Penn Libraries
UNIVERSITY of PENNSYLVANIA

University of Pennsylvania
ScholarlyCommons

Publicly Accessible Penn Dissertations

1-1-2015

The Revolution Will Be Videotaped: Making a Technology of Consciousness in the Long 1960s

Peter Sachs Collopy

University of Pennsylvania, peter@collopy.net

Follow this and additional works at: http://repository.upenn.edu/edissertations

Part of the Communication Commons, and the United States History Commons

The Revolution Will Be Videotaped: Making a Technology of Consciousness in the Long 1960s

Abstract

In the late 1960s, video recorders became portable, leaving the television studio for the art gallery, the psychiatric hospital, and the streets. The technology of recording moving images on magnetic tape, previously of use only to broadcasters, became a tool for artistic expression, psychological experimentation, and political revolution. Video became portable not only materially but also culturally; it could be carried by an individual, but it could also be carried into institutions from the RAND Corporation to the Black Panther Party, from psychiatrists' offices to art galleries, and from prisons to state-funded media access centers. Between 1967 and 1973, American videographers across many of these institutional contexts participated in a common discourse, sharing not only practical knowledge about the uses and maintenance of video equipment, but visions of its social significance, psychological effects, and utopian future. For many, video was a technology which would bring about a new kind of awareness, the communal consiousness that—influenced by the evolutionary philosophy of Henri Bergson—Pierre Teilhard de Chardin referred to as the noosphere and Marshall McLuhan as the global village. Experimental videographers across several fields were also influenced by the psychedelic research of the 1950s and early 1960s, by the development of cybernetics as a science of both social systems and interactions between humans and machines, by anthropology and humanistic psychology, and by revolutionary political movements in the United States and around the world.

Degree Type
Dissertation

Degree Name
Doctor of Philosophy (PhD)

Graduate Group
History and Sociology of Science

First Advisor
John Tresch

Keywords
Consciousness, Media, Video

Subject Categories
Communication | United States History

THE REVOLUTION WILL BE VIDEOTAPED:

MAKING A TECHNOLOGY OF CONSCIOUSNESS IN THE LONG 1960s

Peter Sachs Collopy

A DISSERTATION

in

History and Sociology of Science

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2015

Supervisor of Dissertation

_____

John Tresch, Associate Professor of History and Sociology of Science

Graduate Group Chairperson

_____

John Tresch, Associate Professor of History and Sociology of Science

Dissertation Committee

Ruth Schwartz Cowan, Professor Emerita of History and Sociology of Science

Nathan Ensmenger, Associate Professor of Informatics and Computing, Indiana University

Fred Turner, Associate Professor of Communications, Stanford University

To my family: Marianne Sachs, Fred Collopy,

Andy Collopy, and Deanna Day

Acknowledgements

The history of experimental video that I recount here is one of interactions between participants in many fields, and the process of writing it has also required such collaboration. Thanks first of all to the members of my dissertation committee, each of whom has supported my research and career with great generosity. I began researching experimental video in seminars taught by Nathan Ensmenger and Ruth Schwartz Cowan, each of whom has shaped this work deeply through their advice and questions. John Tresch has been an endlessly creative mentor, suggesting new disciplinary contexts and historical continuities for my research. And Fred Turner has been an inspiration in making technological countercultures a subject of historical research.

   I also owe particular thanks to the experimental videographers who have supported me with conversation, advice, and access to archives, especially Stephen Beck, Skip Blumberg, Fred Collopy, Davidson Gigliotti, Andy Gurian, DeeDee Halleck, Ben Levine, Richard Milone, Tom Nickel, Ira Schneider, Parry Teasdale, Ann Woodward, and the late Paul Ryan. I have learned a great deal as well from other scholars, curators, and documentarians who are persuing this history, including Deirdre Boyle, Beth Capper, Sarah Chapman, Liz Flyntz, John Giancola, Andrew Ingall, Jon Nealon, Jenny Raskin, Robin Simpson, and Ed Webb-Ingall, and from scholars of video history more generally, including Zachery Campbell, Joshua Greenberg, Lucas Hilderbrand, Joshua Kitching, Dylan Mulvin, and Michael Newman.

   The University of Pennsylvania's Department of History and Sociology of Science has been a wonderful place to persue this research. Every member of the faculty has

ABSTRACT

THE REVOLUTION WILL BE VIDEOTAPED:

MAKING A TECHNOLOGY OF CONSCIOUSNESS IN THE LONG 1960s

Peter Sachs Collopy

John Tresch

In the late 1960s, video recorders became portable, leaving the television studio for the art gallery, the psychiatric hospital, and the streets. The technology of recording moving images on magnetic tape, previously of use only to broadcasters, became a tool for artistic expression, psychological experimentation, and political revolution. Video became portable not only materially but also culturally; it could be carried by an individual, but it could also be carried into institutions from the RAND Corporation to the Black Panther Party, from psychiatrists' offices to art galleries, and from prisons to state-funded media access centers. Between 1967 and 1973, American videographers across many of these institutional contexts participated in a common discourse, sharing not only practical knowledge about the uses and maintenance of video equipment, but visions of its social significance, psychological effects, and utopian future. For many, video was a technology which would bring about a new kind of awareness, the communal consiousness that—influenced by the evolutionary philosophy of Henri Bergson—Pierre Teilhard de Chardin referred to as the noosphere and Marshall McLuhan as the global village. Experimental videographers across several fields were also influenced by the psychedelic research of the 1950s and early 1960s, by the development of cybernetics as

a science of both social systems and interactions between humans and machines, by anthropology and humanistic psychology, and by revolutionary political movements in the United States and around the world.

Table of Contents

Illustrations

Introduction

Technologies of Consciousness

In the late 1960s, video recorders became portable, leaving the television studio for the art gallery, the psychiatric hospital, and the streets. The technology of recording moving images on magnetic tape, previously of use only to broadcasters, became a tool for artistic expression, psychological experimentation, and political revolution. Video became portable not only materially but also culturally; it could be carried by an individual, but it could also be carried into institutions from the RAND Corporation to the Black Panther Party, from psychiatrists' offices to art galleries, and from prisons to state-funded media access centers.

Videographers across many of these institutional contexts participated in a common discourse, sharing not only practical knowledge about the uses and maintenance of video equipment, but visions of its social significance, psychological effects, and utopian future. I refer to this discourse as *experimental video* because it was concerned with trying out a novel technology in a variety of social situations, constructing new experiences, and building organizations which were themselves experimental in institutional form; "heterarchical" video collectives were as common as hierarchical corporations. Experimental video is not quite an actors' category, though, and indeed some videographers used the word *experimental* more narrowly to refer to video art that incorporated synthesizers or otherwise emphasized the electronic nature of the medium. The terms preferred by videographers, like *guerrilla*, *underground*, *alternate*, and

independent, are more specific than my sense of experimental video, but effectively convey its countercultural sensibilities.

My promiscuous use of the term experimental video also captures the continuity that participants saw between different applications of this new technology. "This was the '60s revolution,'" explained artist Steina Vasulka. "We didn't have the division in the early times. We all knew we were interested in different things, like video synthesis and electronic video, which was definitely different from community access-type video, but we didn't see ourselves in opposite camps. We were all struggling together and we were all using the same tools."[1]

As writer Marco Vassi described the spirit of experimental video, "the enthusiasm for videotape came from the evenings we spent using the equipment with each other, to create portraits, and modes of psychological insight, and sheer technological art. I suppose we all had our first flashes of power through those sessions, the realization that if one had access to the technology, he had as strong a voice in shaping the destiny of the world as the politicians and generals."[2] Many saw portable video as an inherently democratic technology that would distribute this power to be heard more equitably. "The political implications of video, in terms of helping to define and articulate the interests of groups which up to now have been deprived of a voice (or at least an audience), are perhaps the most far reaching," wrote Sami Klein.[3] Experimental video was thus a

1. Steina Vasulka, interview by Lucinda Furlong, February 1982 quoted in Lucinda Furlong, "Notes toward a History of Image-Processed Video: Eric Siegel, Stephen Beck, Dan Sandin, Steve Rutt, Bill and Louise Etra," *Afterimage*, Summer 1983, 35.
2. Marco Vassi, *The Stoned Apocalypse* (New York: Trident, 1972), 239.
3. Sami Klein, "Everybody Will Be on Television," *Rolling Stone*, March 18, 1971, 22.

political project as well as an aesthetic and psychological one—and an attempt to turn magnetic recording against its origins as a centralizing and even fascist technology designed to facilitate broadcasting.

