But Smithson also drew inspiration from the recent speculations on the existence of prehistoric forms of coding, as revealed by his essay "The Artist as Site-Seer: Or, a Dintorphic Essay" (1966–67), which was unpublished in the artist's lifetime but contains many clues for understanding his art.³⁷ In it, Smithson refers to Hawkins's theory of Stonehenge as a computer, which he opposes to traditional interpretations of the site as a "primitive Druid Temple"; Hawkins's technological Stonehenge becomes in Smithson's text an archetype of "environmental coding," that is, a conception of the environment as essentially artificial and abstract rather than natural.³⁸

Prehistory appears as an elastic notion in this essay, which also includes references to Kubler, the pyramids of Egypt, and the "megaliths" that adorn the postapocalyptic landscape of J. G. Ballard's science-fiction short story, *Terminal Beach* (1964). Stretching to encompass Alexander Graham Bell's various technical inventions along with structuralist theory and direct mentions of

³⁴ Lee, *Chronophobia*, 245.

³⁵ R. Smithson, "Fragments of an Interview with P. A. [Patsy] Norvell," in Flam, *Robert Smithson*, 194.

³⁶ Roberts, *Mirror-Travels*, 109–10.

³⁷ R. Smithson, "The Artist as Site-Seer; Or, a Dintorphic Essay" [1966–67], in Flam, *Robert Smithson*, 340–45.

³⁸ Smithson, "The Artist as Site-Seer," 340.

cybernation, Smithson's technologically inflected vision of prehistory comes across in the end less as a futuristic projection and more as an eclectic version of Wilhelm Worringer's inorganic abstraction updated for the computer age.³⁹

Smithson's interest in prehistoric "coding" was in effect short-lived. As he explained in 1971 in answer to a question on the Nazca lines, the ancient Peruvian geoglyphs that were a source of inspiration for several of the Earthworks artists: "The Nazca lines have meaning only because they were photographed from airplanes, at least for our eyes conditioned by the twentieth century. All we can do is use our orders and systems to investigate them, and they generally turn out to be wrong—like 'Stonehenge Decoded.' Stonehenge doesn't strike me as a Neolithic computer. What is interesting is how we fail to understand such remote things."⁴⁰ Smithson's definition of prehistory as unknowable recalls Georges Bataille's earlier conception of the unintelligibility of prehistoric art.⁴¹ As for whatever futurism might have been contained in Smithson's attraction to cybernetics, it appears in the end to have been overshadowed by his fascination with entropy.⁴² Indeed, as Smithson's work evolved, so, in a kind of reversion to the prehistoric projections of the machine age,⁴³ did his references to prehistory become more explicitly a part of his "desublimation of the technological sublime."⁴⁴

³⁹ On Worringer's antinaturalist view of "primeval art," see S. Giedion, *The Eternal Present: The Beginnings of Art* (London, 1962), 40–44.

⁴⁰ R. Smithson, "...The Earth, Subject to Cataclysms, Is a Cruel Master" [1971], in Flam, *Robert Smithson*, 254–55.

⁴¹ G. Bataille, "Lascaux ou la naissance de l'art" [1955], in *Œuvres complètes*, vol. 9 (Paris, 1979), 37, 49, and 55.

⁴² Lee, *Chronophobia*, 243–50.

⁴³ On Smithson's "paleotechnic" vision of prehistory, see L. Dryansky, "Paléofuturisme: Robert Smithson entre préhistoire et posthistoire," *Les Cahiers du Musée National d'Art Moderne*, no. 126 (Winter 2013–14): 76–77.

⁴⁴ C. A. Jones, *Machine in the Studio: Constructing the Postwar American Artist* (Chicago, 1996), 268–343.

If Smithsonian ultimately dissociated his conception of prehistory from notions of coding, Dennis Oppenheim absorbed these ideas in a way that was not guided by an antinaturalist abstraction like the work of his colleague, but by the question of embodiment. Oppenheim's work constitutes an original and instructive example of how artists brought together prehistory and the cybernetic age. At first sight, however—and excepting the fact that he used media such as photography, film, and video to document his pieces—there seems to be nothing remotely technological about either the content or the appearance of Oppenheim's work from this period. On the contrary, the artist's oeuvre has often been associated with ancient ritualistic practices, starting with Burnham who in 1973 famously compared Oppenheim's working methods “to the traditional techniques used by the shaman in so-called primitive societies.”⁴⁵

But the link between Burnham and Oppenheim also invites another reading of the artist's approach. If Burnham viewed Oppenheim as a “shaman,” he also cast him as one of the leading figures of the new post-object art of the information age.⁴⁶ As mentioned earlier, Burnham was one of the main proponents in America of a futuristic fusion of art and technology. In his first book, *Beyond Modern Sculpture* (1968), he depicted the evolution of the ties between sculpture and technology as a process of increasing dematerialization leading in contemporary times to a “systems aesthetics” modeled on systems theory and cybernetics, and, from then on, in the near future, to the ultimate demise of sculpture itself. Like Youngblood, he also believed that the twentieth century was “the beginning of a critical transition for the whole human species” and that the leap to a “post-human species” was imminent.⁴⁷

⁴⁵ J. Burnham, “Artists as Shaman” [1973], in Burnham, *Great Western Salt Works*, 140.

⁴⁶ J. Burnham, “Real Time Systems,” *Artforum* 8, no. 1 (1969): 49–55.

⁴⁷ J. Burnham, *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of This Century* (New York, 1987), 371.

Progressively, however, Burnham's language switched from utopian to frankly mystical. This turn may in fact have been suggested to him by the precedent of prehistory. In *Beyond Sculpture*, he reached back into prehistorical times to account for the emergence of robot and cyborg art, relating the apparition of these new forms of automata to the prehistoric association of art, magic, and science depicted by Arnold Hauser in *The Social History of Art* (1951).⁴⁸ In Burnham's later writings this interest in magic led, however, to a departure from scientificity. Systems and structures became contemporary incarnations of the Kabbalah.⁴⁹ This is the phase to which belongs his view of Oppenheim as a shaman. But if Burnham strove to spiritualize technology, and in particular ideas derived from cybernetics, Oppenheim, on the contrary, experimented in his "prehistoric" work with how to embody these same notions.

Oppenheim's interest in information theory and cybernetics has been overlooked despite several traces of these themes in his work from the 1960s and '70s. The most explicit examples are two performances involving the artist's children: *Feedback* (1971) and *A Feed-Back Situation* (1971). In *Feedback*, Oppenheim traces with his finger on his teenage daughter's shirtless back a series of letters. The daughter articulates the letters individually without necessarily making out the sequence. The letters spell out profane words related to sex, which only the father can understand.⁵⁰ In *A Feed-Back Situation* (fig. 1), Oppenheim and his young son, Erik, stand shirtless next to each other with their backs turned to a Super 8 camera. Each tries to reproduce on the other's back the tracings which he feels at the same time being drawn on his own body. The process of exchange and the intertwined arms enact a kind of primeval, physical feedback system while the lines drawn on the backs circle in ways vaguely reminiscent

⁴⁸ Burnham, *Beyond Modern Sculpture*, 312.

⁴⁹ M. Ragain, "Introduction," in J. Burnham, *Dissolve into Comprehension: Writings and Interviews 1964–2004*, ed. M. Ragain (Cambridge, MA, 2015), xxi.

⁵⁰ My thanks to Amy Plumb Oppenheim for clarifying the structure and the content of this piece.

of feedback loops. With their punning titles, these performances might be understood as parodies of the period's infatuation with cybernetics.⁵¹ But, if provocation is not absent from the feedback pieces,⁵² they also have an intensity that indicates a deeper content. Contrary to the idea of cybernetics as an abstract, hyper-technological theory, Oppenheim here invests it with an almost raw materiality, which simultaneously gestures in the direction of the beginnings of art, the words traced by the artist on his daughter's back evoking rough, finger-drawn prehistoric pictures, while the lines traced blindly by father and son in response to each other's touch bring to mind the entangled prehistoric digital tracings on cave walls, which, according to Sigfried Giedion, were also executed in a state of semi-blindness due to the obscurity of the caverns.⁵³

The connection between feedback processes and tactility is in effect a recurrent motif in Oppenheim's work from this period. A good illustration is *Identity Stretch* (1970–75), which again involves the question of the relation, or feedback, between parent and offspring (fig. 2). For this piece, Oppenheim had his thumbprint and that of Erik enlarged thousands of times and transferred in asphalt onto a field in Upstate New York. Like several pieces of land art, the work evokes Neolithic geoglyphs. More importantly, the giant thumbprints monumentalize that most ancient procedure of image-making, the very “dawn of images,”⁵⁴ which is the impress.

Accordingly, Rosalind Krauss cited *Identity-Stretch* as an emblem of the “indexicality” that for

⁵¹ It is also highly likely that Oppenheim was inspired by the anthropologist Gregory Bateson's use of the notion of cybernetics, and particularly feedback, as applied to behavioral science. The artist's archive contains a clipping of an article by Bateson translated into French and illustrated with works by Oppenheim, including *Feedback*. I have not been able to trace the source of this document so far. My warmest thanks again to Amy Plumb Oppenheim for exhuming this archive and bringing it to my attention.

⁵² See S. Delpoux, “Paternités de Dennis Oppenheim,” *Les Cahiers du Musée National d'Art Moderne*, no. 99 (Spring 2007): 53–61.

⁵³ Giedion, *The Eternal Present*, 54–55.