Experimental video could also be a means to a more sublime and less tangible end. By the middle of the twentieth century, such mystics as the French paleontologist and Jesuit priest Pierre Teilhard de Chardin and the English essayist and novelist Aldous Huxley saw new technologies as crucial keys to a new stage of human evolution in which people would share in a universal consciousness.[4] Inspired by Teilhard, Canadian humanist Marshall McLuhan suggested that electronic media were turning humanity into a "global village."[5] Each of these thinkers suggested that consciousness was a plenum in which humans participated, rather than a set of interacting individuals. Each was also influenced by French philosopher Henri Bergson, and particularly by the holism and panpsychism of his 1907 *Creative Evolution*.[6] Sharing—and indeed influencing—McLuhan's concern for communications, English anthropologist and cybernetician Gregory Bateson conceived of mind itself as a entity that existed not in individual selves, but rather in the larger system of humanity and its environment. Bateson too conceptualized this mind as an evolving being, though his own approach to evolutionary theory was shaped not by Bergson but by

---

4. Pierre Teilhard de Chardin, *The Phenomenon of Man*, trans. Bernard Wall (1959; New York: Harper Torchbooks, 1965); Aldous Huxley, *The Doors of Perception* (New York: Harper, 1954). Although Huxley's writing on technology is generally critical, it contains the possibility that specific technologies could contribute to spiritual progress. As Ronald Sion writes, "what is crucial for Huxley is the degree to which any technological change aids or impedes society in the achievement of its ultimate human destiny." Ronald T. Sion, "Aldous Huxley and the Human Cost of Technological Progress" (PhD diss., Salve Regina University, 1998), 6.
5. Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (1962; New York: Signet, 1969), 43.
6. Henri Bergson, *Creative Evolution*, trans. Arthur Mitchell (1911; Mineola, N.Y.: Dover, 1998).

his geneticist father William Bateson and the English utopian novelist and evolutionary theorist Samuel Butler.[7]

Under the influence of these men, in the middle of the twentieth century many Americans believed they had found tools which could deliver not only altered states of consciousness and greater insight into the self, but the ability to dissolve it and participate in a greater unity. "What makes the youthful disaffiliation of our time a cultural phenomenon, rather than merely a political movement," wrote Theodore Roszak in 1969, "is the fact that it strikes beyond ideology to the level of consciousness, seeking to transform our deepest sense of the self, the other, the environment."[8] Following Roszak, Fred Turner writes of American youth in the 1960s who "turned away from political action and toward technology and the transformation of consciousness as the primary sources of social change."[9]

These sources were linked because it was in certain technologies—including psychedelic (literally *mind manifesting*) drugs like mescaline and LSD, but also electronic networks of televisions, computers, and video recorders—that the counterculture found resources for altering their consciousness. "The only pure revolution in the end is technology," wrote Abbie Hoffman, who nonetheless contributed

---

7. Gregory Bateson, *Steps to an Ecology of Mind* (1972; Chicago: University of Chicago Press, 2000), xxi–xxii. I have not yet explored Butler's influence on Bateson's panpsychism or the role of photography in Butler's own thought. On the intellectual relationship between Butler and William Bateson, though, see William Coleman, "Bateson and Chromosomes: Conservative Thought in Science," *Centaurus* 15, no. 3–4 (1970): 300–301. On Butler himself, see Peter Raby, *Samuel Butler: A Biography* (Iowa City: University of Iowa Press, 1991) and James G. Paradis, ed., *Samuel Butler, Victorian against the Grain: A Critical Overview* (Toronto: University of Toronto Press, 2007).
8. Theodore Roszak, *The Making of a Counter Culture: Reflections on the Technocratic Society and Its Youthful Opposition* (Garden City, N.Y.: Doubleday, 1969), 49.
9. Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006), 4.

to the organization of mass political movements in ways most experimental videographers did not. "Yet that is the same as revolution in consciousness. Funny, one thing just buttons, light bulbs, needles and thread. The other totally internal, spiritual, personal, emotional.… It is in the fusion of that and endless other dichotomies that the road to revolution lies."[10]

For experimental videographers, video seemed not only a new medium, but one which would bring about a new kind of awareness, a new way of being human. Turner refers to such devices as "technologies of consciousness."[11] In the Bergsonian discourse of experimental video, such technologies had evolutionary significance. "Our bodies cannot keep up with what evolution via our minds would have us do," wrote Michael Shamberg in *Guerrilla Television*. "So we are evolving through our technology."[12]

Historians and critics of both video art and documentary video have recognized these intellectual influences, but have not explained them. Experimental videographers, writes Deirdre Boyle, "were university-bred intellectuals in awe of video, excitedly inventing new uses for it and spinning a radical rhetoric that announced their intentions, not merely for the future of video but for Planet Earth. Philosophically, their ideas sprang from the theoretical brows of Marshall McLuhan, Norbert Wiener, Pierre Teilhard de Chardin, Buckminster Fuller, and Gregory Bateson, among others."[13]

---

10. Free [Abbie Hoffman], *Revolution for the Hell of It* (New York: Dial, 1968), 86–87.

11. Turner, *From Counterculture to Cyberculture*, 234, 258.

12. Michael Shamberg and Raindance Corporation, *Guerrilla Television* (New York: Holt, Rinehart and Winston, 1971), section I, p. 5.

13. Deirdre Boyle, *Subject to Change: Guerrilla Television Revisited* (New York: Oxford University Press, 1997), 11.

The history of experimental video is an episode not only in the histories of art, media, and politics, but also in that of public science, of "knowledge in transit."[14] "The challenge of video's history has been taken on by the art world," write Doug Hall and Sally Jo Fifer, "though it might well have been claimed by social history or, for that matter, the history of science and technology."[15] Among the merits of approaching video from outside art history is, as Ina Blom writes, that "such art-centric accounts tend towards a rather generalizing approach to the technologies that inform new art production [which], in turn, leads to an equally standardized account of the sociality that figures as art's new sphere of operation."[16] My approach, then, is attentive to both the material and conceptual contexts in which experimental video emerged, and attentive not only to its artistic incarnations but to the psychiatric, psychological, anthropological, educational, ecological, and political practices with which video art was in conversation. This dissertation is an attempt to demonstrate not only the value of the history of technology for contextualizing this medium, but that of the history of science for understanding the interests and motivations of its users.

Creative Evolution

In 1907, French philosopher Henri Bergson published *Creative Evolution*. Employing the metaphysics he'd developed in his 1888 dissertation *Time and Free Will* and 1896 book *Matter and Memory*, Bergson argued that life is inherently "a tendency to act on inert

---

14. James A. Secord, "Knowledge in Transit," *Isis* 95, no. 4 (December 2004): 654–672.

15. Doug Hall and Sally Jo Fifer, "Introduction: Complexities of an Art Form," in *Illuminating Video: An Essential Guide to Video Art*, ed. Doug Hall and Sally Jo Fifer (New York: Aperture, 1990), 14.

16. Ina Blom, "The Autobiography of Video: Outline for a Revisionist Account of Early Video Art," *Critical Inquiry* 39, no. 2 (Winter 2013): 278.

matter," a creative force, or *élan vital*, that results in mutation and organic diversity.[17]

Bergson was already a prominent philosopher with a chair at the Collège de France when he published *Creative Evolution*, but it became his most widely read book and sparked the 1911 translation into English of his three major works. Although Bergson was already admired by William James, it was at this point that he became an international public intellectual; enthusiastic New Yorkers driving to his 1913 lectures at Columbia University supposedly caused Broadway's first traffic jam.[18] When Bergson was awarded the Nobel Prize in Literature in 1928, the president of the Nobel Committee cited *Creative Evolution* as his greatest accomplishment.[19]

Bergson's legacies are many. "In my youth," wrote molecular biologist Jacques Monod, "no one stood a chance of passing his baccalaureate examination unless he had read *Creative Evolution*."[20] In the 1900s and 1910s, Bergson's work was read primarily as a critique of rationalism and rationality, a "revolt against reason." Bergson avoided politics until World War I, but his books were appropriated by both conservatives and syndicalists in what Robert Grogin describes as an "intellectual assault upon the rationalist bases of French democracy." (When Bergson did enter politics, he engaged with international issues rather than domestic ones, playing a role in persuading Woodrow Wilson to enter World War I and later serving as president of the League of

---

17. Bergson, *Creative Evolution*, 96; Henri Bergson, *Time and Free Will: An Essay on the Immediate Data of Consciousness*, trans. F. L. Pogson (1913; Mineola, N.Y.: Dover, 2001); Henri Bergson, *Matter and Memory*, trans. Nancy Margaret Paul and W. Scott Palmer (1919; New York: Zone Books, 1988).