⁵⁴ A. Leroi-Gourhan, *Le geste et la parole*, vol. 2, *La mémoire et les rythmes* (Paris, 1964), 212–16.

her was the defining feature of 1970s art.⁵⁵ Krauss, it is true, downplayed the prehistoric sources of such work.⁵⁶ Yet in her description of how the index “ced[es] the language of art back to the imposition of things,” it is hard not to hear echoes of a primordial conception of art.⁵⁷

At the same time, such an approach overlooks the technical considerations that entered into the making of *Identity-Stretch*. It is important to specify that Oppenheim did not transfer the thumbprints directly, but “made them on elastic material, pulled to maximum, then photographed.”⁵⁸ While impresses may belong to an archaic mode of image-making descended to us from prehistory, there is, as Georges Didi-Huberman reminds us, nothing rudimentary about them.⁵⁹ Making an impress is a technique,⁶⁰ a fact which Oppenheim in his way demonstrates with his manipulation of the thumbprints. But even more significant is how his stretching of the thumbprints brings out the looping motif formed by the papillary ridges, which, once more, evokes a feedback pattern. In the same period in which he conceived *Identity-Stretch*, Oppenheim also created a piece called *Identity Transfer* in which he figured the transfer of identity from one family generation to the next by having his eldest child touch his thumb with her own, then he in turn touch his father’s thumb, and, finally, the latter apply his thumb to the ground as if to leave its impress on the earth’s surface (fig. 3). Commenting on this work and on the content of the “transfer” enacted, Oppenheim, who was probably thinking of the discovery of the genetic code, explained: “You’re transferring coded information.”⁶¹ As in *A Feed-Back*

⁵⁵ R. Krauss, “Notes on the Index: Seventies Art in America,” *October* 3 (1977): 78 and 80.

⁵⁶ R. Krauss, “Sculpture in the Expanded Field,” *October* 8 (1979): 33.

⁵⁷ Krauss, “Notes on the Index,” 75.

⁵⁸ See the work’s caption.

⁵⁹ G. Didi-Huberman, *La ressemblance par contact: Archéologie, anachronisme et modernité de l’empreinte* (Paris, 2008), 30–31.

⁶⁰ Didi-Huberman, *La ressemblance par contact*, 27.

⁶¹ W. Sharp, “Interview with Dennis Oppenheim” [1971], in *Dennis Oppenheim: Explorations*, ed. G. Celant (Milan, 2001), 121.

Situation and in *Identity Stretch*, Oppenheim was engaging here with a nexus of ideas derived from cybernetics, which was then radically affecting the concept of “nature” by aligning organic functions with information processing.

Thus, alongside both posthuman fantasies and Smithson’s profoundly ambivalent position toward technology, Oppenheim invites a different approach in which technology is given a corporeal density. By combining references to advanced technology and to the biological operations of generation, he points in effect to the prehistoric emergence of technics, when, to borrow from Leroi-Gourhan, tools were first “exuded” like a natural organ from the brain and the body.⁶²

From picture back to image: Prehistory, tactility, and expanded cinema

Of all the bodily senses it is primarily with touch that Oppenheim connects feedback. Indeed, tactility is a key notion for understanding how in this period the technology of the electronic age could be related to a primeval sense of organic wholeness. This aspect was best theorized by McLuhan, for whom the immediacy and ubiquity of electronic communication technologies not only recreated the “tribal” world on a global scale, but, perhaps more importantly, introduced a profound shift in the structuring of the sensory apparatus of modern Western humankind. According to this theory, whereas vision had been the dominating sense since the Renaissance, the electric age reestablished the tactile “interplay of the senses” characteristic of “pre-literate man.”⁶³ Although McLuhan insisted as well on the disruptive aspects of such changes—he also qualified the electric age as the “Age of Anxiety”⁶⁴—these

⁶² Leroi-Gourhan, *Le geste et la parole*, 151–52.

⁶³ M. McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (London, 1962), 65.

⁶⁴ McLuhan, *Understanding Media*, 5.

ideas were immensely inspiring for artists engaged in exploring the creative potential of the new communication technologies. In particular, the project of replacing a tradition of ocularcentrism with a predominantly tactile model found resonance in the synesthetic environments of “expanded cinema,” a loosely defined category grouping film installations, video art, light shows, and artistic experiments with pioneering image technologies.

One of the most complete illustrations of this constellation between expanded cinema, tactility, and prehistory is Stan VanDerBeek’s *Movie-Drome*, a metal dome structure erected by the experimental filmmaker on an artists’ commune in Stony Point, just north of New York City (fig. 4). The *Movie-Drome* was intended as a prototype for an unrealized global communication system in which several domes would be positioned throughout the world, each linked to orbiting satellites that would store and transmit images between various sites,⁶⁵ providing an artistic interpretation of the McLuhanite idea of the “global village.” Inside the building, VanDerBeek, who is believed to have coined the term “Expanded Cinema,”⁶⁶ organized multimedia presentations combining slide and film projections from various sources: outtakes from his own experimental films, art historical and anthropological slides, found footage and stock imagery, bits of newsreels, abstract images made by the artist in pressed-glass sides, and so on.⁶⁷ The dome was inaugurated in 1966 during the New York Film Festival with a presentation significantly entitled *Feedback*, situating it squarely within the fascination for cybernetics characteristic of the times.