18. Leonard Lawlor and Valentine Moulard Leonard, "Henri Bergson," *Stanford Encyclopedia of Philosophy*, revised May 8, 2013, http://plato.stanford.edu/entries/bergson/.

19. Per Hallström, Nobel Prize award ceremony speech, December 10, 1928, http://www.nobelprize.org/nobel_prizes/literature/laureates/1927/press.html.

20. Jacques Monod, *Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology*, trans. Austryn Wainhouse (New York: Alfred A. Knopf, 1971), 26.

Nations' International Committee on Intellectual Cooperation.)[21] Bergson became an important point of reference in continental philosophy, both in the early twentieth century and after a revival sparked by Gilles Deleuze's 1966 book *Bergsonism*.[22] And outside of France, his conception of time as a heterogenous, continuous phenomenon became a theme in Anglophone literature, including the work of T.S. Eliot, Willa Cather, and Wallace Stevens.[23]

Catholic theology also grappled with Bergsonism. Many Catholics embraced Bergson's mysticism, and Bergson himself expressed a "moral adherence to Catholicism," though he never formally converted from Judaism. The influential neo-Thomist Jacques Maritain began his philosophical career as an enthusiastic Bergsonian, and devoted his first book to the relationship between Bergson and Thomas Aquinas. Faced with the tension between these doctrines and with Bergson's popular appeal, in 1914 the Church placed Bergson's work on the Index of Prohibited Books.[24]

Although he had these many audiences, at the center of Bergson's work was an effort to "re-erect the bridge, broken down in Kant's day, between metaphysics and science." He followed research on telepathy and other occult phenomena, for example, and served as the president of London's Society for Psychical Research.[25] Later, Bergson debated

21. R. C. Grogin, *The Bergsonian Controversy in France 1900–1914* (Calgary: University of Calgary Press, 1988), 82, 88, 201–203.
22. Lawlor and Leonard, "Henri Bergson"; Gilles Deleuze, *Bergsonism*, trans. Hugh Tomlinson and Barbara Habberjam (New York: Zone, 1991).
23. Paul Douglas, *Bergson, Eliot, and American Literature* (Lexington: University Press of Kentucky, 1986); Tom Quirk, *Bergson and American Culture: The Worlds of Willa Cather and Wallace Stevens* (Chapel Hill: University of North Carolina Press, 1990).
24. Grogin, *Bergsonian Controversy in France*, 143, 160–161, 167; Jacques Maritain, *Bergsonian Philosophy and Thomism*, trans. Mabelle L. Andison and J. Gordon Andison (New York: Philosophical Library, 1955).
25. Grogin, *Bergsonian Controversy in France*, 43, 48–49. See also Renée Haynes, *The Society for*

Einstein on the subjectivity of time in general relativity, a controversy traced by Jimena Canales.[26] Historians of science have paid relatively little attention to his evolutionary thought, though, or to his influence on other evolutionists; Peter Bowler's *The Eclipse of Darwinism*, for example, devotes only a paragraph to *Creative Evolution*.[27]

As a result of the other interests of his more recent readers, Bergson's work on evolution has come to be understood as a particular application of his philosophy rather than, as he claimed himself, the motivation for his more foundational work in metaphysics. Bergson came to both philosophy and evolution as a youthful reader of Herbert Spencer who admired the British polymath but found his work insufficiently precise. Spencer's work was marred, wrote Bergson in 1934, by "the author's insufficient preparation and his inability to grasp the significance of the 'latest ideas' of mechanics; I should have liked to take up… part of his work, complete and consolidate it.… This was what let me to consider the idea of Time… which plays the leading part in any philosophy of evolution."[28]

Central to Bergson's work was a method he labeled intuition, an attempt to escape from the limits of analysis and rationalist philosophy. Intellect, Bergson argued, is not a

---

Psychical Research, 1882–1982: A History (London: Macdonald, 1982), 194–195; and Henri Bergson, "Presidential Address" (May 28, 1913), trans. H. Wildon Carr, *Proceedings of the Society for Psychical Research* 27 (1914–1915): 157–175.

26. Jimena Canales, *A Tenth of a Second: A History* (Chicago: University of Chicago Press, 2009), 179–203.

27. Peter J. Bowler, *The Eclipse of Darwinism: Anti-Darwinian Evolution Theories in the Decades around 1900* (Baltimore: Johns Hopkins University Press, 1983), 56–57. There are a couple exceptions in the form of articles that evaluate Bergson's influence on biology: David M. Steffes, "Panpsychic Organicism: Sewall Wright's Philosophy for Understanding Complex Genetic Systems," *Journal of the History of Biology* 40, no. 2 (June 2007): 327–361; Laurent Loison, "French Roots of French Neo-Lamarckisms, 1879–1985," *Journal of the History of Biology* 44, no. 4 (November 2011): 713–744.

28. Henri Bergson, *The Creative Mind: An Introduction to Metaphysics*, trans. Mabelle L. Andison (1946; Mineola, NY: Dover, 2007), 2.

fluid ability to think but rather a specific, rigid capacity that humans evolved "to secure

the perfect fitting of our body to its environment, to represent the relations of external

things among themselves—in short, to think matter." It is well suited to studies of space

such as geometry and mechanics, and originally adapted to "manufacturing artificial

objects, especially tools to make tools, and of indefinitely varying the manufacture."

Intellect also leads us, though, to understand non-spatial phenomena, including time and

life, through misleading physical analogies. "The intellect is characterized by a natural

inability to comprehend life," concluded Bergson, but "instinct, on the contrary, is

molded on the very form of life."[29]

The capacity of instinct, which "only carries out further the work by which life

organizes matter," as in the case of a chick carrying on its development by pecking

through its shell, consists of an innate sympathy experienced by humans as emotional

reaction. Although less available to us than to organisms, with some effort this capacity

could be used by a philosopher to understand life. This practice of "instinct that has

become disinterested, self-conscious, capable of reflecting upon its object and of

enlarging it indefinitely," is what Bergson referred to as intuition. It's an experience

already present in the "aesthetic faculty" involved in making and perceiving art, in which

we intuit organization rather that observing components. In the study of life, this intuition

could reveal what intellect cannot: that living things, unlike solid objects, are not strictly

distinct entities, but rather experience "reciprocal interpenetration."[30]

---

29. Bergson, *Creative Evolution*, ix, 139, 165.
30. Ibid., 165, 173–178.

The organic world functions differently from the inorganic because it owes its existence to an energy, the *élan vital*, which causes continuous, spontaneous, and heterogenous creation. "It seizes upon this matter," wrote Bergson, "and strives to introduce into it the largest possible amount of indetermination and liberty." Vitalism offered an alternative to mechanistic and teleological understandings of evolution, each of which amounted to determinism and thus—because all can be known in advance—to denying the lived reality of time.[31]

Bergson also dismissed the specific evolutionary mechanisms involved in neo-Darwinism and neo-Lamarckism: random variation and natural selection might account for the gradual development of complex organs, he argued, but they couldn't explain convergent evolution, while the use or disuse of organs and inheritance of acquired characteristics could account for convergent evolution but not complex organs. He was more enthusiastic about Hugo de Vries' mutationism, which suggested that there might be some force impelling species to periods of rapid change, and especially about orthogenesis, or directional evolution, associated with Theodor Eimer. "Where we differ from Eimer," wrote Bergson, "is in his claim that combinations of physical and chemical causes are enough to secure the result. We have tried to prove on the contrary… that if there is 'orthogenesis' here, a psychological cause intervenes."[32]

Bergson affirmed the primacy of science in studying matter, but argued that it met limits when confronted with organic phenomena—because organisms are not themselves

---

31. Ibid., 86–87, 251, 39.
32. Ibid., 62–69, 76, 84–86. On these competing evolutionary theories in the early twentieth century, see Bowler, *Eclipse of Darwinism*.

life, but merely the material effects of life as an intangible phenomenon. Using the example of the evolution of the eye beloved by William Paley and Charles Darwin, Bergson argued that "as the undivided act constituting vision advances more or less, the materiality of the organ is made of a more or less considerable number of mutually coordinated elements, but the order is necessarily complete and perfect. It could not be partial because… the real process which gives rise to it has no parts."[33]

Understood intuitively, wrote Bergson, life is neither strictly a unity nor a multiplicity—but "contact with matter… divides actually what was but potentially manifold," producing individual organisms which then reunify to form societies, maintaining an intermediate state.[34] The realization of some shared identity with all life, some sense of community, was to many readers the ultimate message of *Creative Evolution*. As Bergson wrote,

> We feel ourselves no longer isolated in humanity, humanity no longer seems isolated in the nature that it dominates. As the smallest grain of dust is bound up with our entire solar system, drawn along with it in that undivided movement of descent which is materiality itself, so all organized beings, from the humblest to the highest, from the first origins of life to the time in which we are, and in all places as in all times, do but evidence a single impulsion, the inverse of the movement of matter, and in itself indivisible. All the living hold together, and all yield to the same tremendous push. The animal takes its stand on the plant, man bestrides animality, and the whole of humanity, in space and in time, is one immense army galloping beside and before and behind each of us in an overwhelming charge able to beat down every resistance and clear the most formidable obstacles, perhaps even death.[35]

---

33. Bergson, *Creative Evolution*, 93–96.
34. Ibid., 258–259.
35. Ibid., 270–271.

And humanity is unique in this community, for evolution is a process of life seeking "to create with matter, which is necessity itself, an instrument of freedom, to make a machine which should triumph over mechanism, and to use the determinism of nature to pass through the meshes of the net which this very determinism had spread." In this process, different organisms developed different access to consciousness, which "even in the most rudimentary animals, covers by right an enormous field, but is compressed in fact in a kind of vise: each advance of the nervous centres, by giving the organism a choice between a larger number of actions, calls forth the potentialities that are capable of surrounding the real, thus opening the vise wider and allowing consciousness to pass more freely." Humanity, equipped with powerful brains, language, and social life, is evolution's greatest success.[36] Bergson stood in a scientific tradition in which, as John Tresch writes, "the process of our species' evolution is externalized and socialized; we adapt as a collective by means of our tools."[37]

Although Bergson's reputation as a philosopher faded quickly after World War I, his ideas continued to show up around the fringes of science in the middle of the twentieth century. In particular, Bergson's human triumphalism became a premise for the work of one of his successors, the paleontologist and Jesuit priest Peirre Teilhard de Chardin, who was inspired to study evolution by Bergson as Bergson was by Spencer. "There gradually grew in me," wrote Teilhard, "the consciousness of a deep-running, ontological, total Current which embraces the whole Universe.… I can remember very clearly the avidity

---

36. Ibid., 263–265, 179.
37. John Tresch, *The Romantic Machine: Utopian Science and Technology after Napoleon* (Chicago: University of Chicago Press, 2012), 309.

with which, at that time, I read Bergson's *Creative Evolution*."[38] Teilhard's own synthetic

philosophy of evolution, presented in several books that Church superiors forbid him

from publishing, reintroduced teleology to creative evolution.[39] "The possible increases

of total spiritual energy derive," wrote Teilhard, "from what Bergson has called 'creative'

evolution. They are therefore by nature unpredictable. What will the higher forms of

intuition, art and thought be tomorrow? We not only cannot say, but simply cannot

imagine. But though we must here forgo any pictured anticipation of the future, we can

nevertheless state the general type of advances that can be expected. They will take place,

as they have already begun, in the direction and under the domination of a *growing*

unity."[40]

In his popular book *The Phenomenon of Man*, written in 1938 and published

posthumously in 1955, Teilhard argued that the development of human consciousness

represented "a new era of evolution, the era of noogenesis," in which life could reflect on

its own existence. Just as life added a biosphere to the layers acknowledged by

geologists, the evolution of humanity added a noosphere, a "thinking layer," which

constituted an evolving communal consciousness. "Human elements infiltrated more and

more into each other," wrote Teilhard, facilitated by new technology. "Thanks to the

prodigious biological event represented by the discovery of electro-magnetic waves, each

individual finds himself henceforth… simultaneously present, over land and sea, in every

---

38. Pierre Teilhard de Chardin, *The Heart of Matter*, trans. René Hague (New York: Harcourt Brace Jovanovich, 1979), 25. See also Linda Sargent Wood, *A More Perfect Union: Holistic Worldviews and the Transformation of American Culture after World War II* (Oxford: Oxford University Press, 2010), 116–117. For Teilhard's biography, see Claude Cuénot, *Teilhard de Chardin: A Biographical Study*, trans. Vincent Colimore (Baltimore: Helicon, 1965).
39. Julian Huxley, introduction to Teilhard, *Phenomenon of Man*, 24.
40. Pierre Teilhard de Chardin, *Human Energy*, trans. J.M. Cohen (London: Collins, 1969), 136.

corner of the earth." The result is a planet made aware of itself, "a single closed system in

which each element sees, feels, desires and suffers for itself the same things as all the

others at the same time," and ultimately "a harmonised collectivity of consciousness"

evolving toward total unity, a phenomenon which Teilhard referred to as the Omega

Point. The biggest difference between Teilhard's system and Bergson's, then, was

Teilhard's reintroduction of teleology.[41]
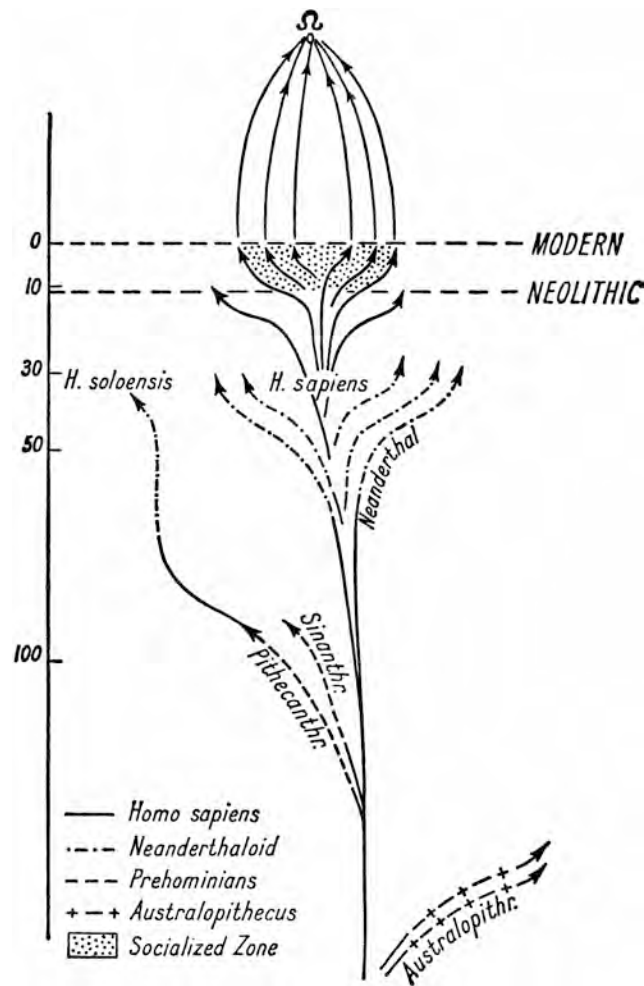
**Human evolution according to Pierre Teilhard de Chardin,
with convergence on the Omega Point.[42]**

41. Teilhard, *Phenomenon of Man*, 4, 24, 182, 240, 251, 259.
42. Phylogeny from ibid., 192.

The Phenomenon of Man was also a theological text. In an epilogue, Teilhard identified the Omega Point with the Second Coming of Christ. "The Kingdom of God," he wrote "is a prodigious biological operation—that of the Redeeming Incarnation.… By a perennial act of communion and sublimation, [Christ] aggregates to himself the total psychism of the earth.… Then, as St. Paul tells us, *God shall be in all.*"[43]