⁶⁵ S. VanDerBeek, “‘Culture Intercom’ and Expanded Cinema: A Proposal and Manifesto,” *The Tulane Drama Review* 11, no. 1 (1966): 38–48. G. Sutton, *The Experience Machine: Stan VanDerBeek’s Movie-Drome and Expanded Cinema* (Cambridge, MA, 2015), 11. My descriptions of the *Movie-Drome* are indebted to Sutton’s excellent study.

⁶⁶ For the history of this term, see Sutton, *The Experience Machine*, 199n5.

⁶⁷ Sutton, *The Experience Machine*, 31.

However, despite the visionary nature of this project, the *Movie-Drome* also constituted, as Gloria Sutton indicates, a “decidedly low-tech context.”⁶⁸ Sutton makes a keen distinction between, on the one hand, the immersive multimedia experience created by the *Movie-Drome*, which relied on simple equipment and did not attempt to deceive the viewer, and, on the other, the sophisticated illusionism of the “widescreen vernacular” and other new media forms that began to develop in this period, heralding current virtual reality technologies.⁶⁹ In effect, not only was the technical implementation of the *Movie-Drome* relatively unsophisticated, but, I want to argue, it generated a sensory environment designed to procure a prehistoric experience akin to that described by McLuhan.

For the first viewers of *Feedback*, the initially most striking aspect of the event was perhaps quite simply the fact of seeing images projected on the curved surface of a dome wall. Projections on spherical surfaces were not, in fact, a totally novel experience. As Andrew Uroskie recounts, early reviews of VanDerBeek’s expanded cinema tended to associate it with the circular cinema of Charles and Ray Eames. In 1959 the couple famously presented their film *Glimpses of the USA* on multiple screens inside a Fuller geodesic dome at the 1959 World’s Fair in Moscow, a technical feat repeated at the 1964 World’s Fair in New York with the projection of *Think* inside the IBM ovoid building.⁷⁰ Such comparisons, however, were based on a misconception, VanDerBeek’s intentions differing completely from the didactic, and even

⁶⁸ Sutton, *The Experience Machine*, 97.

⁶⁹ Sutton, *The Experience Machine*, 96–97.

⁷⁰ On these installations, see B. Colomina, “Enclosed by Images: The Eameses’ Multimedia Architecture,” *Grey Room*, no. 2 (Winter 2001): 5–29. Fred Turner has coined the term “surround” to refer to such circular environments: F. Turner, *The Democratic Surround: Multimedia and American Liberalism from World War II to the Psychedelic Sixties* (Chicago, 2013).

propagandistic, motives of the Eameses.⁷¹ The difference is apparent in the way each installed their images in space. In the environments that the Eameses designed, the image remains contained by a frame. Despite an impression of profusion, the couple's multiscreen technique organizes the images on strictly separate surfaces. Paradoxically, this tidy division creates an effect that is "intentionally *cohesive*, rather than disjunctive," the images "reinforcing one another to communicate a single, unmistakable message of limitless abundance and prosperity."⁷² By contrast, in the *Movie-Drome* the images overlapped without merging, recalling the superimposition of heterogeneous figures in cave paintings, which has so long intrigued prehistorians (fig. 5). Floating in space, they appear completely unmoored from the flat and well-defined surface that, according to Greenberg's then very influential views on art, was supposed to have been the support of images since humankind outgrew its prehistoric condition: "The Paleolithic painter or engraver could disregard the norm of the frame and treat the surface in a literally sculptural way only because he made images rather than pictures, and worked on a support—a rock wall, a bone, a horn, or a stone—whose limits and surface were arbitrarily given by nature. But the making of pictures means, among other things, the deliberate creating or choosing of a flat surface, and the deliberate circumscribing and limiting of it."⁷³ With the spherical *Movie-Drome*, VanDerBeek broke with the "norm of the frame," thus returning the "picture" to its primeval condition as "image." Indeed, the endless and chaotic stream of

⁷¹ A. V. Uroskie, *Between the Black Box and the White Cube: Expanded Cinema and Postwar Art* (Chicago, 2014), 166–67.

⁷² Uroskie, *Between the Black Box and the White Cube*, 167.

⁷³ C. Greenberg, "Modernist Painting" [1960–61], in *The Collected Essays and Criticism*, vol. 4, *Modernism with a Vengeance, 1957–1969*, ed. J. O'Brian (Chicago, 1993), 92.

projections produced a sensory overload, which was meant to exceed the capacities of visual representation itself.⁷⁴

The filmmaker in this respect seems to have been following quite closely McLuhan's notion of "auditory" or "acoustic space" as opposed to visual space. McLuhan developed this idea largely in dialogue with Carpenter, who himself first encountered it in his research on "Eskimos." In the article "Acoustic Space," which McLuhan and Carpenter jointly published in their journal *Explorations*, they described this space in terms that apply very well to the *Movie-Drome's* environment and its transformative experience:⁷⁵ "a sphere without fixed boundaries [...] It is not pictorial space, boxed in, but dynamic, always in flux, creating its own dimensions moment by moment. It has no fixed boundaries; it is indifferent to background. The eye focuses, pinpoints, abstracts, locating each object in physical space, against a background; the ear, however, favors sound from any direction."⁷⁶ Alexander Nagel has demonstrated convincingly how this space corresponded for McLuhan to a "return to the medieval integration of the senses after centuries of subjection to the visual systems of ordering."⁷⁷ But just as important, it seems, were the connections McLuhan established between the electric age's sensorium and the world of "pre-literate man." Thus, in an interesting case of a circular exchange of ideas, McLuhan in

⁷⁴ Sutton, *The Experience Machine*, 96.

⁷⁵ Sutton mentions that VanDerBeek owned a copy of *Explorations's* eighth issue, and that he was an avid reader of McLuhan's writings: Sutton, *The Experience Machine*, 54 and 57.

⁷⁶ E. Carpenter and M. McLuhan, "Acoustic Space," in *Explorations in Communication: An Anthology*, ed. E. Carpenter and M. McLuhan (Boston, 1960), 67. This volume collects articles culled from the journal *Explorations*. Branden Joseph points out that McLuhan, in his later publication, *The Medium Is the Massage* (1967), illustrates the concept of "auditory space" with a photograph of a multimedia performance by Andy Warhol's Exploding Plastic Inevitable. The bombardment of the senses provoked by the EPI indeed exemplifies the multidirectional nature of acoustic space. But, as Joseph also indicates, their aggressivity stands in stark distinction to the utopia of tribal unity. B. W. Joseph, "'My Mind Split Open': Andy Warhol's Exploding Plastic Inevitable," *Grey Room*, no. 8 (Summer 2002): 88–91.

⁷⁷ A. Nagel, *Medieval Modern: Art out of Time* (London, 2012), 156.

defining what he viewed as the indifference of non-literate men to visual values referred to Giedion's study of the conception of space in prehistoric art, which, in turn, was indebted to Carpenter's work.⁷⁸ Indeed, Giedion, like Carpenter and McLuhan, insisted on the "audible" rather than "optical" nature of prehistoric space, meaning that prehistoric space, like sound, was not structured around a fixed point of view and could spread in all directions simultaneously.⁷⁹ "Primeval art has no background... This is inherent in the prehistoric conception of space: all linear directions have equal right and likewise all surfaces, whether they be regular or irregular. They can be tilted at any angle with the horizontal throughout the entire 360 degree range. To the eye of primeval man, animals that to us appear to be standing on their heads do not appear inverted to him because they exist, as it were, in space free from the forces of gravity."⁸⁰

As a point of fact, sound was a crucial component of the *Movie-Drome* presentations. The audience that attended *Feedback* remarked on the way the sound reverberated throughout the room and praised the outstanding quality of the acoustics.⁸¹ Even more noteworthy was the way in which VanDerBeek played with the spatialization of image and sound to disorient the viewer: "the multidirectional movement of the projectors (affixed to a central turntable or wheeled carts) caused the aluminum walls to appear to pulsate while the changing tone and pitch of the soundtracks created acoustic reverberations around the space making it impossible to correlate specific sounds with their filmic sources."⁸² To intensify the experience, VanDerBeek instructed

⁷⁸ McLuhan, *The Gutenberg Galaxy*, 65–66. On Giedion and Carpenter, see S. Papapetros, "Modern Architecture and Prehistory: Retracing *The Eternal Present* (Sigfried Giedion and André Leroi-Gourhan)," in "Wet/Dry," special issue, *Res: Anthropology and Aesthetics* 63–64 (2013): 183–84.

⁷⁹ Giedion, *The Eternal Present*, 526.

⁸⁰ S. Giedion, "Space Conception in Prehistoric Art," in *Explorations in Communication*, 86–87. This essay directly follows Carpenter and McLuhan's "Acoustic Space" in this volume.

⁸¹ Sutton, *The Experience Machine*, 31.

⁸² Sutton, *The Experience Machine*, 95.

viewers to lie down at the edges of the circle with their feet toward the center. The switch from a vertical or semi-vertical (in the case of the traditional seated position of the film spectator) to a horizontal station, combined with the displacing of eyesight to the margins, clearly signified a rupture with what McLuhan identified as the ocularcentric paradigm of the “Gutenberg era.”