Like *Creative Evolution*, this avowedly pantheistic apocalypticism reached a wide lay audience, particularly of young people, but was controversial among both clergy and biologists. The most positive scientific reception came from Julian Huxley, who wrote the introduction to the English edition of *The Phenomenon of Man*, and from Theodosius Dobzhansky, who devoted a chapter of his rather overlooked 1967 book *The Biology of Ultimate Concern* to "The Teilhardian Synthesis" and served as president of the American Teilhard Association.[44] Dobzhansky also mentions Bergson as a "lesser" influence on him, and Richard Delisle argues that "this debt is perhaps more significant than he himself was prepared to admit, especially as far as the notion of 'groping' is concerned."[45]

Both Teilhard and Bergson also influenced the media theory of Marshall McLuhan, who associated the unification they described specifically with electrificiation rather than with an evolutionary process. "The tendency of electric media," he argued in his 1964 book *Understanding Media*, "is to create a kind of organic interdependence among all the

---

43. Teilhard, *Phenomenon of Man*, 293–294.
44. Theodosius Dobzhansky, *The Biology of Ultimate Concern* (New York: New American Library, 1967), 108–137; Winifred McCulloch, *A Short History of the American Teilhard Association* (Chambersburg, Penn.: ANIMA Publications, 1979), 24.
45. Dobzhansky, *Biology of Ultimate Concern*, 1; Richard G. Delisle, "Expanding the Framework of the Holism/Reductionism Debate in Neo-Darwinism: The Case of Theodosius Dobzhansky and Bernhard Rensch," *History and Philosophy of the Life Sciences* 30, no. 2 (2008): 217.

institutions of society, emphasizing de Chardin's view that the discovery of electromagnetism is to be regarded as 'a prodigious biological event." As a result, "our specialist and fragmented civilization of center-margin structure is suddenly experiencing an instantaneous reassembling of all its mechanized bits into an organic whole. This is the new world of the global village," a new formulation of Bergson's organic community and Teilhard's noosphere that substituted the sociological for the occult or biological. Computer-mediated communication might allow us "to by-pass languages in favor of a general cosmic consciousness which might be very like the collective unconscious dreamt of by Bergson."[46]

Anthropologist Edward Carpenter, a frequent collaborate of McLuhan, began one of his books on communication with a similarly Teilhardian description of the power of electrification: "Electricity has made angels of us all—not angels in the Sunday school sense of being good or having wings, but spirit freed from flesh, capable of instant transportation anywhere. The moment we pick up a phone, we're nowhere in space, everywhere in spirit. Nixon on TV is everywhere at once. That is Saint Augustine's definition of God: a Being whose center is everywhere, whose borders are nowhere."[47]

While the intricacies of Bergson's metaphysics waned in influence between World War I and 1966, then, his panpsychism and evolutionary thought remained vital. Outside of academic philosophy, Bergson's ideas were continually appropriated and reconstructed, as the intellects and intuitions of his readers, and of their readers, sought collective

---

46. Marshall McLuhan, *Understanding Media: The Extensions of Man* (1964; Cambridge, Mass.: MIT Press, 1994), 80, 93, 247.
47. Edmund Carpenter, *Oh, What a Blow That Phantom Gave Me!* (New York: Holt, Rinehart and Winston, 1973), 3.

evolution toward higher states of consciousness. "There must be a new culture," wrote Roszak in 1969, "in which the non-intellective capacities of the personality—those capacities that take fire from visionary splendor and the experience of human communion—become the arbiters of the good, the true, and the beautiful." Roszak was both describing and prescribing the priorities of the counterculture, but he also suggested that the intellectual resources for this new culture were limited: in the period when Freud, Weber, and Durkheim made human irrationality a scientific subject, continued Roszak, "only Bergson and Jung… treated the non-rational side of human nature with an intuitive sympathy."[48]

Bergson's disciples Huxley, Teilhard, and McLuhan became intellectual touchstones for the counterculture of the 1960s and 1970s in part because they described a world in which the hippies' fascination with technologies of consciousness, most often psychedelic drugs, constituted a contribution to creative evolution. This interpretation is particularly evident in the writings of experimental videographers, who found in magnetic recording a set of metaphors and experimental practices for reflecting on the nature of their own consciousness.

From Ethnography to Cybernetics

Experimental videographers also drew both techniques and concepts from the discipline of anthropology and the practice of ethnographic filmmaking. It was ethnographic filmmakers who first began showing subjects films of themselves, producing a phenomenon that experimental videographers interpreted as feedback. And it was

---

48. Roszak, *Making of a Counter Culture*, 51–52.

anthropologists Margaret Mead and Gregory Bateson, among other interdisciplinary scholars, who imported concepts such as feedback from engineering into the human sciences as they constructed the new field of cybernetics.

French anatomist Félix-Louis Regnault began making ethnographic films in 1895, focusing on the range of human motion in different cultures. Three years later, British zoologist Alfred Cort Haddon took a Lumiére camera with him on his second ethnographic visit to the Torres Strait Islands, filming dances and firemaking practices in the field.[49] In the 1910s, three such filmmakers, adventurers Martin and Osa Johnson and mining engineer Robert Flaherty, began showing their films to their subjects.

In 1917 the Johnsons filmed the Big Nambas of the Melanesian island Malekula, producing a film, *Among the Cannibal Isles of the South Pacific*, which they screened before its subjects on a return visit in 1919.[50] "Practically every savage shown in the picture was in the audience," wrote Osa Johnson. "As each man appeared on the screen the audience shrieked his name and roared with laughter," and when one appeared who had since died "the natives were awe-struck." The Johnsons garnered respect from the Big Nambas for the apparent magic of film, as well as footage of the natives watching themselves—"a gimmick," suggests Karl Heider, "to further cast them as credulous savages"—which they included in their film *Head Hunters of the South Seas*.[51]

---

49. Emilie de Brigard, "The History of Ethnographic Film," in *Principles of Visual Anthropology*, ed. Paul Hockings (The Hague: Mouton, 1975), 15–17. On Haddon, see Anna Grimshaw, *The Ethnographer's Eye: Ways of Seeing in Modern Anthropology* (Cambridge: Cambridge University Press, 2001), 19–24; Alison Griffiths, *Wondrous Difference: Cinema, Anthropology, & Turn-of-the-Century Visual Culture* (New York: Columbia University Press, 2002), 127–148.

50. Pascal James Imperato and Eleanor M. Imperato, *They Married Adventure: The Wandering Lives of Martin and Osa Johnson* (New Brunswick: Rutgers University Press, 1992), 73–74, 80.

51. Osa Johnson, *I Married Adventure: The Lives and Adventures of Martin and Osa Johnson* (Philadelphia: Lippincott, 1940), 137; Karl G. Heider, *Ethnographic Film*, rev. ed. (Austin: University

During the same years, Flaherty filmed the influential *Nanook of the North* among the Inuit of northern Canada. He began traveling with "a motion picture outfit" in 1913, when he "filmed the travel and igloo live and some of the religious performances, conjuring, and dances of the Baffin Island Eskimos." On his next expedition, Flaherty travelled to the Belcher Islands, where he shot more film but also screened his previous footage. "With a portable projector brought for the purpose," he wrote, "we showed the islanders a copy of the Baffin Island film, purposing in this way to inspire them with that spirit of emulation so necessary to the success of our filming." By watching a film of other Inuit, in other words, Flaherty's subjects could better understand what he was doing and why he was asking (and paying for) their cooperation.[52]

Flaherty edited the 70,000 feet of film he shot on these two expeditions (on the order of 19 hours), producing a print that he screened at the American Geographic Society and the Explorer's Club in New York. He was frustrated that audience responses focused on his travels rather than on the Inuit themselves, though. When Flaherty destroyed his negative in an accidental fire in 1916, he resolved to shoot a superior film. "New forms of travel film were coming out," he wrote, "and the Johnson South Sea Island film particularly seemed to me to be an earnest of what might be done in the North." He even sought advice from the Johnsons' editor Terry Ramsaye, who advised him to give up.

---

of Texas Press, 2006), 19–20.

52. Paul Rotha, *Robert J. Flaherty: A Biography*, ed. Jay Ruby (Philadelphia: University of Pennsylvania Press, 1983), 22; Robert J. Flaherty, "The Belcher Islands of Hudson Bay: Their Discovery and Exploration," *Geographical Review* 5, no. 6 (June, 1918): 443, 456–457.