At the same time, the sources of the images that entered into the *Movie-Drome*’s multimedia experiment still belonged to the pre-electric age: they were derived from photography and film. As indicated, VanDerBeek’s original idea was to use satellite transmission and video and computerized images, a project that could not be realized at the time. In the same period, however, video emerged as a full-fledged artistic medium. A quintessentially audiovisual technology, video appeared in many ways as the medium *par excellence* for giving expression to the sensory interplay depicted by McLuhan. Video art pioneers made good use of the technology’s dual nature, using sound synthesizers, for instance, to produce and manipulate video images. Significantly, several of these experimenters had backgrounds not in the visual arts, or not primarily, but in music. Such was the case foremost with Nam June Paik, a musicologist and composer by training. In 1963 Paik, who was then based in Germany, organized at Galerie Parnass in Wuppertal what is often considered the first exhibition of video art, *Exposition of Music-Electronic Television*. As the title indicates, the event combined sound and image. Paik presented record and tape installations, prepared pianos, and other musical objects to be handled by the audience, along with a group of modified television sets whose image in some cases could be manipulated by the viewers either by talking into a microphone, by playing with the knob of a radio connected to the TV, or by using a foot-operated switch.⁸³

⁸³ E. Decker-Phillips, *Paik Video* (Barrytown, NY, 1997), 33–38.

Not only did Paik play with the audiovisual nature of the electronic medium, but he also highlighted its tactility in a manner that strongly resonated with McLuhan's conception of the prehistoric sensorium. In *Through the Vanishing Point: Space in Poetry and Painting* (1968), McLuhan and his coauthor Harley Parker, commenting on a cave painting from Altamira (where Paleolithic cave paintings were discovered for the first time), asserted: "The hand has no point of view."⁸⁴ By this they meant that the representational skills deployed by Paleolithic artists were founded on tactile rather than optical sensations. That same year, Paik in collaboration with the experimental filmmaker Jud Yalkut produced *Electronic Moon #2*, a film based on a video installation. Yalkut recorded with a film camera the abstract imagery appearing on the screen of a manipulated TV set. At one point, a hand (in all likelihood belonging to Nam June Paik) enters the frame, touching the TV screen. Backlit by the beam of electronic light emanating from the TV set (the "light-through" of television as opposed to the "light-on" of photographs and movies as McLuhan and Carpenter described it⁸⁵), it brings to mind the negative impresses of hands on cave walls, "touching through time"⁸⁶ to connect the electronic image and the prehistoric image through their shared tactility.

While Paik in the first phase of his work with electronic images relied on the hands-on modification of TV circuitry and magnetic fields, he soon switched to making his own tapes and using synthesizers that enabled him to make use of the plasticity of video technology in more

⁸⁴ M. McLuhan and H. Parker, *Through the Vanishing Point: Space in Poetry and Painting* (New York, 1968), 35. Parker, who was Head of Exhibition Design at the Royal Ontario Museum from 1957 to 1968, is perhaps most famous for his conception of the Hall of Fossil Invertebrates at the museum, which owed much to McLuhan's ideas. Nagel provides an in-depth study of this installation but does not comment on its prehistoric content. Nagel, *Medieval Modern*, 160–63.

⁸⁵ E. Carpenter and M. McLuhan, "Introduction," in *Explorations in Communication*, xi.

⁸⁶ As per the title of Ina Blom's essay "The Touch Through Time: Raoul Hausmann, Nam June Paik and the Transmission Technologies of the Avant-Garde," *Leonardo* 34, no. 3 (2001): 209–15.

sophisticated ways. However, the tactile quality of his video art did not diminish (quite the contrary), nor, despite his often repeated assertion that video was a new form of painting, did he revert to a pictorial type of representation. As David Zerbib remarks, Paik's handling of electronic matter to produce distorted images may be fruitfully compared with the "alteration drive," which according to Bataille lies at the origin of representation.⁸⁷ Following this theory, the will to alter the support, to inscribe a trace in matter, is prior to any attempt at mimetic representation.

For the art historian René Berger, who produced some of the earliest criticism on video art, and who was also well-versed in the writings of McLuhan, "the sophisticated tool that is electronics is paradoxically very close to the first bifaces of prehistory...Chronology is dissolved, traces turn to tracings, tracings in turn become trajectories, leading back symbolically to the hand impresses left by cavemen on the walls of their caverns."⁸⁸ This return to a prehistoric condition of the image must not be confused with a new case of primitivism in modern art. As Paik's example demonstrates, the pioneers of video art were on the contrary fascinated with the novelty of electronic technology and its specific properties. Rather, with the "Paleocybernetic" medium of video they were able to address anew the relation between technology and the senses and to rediscover the technical environment as a space for experimentation, "an open field of symbolization, as it was in Paleolithic times when men invented writing."⁸⁹

⁸⁷ D. Zerbib, "Paik, Heidegger and the Chelsea Girl; Or, Electronic Ecstasy Unveiled," in *Nam June Paik*, ed. S.-K. Lee and S. Rennert, exh. cat. (London, 2010), 185.