Nonetheless, Flaherty's next expedition—beginning in 1920 and funded by the fur

company Revillon Frères—was devoted entirely to filming.[53]

"My equipment," wrote Flaherty, "included 75,000 feet of film, a Haulberg electric

light plant and projector and two Akeley cameras and a printing machine so that I could

make prints of film as it was exposed and project the pictures on the screen so that

thereby the Eskimo would be able to see and understand wherever mistakes were made."

As Jay Ruby writes, "the Inuit themselves began to suggest scenes that Flaherty might

include in his movie," including the first one he shot, of his protagonist Nanook leading a

walrus hunt using a traditional harpoon. "That walrus fight was the first film the Eskimo

had ever seen," wrote Flaherty, "and, in the language of the trade, it was a 'knock-out.'"[54]

Developing film in the field was enormously difficult, wrote Flaherty; over a winter,

for example, 1500 barrels of water for washing the film had to be carried from a water

hole a quarter mile away.[55] Nonetheless, Flaherty developed his film immediately so not

only so he could watch it himself, but also "to project it to the Eskimos so that they

would accept and understand what I was doing and work together with me as partners."[56]

This cooperation was essential to his work; it was an Iniut, for example, who maintained

Flaherty's cameras.[57] "The Inuit performed in front of the camera, reviewed and criticized

53. Rotha, *Robert J. Flaherty*, 26–28, 30; Robert J. Flaherty, "How I Filmed 'Nanook of the North,'" *World's Work* 44 (September, 1922): 554.
54. Flaherty, "How I Filmed 'Nanook of the North,'" 554–557; Jay Ruby, *Picturing Culture: Explorations of Film & Anthropology* (Chicago: University of Chicago Press, 2000), 88.
55. Flaherty, "How I Filmed 'Nanook of the North,'" 558.
56. Robert Flaherty, "Robert Flaherty Talking," in *The Cinema 1950*, ed. Roger Manvell (Harmondsworth, England: Penguin Books, 1950), 14.
57. Robert J. Flaherty, "Life among the Eskimos," *World's Work* 44 (October, 1922): 365–366.

their performance, and were able to offer suggestions for additional scenes in the film,"

writes Ruby, who regards Flaherty as "a pioneer in participatory and reflexive cinema."[58]

The ethnographic films that would be most influential both for the sciences of mind

and for the new field of visual anthropology were not made until the 1930s, though, and

resulted as much from psychiatric concerns as anthropological ones. In 1935, a

representative of the Committee for the Study of Dementia Praecox asked American

anthropologist Margaret Mead, already a prominent public figure for her research on sex,

gender, and adolescence in Samoa and New Guinea, to study dementia praecox—a

disease sometimes distinguished from but more often interchangeable with

schizophrenia—in the field.[59] On the basis of films shot by her former student Jane Belo,

Mead believed that Balinese culture incorporated the sort of dissociative behavior marked

as schizophrenic in the industrialized West. "It is not insignificant," writes Ira Jacknis,

---

58. Ruby, *Picturing Culture*, 83, 88.

59. Gerald Winfield Sullivan, "Bali As It Might Have Been Known: Margaret Mead, Gregory Bateson, Wolfgang Weck, Schizophrenia and Human Agency" (PhD diss., University of Virginia, 1998), 72; Nancy C. Lutkehaus, *Margaret Mead: The Making of an American Icon* (Princeton: Princeton University Press, 2008), 146–147.

Dementia praecox was a form of severe psychosis involving progressive deterioration and *Zerfahrenheit*—"distraction" or "incoherence"—which was originally described by German psychiatrist Emil Kraepelin in 1896 and widely diagnosed in the early twentieth century. By 1939 it "virtually disappeared from elite literary discourses," writes Richard Noll. It was replaced as a subject of research by schizophrenia, a diagnosis which began with Swiss psychiatrist Eugen Bleuler's critique of Kraepelin and understanding of the disease as "reactions of the ailing psyche to environmental influences and to its own strivings" resulting in "a change of associations [which] amounts to a partial or total loss of logical function." Despite the different theories of psychosis proposed by Kraepelin and Bleuler, from 1908 to 1939 psychiatrists often used the terms interchangeably. Richard Noll, *American Madness: The Rise and Fall of Dementia Praecox* (Cambridge, Mass.: Harvard University Press, 2011), 3–5, 232–237.

On the Committee for the Study of Dementia Praecox, and Mead and Bateson's relationships to it, see Gerald Sullivan, *Margaret Mead, Gregory Bateson, and Highland Bali: Fieldwork Photographs of Bayung Gedé, 1936–1939* (Chicago: University of Chicago Press, 1999), 193n17; and Sullivan, "Bali As It Might Have Been Known," 72–105.

"that Mead's earliest knowledge of Bali was primarily visual." In 1936, then, Mead went

to Bali.[60] As she wrote six years later,

> Balinese culture is in many ways less like our own than any other which
> has been recorded. It is also a culture in which the ordinary adjustment of
> the individual approximates in form the sort of maladjustment which, in
> our own cultural setting, we call schizoid. As the toll of dementia praecox
> among our own population continues to rise, it becomes increasingly
> important for us to know the bases in childhood experience which
> predispose to this condition, and we need to know how such predisposition
> can be culturally handled, so that it does not become maladjustment.[61]

Accompanying Mead was her English husband Gregory Bateson, a student of Haddon

who had just completed his book *Naven*, in which he also speculated about the etiology

of mental illness. *Naven* began as an ethnographic study of the eponymous ceremony of

the Iatmul people of New Guinea, in which uncles celebrated the accomplishments of

nephews and nieces by performing exaggerated female dress and behavior, and

sometimes women performed male roles as well.[62]

Through conversations with Mead and her previous husband Reo Fortune, though, and

through reading the work of Ruth Benedict, Bateson became a contributor to the "culture

and personality" school of anthropology which sought to understand how particular

societies shaped the individual personalities of their inhabitants.[63] He became particularly

---

60. Ira Jacknis, "Margaret Mead and Gregory Bateson in Bali: Their Use of Photography and Film," *Cultural Anthropology* 3, no. 2 (May 1988): 160.

61. Gregory Bateson and Margaret Mead, *Balinese Character: A Photographic Analysis* (New York: New York Academy of Sciences, 1942), xvi.

62. David Lipset, *Gregory Bateson: The Legacy of a Scientist* (Boston: Beacon, 1982), 122; Gregory Bateson, *Naven: A Survey of the Problems Suggested by a Composite Picture of the Culture of a New Guinea Tribe Drawn from Three Points of View* (Cambridge: Cambridge University Press, 1936), 4–22.

63. Virginia Yans-McLaughlin, "Science, Democracy, and Ethics: Mobilizing Culture and Personality for World War II," in *Malinowski, Rivers, Benedict and Others: Essays on Culture and Personality*, ed. George W. Stocking, Jr. (Madison: University of Wisconsin Press, 1986), 189–192.

interested in recursive patterns of behavior, "the reactions of individuals to the reactions of other individuals," which he suggested might be "a useful definition of the whole discipline which is vaguely referred to as Social Psychology."[64]

These reactions could generate a social phenomenon Bateson termed *schismogenesis,* "a process of differentiation in the norms of individual behavior resulting from cumulative interaction between individuals." Schismogenesis took either a complementary form, in which actors adopted increasingly contrasting roles such as master and apprentice, or a symmetrical form, in which they competitively exaggerated similar behavior such as boasting. In either case, the effect of schismogenesis was the generation of a schism, "a hostility in which each party resents the other as the cause of its own distortion." In the *naven* ceremony, Bateson classified the increasing exhibitionism of men and spectatorship of women as a form of complementary schismogenesis. "The actual behavior of the *wau* in *naven*," he wrote, "may be described as an insistence upon the complementary aspects of his relationship with the *laua*, at the expense of the symmetrical aspects," suggesting that "the insistence on the complimentary patterns in the *wau-laua* relationship is a case of the control of a symmetrical schismogenesis by admixture of complementary patterns of behavior."[65]

Bateson was just as interested in extending his analysis beyond New Guinea, though. Among the other contexts to which he applied it, he devoted the most attention to "the

---

64. Bateson, *Naven*, 175–176.
65. Ibid., 175–178, 187, 270.

progressive maladjustment of neurotic and prepsychotic individuals," borrowing the

vocabulary of psychiatrist Ernst Kretschmer.[66]

> I myself have no experience of psychiatry, but I suspect that in addition to studying the individual pathology in every case, the psychiatrist would do well to pay more attention to the relations which the deviant individual has with those around him.… I have suggested above that in Iatmul culture the circular ethos of the women ["recognizable (*inter alia*) by a tendency to periodic variation between gaiety and sadness"] and the schizothyme ethos of the men ["characterized (*inter alia*) by sudden and irregular changes from emotional anaesthesia to emotional hyperaesthesia"] are mutually complementary and liable to schismogenesis. If this be true, and further observations are required to verify it, we must be prepared to accept the fact that the schizophrene is not merely working out his own internal pathology, which indeed may or may not be getting worse, but is also responding to the more cyclothyme people around him by himself becoming more and more schizoid.[67]

The development of schizophrenia, Bateson thus suggested in 1936, might not be due

only to "internal pathology," but also to the patient's complementary schismogenetic

relationships with others, which could be understood by analogy to those he observed

between men and women and *wau* and *laua* among the Iatmul.

   Mead and Bateson's trip to Bali, then, was a search for similar comparative insights.

For example, Mead assisted psychologist Theodora Abel with her research comparing

drawings produced by both schizophrenic and "normal" inhabitants of industrialized

America with those produced by Navajo Indians and Balinese people. Abel concluded

that when given specific instructions to "make any kind of a balanced or even design he

desired in the rectangle" using a prescribed number of lines, both schizophrenic

Americans and Balinese artists—capable of creativity in other contexts—"drew rigid and

---

66. Ibid., 160, 179.
67. Ibid., 179–180, 308, 311.

stereotyped lines with no attempt at spatial arrangement," suggesting "that their attitude and modes of thinking were the same."[68]

It was also an opportunity for experimentation with new visual research methods. ""Gradually we developed a style of recording," wrote Mead, "in which I kept track of the main events while Gregory took both moving pictures and stills."[69] Over a two-year period, Bateson shot 25,000 still photographs of the Balinese as well as 22,000 feet of silent 16 mm film, focusing on the trance dances that potentially expressed dissociation, on children, and on family interaction. To provide their research with a comparative dimension, Mead and Bateson also returned to Bateson's *Naven* field site in New Guinea, where they spent eight months shooting an additional 8000 still photographs and 11,000 feet of film. Between the two sites, then, they collected roughly twenty hours of film.[70]

Like Flaherty, the couple enrolled their subjects as analysts by screening their films using a hand-powered projector.[71] They trained "local assistants and critics," wrote Mead, "who could view the films in the field, for example, and discuss whether or not they believed that a trance dancer was 'in trance.'"[72] In one case, Balinese viewers from different regions disagreed about the name to be given to a particular dance move they

---

68. Theodora M. Abel, "Free Designs of Limited Scope as a Personality Index: A Comparison of Schizophrenics with Normal, Subnormal, and Primitive Culture Groups," *Character and Personality* 7, no. 1 (September, 1938): 50–62.

69. Margaret Mead, *Blackberry Winter: My Earlier Years* (New York: William Morrow, 1972), 231.

70. Jacknis, "Margaret Mead and Gregory Bateson," 162; Heider, *Ethnographic Film*, 28–30.

71. Jacknis, "Margaret Mead and Gregory Bateson," 164.

72. Margaret Mead, "Visual Anthropology in a Discipline of Words," in Hockings, *Principles of Visual Anthropology*, 8.

saw on film, providing additional ethnographic data.[73] In another case, writes Ira Jacknis, "they filmed several [wood]carvers watching films of themselves."[74]

Margaret Mead takes notes "while Gregory films a children's play group" in Bali, c. 1937.[75]

After returning to New York, the couple published the book *Balinese Character: A Photographic Analysis* in 1942, including 729 of their still photographs. Bateson incorporated a short film into an exhibit he curated on Bali at the Museum of Modern Art, and both he and Mead presented short films to accompany lectures. Interrupted by World War II, though, Mead didn't begin editing the film for distribution until 1950, the same year in which she and Bateson divorced.[76] (Both devoted their time to the war effort: Mead to the Committee on National Morale, the National Research Council's Committee

73. Jane Belo, *Trance in Bali* (New York: Columbia University Press, 1960), 192.
74. Jacknis, "Margaret Mead and Gregory Bateson," 165; Sullivan, *Margaret Mead, Gregory Bateson, and Highland Bali*, 14.
75. Photograph and quotation from Margaret Mead, *Letters from the Field, 1925–1975* (1977; New York: Harper Colophon Books, 1979), 235.
76. Bateson and Mead, *Balinese Character*; Jacknis, "Margaret Mead and Gregory Bateson," 168–170; Jane Howard, *Margaret Mead: A Life* (New York: Simon & Schuster, 1984), 265.

on Food Habits, and strengthening Anglo-American relations; and Bateson to analyzing Nazi propaganda films and conducting psychological warfare with the Office of Strategic Services in Ceylon and Burma.[77]) She eventually produced seven short films on Balinese and Iatmul culture, including *Trance and Dance in Bali*, from Bateson's footage.[78]

Bateson's conclusion from their research in Bali was, as he wrote in 1949, that "schismogenic sequences were not found in Bali." Rather, he claimed, the Balinese avoided escalation and climax, valuing balance and stability above all else.[79] Bateson interpreted these conclusions through a new discipline that he and Mead were involved in founding, cybernetics.

"The writing of *Naven* had brought me to the very edge of what later became cybernetics," Bateson later wrote, "but I lacked the concept of negative feedback."[80] In 1942 he read an article on "Feed-back" by psychiatrist and neurophysiologist Warren McCulloch, who had picked up the concept from mathematician Norbert Wiener.[81]

---

77. Mead and Bateson's wartime activities are the subject of quite a bit of scholarship, including Yans-McLaughlin, "Science, Democracy, and Ethics." Recent contributions to this literature include David H. Price, *Anthropological Intelligence: The Deployment and Neglect of American Anthropology in the Second World War* (Durham, N.C.: Duke University Press, 2008); Peter Mandler, *Return from the Natives: How Margaret Mead Won the Second World War and Lost the Cold War* (New Haven: Yale University Press, 2013), 45–175; and Fred Turner, *The Democratic Surround: Multimedia & American Liberalism from World War II to the Psychedelic Sixties* (Chicago: University of Chicago Press, 2013), 39–76.

78. Jacknis, "Margaret Mead and Gregory Bateson," 170. Mead's postwar scholarship on child development in Bali also drew on Bateson's photographs. Margaret Mead and Frances Cooke Macgregor, *Growth and Culture: A Photographic Study of Balinese Childhood* (New York: G. P. Putnam's Sons, 1951); Andrew Lakoff, "Freezing Time: Margaret Mead's Diagnostic Photography," *Visual Anthropology Review* 12, no. 1 (Spring 1996): 1–18.

79. Gregory Bateson, "Bali: The Value System of a Steady State," in *Social Structure: Studies Presented to A. R. Radcliffe-Brown*, ed. Meyer Forte (Oxford: Clarendon, 1949), 35–53. This chapter was reprinted—and probably much more widely read—in Bateson, *Steps to an Ecology of Mind*, 107–127.

80. Bateson, *Steps to an Ecology of Mind*, xix.

81. Erik L. Peterson, "Finding Mind, Form, Organism, and Person in a Reductionist Age: The Challenge of Gregory Bateson and C. H. Waddington to Biological and Anthropological Orthodoxy, 1924–1980" (PhD diss., University of Notre Dame, 2010), 215.

Although the idea of feedback had a long history in the engineering of control systems, Wiener, in collaboration with physiologists Arturo Rosenblueth and Walter Cannon, had just begun to apply it in the human sciences of physiology and neurology.[82] Bateson began conceptualizing human social interaction as feedback as well.

Later in 1942, and again several times between 1946 and 1953, Bateson and Mead—along with McCulloch, Rosenblueth, Wiener, psychoanalyst Lawrence Kubie, engineer Julian Bigelow, mathematician John von Neumann, ecologist G. Evelyn Hutchinson, and several others—participated in the Macy Conferences at which cybernetics came into being.[83] Cybernetics made it possibly to imagine a social homeostasis, in which a dynamic system of communication maintained a stable and healthy society.