⁸⁸ R. Berger, "L'art vidéo: Défis et paradoxes" [1974], in *L'Art vidéo et autres essais (1971–1997)*, ed. F. Bovier and A. Mey (Dijon, 2014), 44.

⁸⁹ D. Zerbib, "Paik and the Humanization of Technology: The Other *Logos* of *Tekhnè*," in "Contributions to an Artistic Anthropology," ed. Y. Lee and H. Slager, special issue, *NJP Reader*, no. 1 (2010): 8.

Videory: Video's "prehistoric" temporality

With video, then, it seemed as if it were possible for humanity to retrace its footsteps back to the moments just prior to the beginnings of history. More radically, video appeared to make the very notion of history obsolete. As Paik declared: "The word 'history' came into being, because our events were *told* and *written down* thereafter. Now history is being recorded in image or video. Therefore from now on there is no more 'History,' but only 'Imagery' or 'Videory.'"⁹⁰ What Paik was alluding to was not just the switch from a literate to a post-literate society. Rather, his statement pointed to the different time consciousness introduced by video, one which was perceived as completely novel, but which also seemed to connect modern man again to prehistory, as suggested by one of Paik's most important video installations, *Moon Is the Oldest TV* (1965–92) (fig. 6).

The piece was first created in 1965 for Paik's inaugural solo exhibition in New York at the Bonino Gallery, before going through different versions. The basic principles of the installation, however, remained the same. It is composed of several TV monitors (from eleven to seventeen) placed on pedestals, which are aligned in a row. The screens feature circles and circle segments evoking the phases of the moon. These images are not played from a tape, but are created by modifying the internal workings of the TV sets, moving the picture tube scanner back and fixing a magnet at the neck of the tube. As Edith Decker-Phillips notes in her thorough technical description of the work, the bluish-white light emanating from the picture tube adds to the uncanny impression that one is seeing an actual broadcast of the real moon.⁹¹ At the same time, the stillness of the forms appearing on the screens contradicts the idea of "real time" that is

⁹⁰ N. J. Paik, "Binghamton Letter, Jan. 8, 1972," in *Nam June Paik: Video 'n' Videology 1959–1973*, exh. cat. (Syracuse, NY, 1974), n.p.

⁹¹ Decker-Phillips, *Paik Video*, 71.

supposed to be the defining feature of TV and video. The impression of timelessness, which is clearly designated in the work's title, is also underscored by the installation. The monitors sitting atop high pedestals take on a solemn, even monumental appearance, not unlike that of the minimalist "monuments" that for Smithson evoked the Ice Age.⁹² Indeed, it would not be far-fetched to compare them to megaliths. The astronomical theme of the piece encourages as well a comparison with Stonehenge.⁹³

"There is a myth that TV is an 'instant' medium," explained Paik in the early 1970s, "where as [*sic*] a metal sculpture is a 'permanent' medium."⁹⁴ Although this might appear in contradiction with the image of Paik as an iconoclastic Fluxus performer, he was much preoccupied with issues of preservation and permanence. Because it facilitated storage and retrieval of information, Paik viewed video as the contemporary medium best expressing the "Cult of Eternity" at the root of art.⁹⁵ Technical evolution has of course proved him wrong. But Paik's notion of video as connected to eternity touches also on something more fundamental: the idea that the medium's temporal essence is of a different nature from that of time as it is commonly understood. Instead of the immediate time of "real presence," it may in fact be better defined as the time of the "continual" or "eternal present," which according to Giedion was a characteristic of prehistoric art. By this Giedion did not mean that prehistoric art denied the flow of time, but more complexly that it displayed "the perpetual interflow of today, yesterday, and

⁹² Smithson, "Entropy."

⁹³ Toward the end of his life, Paik directly referenced prehistory in an installation entitled *From Neander Valley to Silicon Valley* (1996). It presents an anthropomorphic robot composed of vintage and recent TV sets, fur, antlers, stone, and wood.

⁹⁴ N. J. Paik, "Software Projects (in collaboration with Jud Yalkut) [1972–73]," in *Nam June Paik: Videa 'n' Videology*, n.p.

⁹⁵ Paik, "Software Projects."

tomorrow” whose multidimensionality precedes and exceeds the measure of clocks.⁹⁶ Paik furnished another illustration of this idea with the installation *TV Clock* (1963–81), a piece made prior to *Moon Is the Oldest TV*. It likewise consists of television monitors presented on high plinths with modified screens showing fixed abstract patterns that evoke the hands of a clock without actually imitating them.⁹⁷ In this manner Paik ironically presents the supersession of human clock time by the eternal time of electronic technology.

All the same, Paik’s critique of history stopped short of anti-humanism. A decade earlier, as the electronic revolution was just beginning, McLuhan announced with a strange kind of enthusiasm that “[h]istory has been abolished by our new media. If prehistoric man is simply preliterate man living in a timeless world of seasonal recurrence, may not post-historic man find himself in a similar situation? May not the upshot of our technology be the awakening from the historically conditioned nightmare of the past into a timeless present? Historic man may turn out to have been literate man. An episode.”⁹⁸ Against such a perspective, Paik expressed a strong desire to humanize technology,⁹⁹ and even let slip his hatred of technology.¹⁰⁰ From this point of

⁹⁶ Giedion, “Space Conception in Prehistoric Art,” 85–86.

⁹⁷ Decker-Phillips, *Paik Video*, 68–69.

⁹⁸ M. McLuhan, “Culture without Literacy,” *Explorations: Studies in Culture and Communication*, no. 1 (1953): 119.

⁹⁹ Zerbib, “Paik and the Humanization of Technology,” 6–20. Zerbib relates Paik’s concern for this question to the anti-technocratic approaches of both Martin Heidegger and the Frankfurt School. Another possible link, which has yet to be explored, is with the radically anti-modernist theory of Hans Sedlmayr, the controversial art historian whose seminar Paik attended as a student when he first came to Germany in the mid-1950s. In his book *Verlust der Mitte* (1948), Sedlmayr, a leading figure of the Viennese School, but also a former member of the Nazi party, devotes a section to the “dehumanization” wrought by technology in modern times. H. Sedlmayr, *Art in Crisis: The Lost Center*, trans. B. Battershaw (London, 2017), 238–40. Paik’s attendance of Sedlmayr’s seminar is mentioned in T. Kellein, “Die Welt der Kunst der Welt: Nam June Paik als Philosoph,” in *Nam June Paik: Video Time, Video Space*, ed. T. Stooss and T. Kellein, exh. cat. (Basel, 1991), 30.

¹⁰⁰ See e.g. N. J. Paik, “Nam June Paik California/New York/Boston Video Synthesizer Plus,” 1970, in *Nam June Paik: Video ‘n’ Videology*, n.p.

view, Paik's engagement with video is perhaps less instructive than that of his fellow pioneer of electronic art, Woody Vasulka, whose work stemmed from a fascination with the fact that "the machine is basically indifferent to our needs and wishes."¹⁰¹ One of Vasulka's early videos stages this indifference with an illuminating reference to prehistory. In a passage from this tape—entitled, significantly, *Evolution* (1971)—Vasulka manipulates the image of a chart of human evolution so as to give the impression of accelerating the progression of figures from hominid to *Homo sapiens* while simultaneously figuring an irresistible movement of regression by having the images slide horizontally in reverse (fig. 7). Vasulka created the sequence's anti-evolutionary and paradoxical play with time by using an effect called "horizontal drift," which he had recently discovered by accident. This feature, which is specific to the video image, makes it possible to slide video frames horizontally across the screen, an effect that Vasulka also contrasted with the vertical scrolling of film frames in the projector.¹⁰² In the case of *Evolution*, the horizontal orientation of the image designates a break both with anthropomorphic verticality and with the evolutionary pattern of history, humankind being returned here to its prehistoric state. As the tape progresses, in effect, human figures fade away. They are replaced first by TV sets and then by abstract, electronically generated forms. The final images show these shapes sliding back and forth in a manner reminiscent of the earlier procession of hominids, thus completing the process of replacement of a human-centered world by a machinic one.

In her remarkable study of early video as a memory technology, Ina Blom rightly insists on the differences between video time and human time: "For all the early emphasis on real-time procedures, video times were not necessarily calibrated to our sense of time, the normal human

¹⁰¹ W. Vasulka, "A Lecture Delivered at NTT Intercommunication Center, Tokyo, September 13, 1998," in *Buffalo Heads: Media Study, Media Practice, Media Pioneers 1973–1990*, ed. W. Vasulka and P. Weibel (Cambridge, MA, 2008), 396.

¹⁰² W. Vasulka, "Five Lectures" [1976], in Vasulka and Weibel, *Buffalo Heads*, 414–15.

perception of motion. In fact, they often did not even attempt to address human attention, but appeared to turn inward, privileging a series of properly machinic timescapes.”¹⁰³ *Evolution* presents such a machinic timescape. In a sense, the tape may be understood as a rejoinder to the period’s speculations on the assumption of *Homo sapiens* to a higher stage of humanity. But Vasulka’s approach more subtly undermines both techno-utopian and technophobic positions, reminding us that in order to fully take on the phenomenon of technology it is necessary to begin by questioning our human-centered biases. It is this decentering that, ultimately, provides the prehistoric imaginary with its enduring actuality.

¹⁰³ Blom, *The Autobiography of Video*, 101.