This framework gave Bateson a new way of thinking about control of schismogenesis, a preoccupation since *Naven*. Schismogenesis was generally a positive or self-reinforcing feedback phenomenon, but if there were circumstances under which it could turn into negative or self-correcting feedback—perhaps through a switch between symmetrical and complementary schismogenesis—then a stability or oscillation was possible. The *naven* ceremony, Bateson argued in a new epilogue to *Naven* in 1958, was such a reversal, "an exaggerated caricature of a complementary sexual relationship between *wau* and *laua*… set off by overweening symmetrical behavior" in the form of the *laua*'s accomplishments, which otherwise challenged the *wau*'s seniority. Although he had claimed nearly the same thing 22 years earlier when he described *naven* as "a case of the control of a symmetrical

82. David A. Mindell, *Between Human and Machine: Feedback, Control, and Computing before Cybernetics* (Baltimore: Johns Hopkins University Press, 2002), 282.
83. Bateson, *Steps to an Ecology of Mind*, xix–xx; Steve Joshua Heims, *The Cybernetics Group* (Cambridge, Mass: MIT Press, 1991).

schismogenesis by admixture of complementary patterns of behavior," Bateson attributed his new understanding to "the growth of cybernetic theory."[84]

During these years, Bateson also became more involved in psychiatry. In 1946, he entered psychotherapy as a patient. Two years later, he moved to San Francisco to collaborate with psychiatrist Jurgen Ruesch and work as a medical anthropologist at Langley Porter Neuropsychiatric Clinic. Although Bateson soon moved to the Veterans Administration Hospital in Palo Alto, the collaboration resulted in the 1951 book *Communication: The Social Matrix of Psychiatry*, in which Reusch and Bateson presented a cybernetic understanding of psychiatry.[85] *Communication* was in turn an influence on Marshall McLuhan, "one of his earliest introductions to the study of communication" according to his student Donald Theall, who loaned him the book and "introduced him to ideas concerning the new science of communication and control in the human and the machine [cybernetics] from which part of the shift of his interest to communications and later to [Harold] Innis arose."[86]

"This was the beginning of fourteen years of association with psychiatry," wrote Bateson, who then researched the role of communication in schizophrenia and cofounded family therapy, a discipline in which the family was understood as a cybernetic system to

84. Gregory Bateson, *Naven: A Survey of the Problems Suggested by a Composite Picture of the Culture of a New Guinea Tribe Drawn from Three Points of View*, 2nd ed. (Stanford: Stanford University Press, 1958), 287–290.

85. Lipset, *Gregory Bateson*, 176, 178; Gregory Bateson, "Curriculum Vitae: Gregory Bateson," in *About Bateson*, ed. John Brockman (New York: E. P. Dutton, 1977), 249; Jurgen Ruesch and Gregory Bateson, *Communication: The Social Matrix of Psychiatry* (New York: W. W. Norton, 1951).

86. Donald Theall and Joan Theall, "Marshall McLuhan and James Joyce: Beyond Media," *Canadian Journal of Communication* 14, no. 4 (1989): 52; Donald F. Theall, *The Virtual Marshall McLuhan* (Montreal: McGill-Queen's University Press, 2001), 224.

be treated holistically.[87] Bateson's ideas, then, were ultimately more influential in psychiatry than in anthropology. As we'll see in chapter 3, they contributed to the development of a set of psychiatric techniques which, like Mead and Bateson's work in Bali, incorporated moving image technology and mediated self-observation.

Much of the historiography of cybernetics has focused on technical experts who exported ways of knowing from military research to scientific disciplines from genetics to economics.[88] "The standard origin story," writes Andrew Pickering, "has it that cybernetics evolved out of the intersection of mathematics and engineering in U.S. military research in World War II." In fact, though, cybernetics evolved out of the intersections of many more disciplines, and many more intellectual projects, than just mathematics and engineering—and just as crucial to the cybernetic synthesis were the disciplines of psychiatry (as Pickering himself points out) and anthropology.[89]

For many cyberneticians, including Bateson, cybernetics was most critically a science of the brain, or mind, or consciousness, and it was a critical feature of cybernetics as a discourse that it permitted slippage between these concepts. "We can regard cybernetics as a postwar science of the adaptive brain," argues Pickering, before noting that nonetheless "the brain, one might say, could not contain cybernetics; cybernetics spilled out all over

87. John Brockman, introduction, in Brockman, *About Bateson*, 10; Deborah Weinstein, *The Pathological Family: Postwar America and the Rise of Family Therapy* (Ithaca, N.Y.: Cornell University Press, 2013), 48.

88. Peter Galison, "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision," *Critical Inquiry* 21, no. 1 (Autumn 1994): 228–266; Lily E. Kay, *Who Wrote the Book of Life? A History of the Genetic Code* (Stanford: Stanford University Press, 2000); Philip Mirowski, *Machine Dreams: Economics Becomes a Cyborg Science* (Cambridge: Cambridge University Press, 2001). For a sense of the range of cybernetics and its historiography, see Peter Sachs Collopy, "History of Cybernetics Bibliography," last modified May 19, 2015, https://collopy.net/projects/bibliography.html.

89. Andrew Pickering, *The Cybernetic Brain: Sketches of Another Future* (Chicago: University of Chicago Press, 2010), 4–5.

the disciplinary and professional map."[90] Whatever else it was—and it was many things,

sometimes even a "universal discipline"—cybernetics was also a discourse within which

to construct and discuss theories of consciousness.[91] It paralleled and sometimes built

upon Bergsonian panpsychism. And it was precisely the sort of discourse necessary for

the production of technologies of consciousness.

Technologies of Consciousness

In 1878, New Jersey mechanical engineer Oberlin Smith visited Thomas Edison's

laboratory, where he saw an early model of Edison's cylinder phonograph. Smith began

developing his own recording devices, seeking to reduce the noise produced by friction

between the needle and recording medium—and soon realized that he could eliminate

this mechanical contact altogether by recording magnetically, manipulating the voltage

passed through an electromagnet in order to magnetize a nearby wire. Smith "went far

enough with it," as he later wrote, "to build a temporary apparatus and to develop a

successful machine for spinning metallic dust into a cotton cord, but was obliged to lay

aside the whole thing before arriving at any *acoustic* results." Demand was increasing for

the metalworking presses and other machines tools that Smith's company, Ferracute

Machine Works, manufactured.[92]

---

90. Ibid., 6, 9.

91. Geof Bowker, "How to Be Universal: Some Cybernetic Strategies, 1943–70," *Social Studies of Science* 23, no. 1 (February 1993): 107.

92. Mark H. Clark, "The Magnetic Recording of Sound," in *Magnetic Recording: The First 100 Years*, ed. Eric D. Daniel, C. Denis Mee, and Mark H. Clark (New York: IEEE Press, 1999), 7–10; Oberlin Smith, "Some Possible Forms of Phonograph," *Electrical World*, September 8, 1888: 116–117; Arthur J. Cox and Thomas Malim, *Ferracute: The History of an American Enterprise* (Bridgeton, N.J., 1985), 10–37.

    See also Mark Henry Clark, "The Magnetic Recording Industry, 1878–1960: An International Study in Business and Technological History" (PhD diss., University of Delaware, 1992), 10–24; Friedrich Karl

Smith was more persistent in his efforts to employ sound recording as an analogy for human consciousness. In 1887, he published an article in *The Andover Review*, a theological journal, arguing that even if "all things are but matter and motion, it is possible for man's existence to continue after death as an immortal spirit." As a phonograph retains a recording, some imperceptible form of matter, "perhaps in the domains of chemistry or electricity," could retain memories after their owner's demise. "The universe," he wrote, "must be full of media, which are capable of maintaining and transmitting forms of energy transcendent in their delicacy or sublime in their immensity."[93] Behind Smith's belief in the possibility of material souls lay his knowledge that sound could be stored in the invisible magnetization of metal.

Smith was not alone in this suggesting that electromagnetism could provide a material basis for the otherwise etherial phenomenon of consciousness. Indeed, such notions had been common a century earlier. In the 1770s, Franz Anton Mesmer healed patients by manipulating the invisible fluid of animal magnetism—the medium of gravity heat, light, magnetism, and electricity, he claimed—first with magnets and then without them.[94] The practice of mesmerism soon became widespread in Europe, and decades later became popular in England and the United States as well.[95] Meanwhile, writes Tresch, "for

---

Engel, ed., "Oberlin Smith and the Invention of Magnetic Sound Recording: An Appreciation on the 150th Anniversary of the Inventor's Birth," 2006, Oberlin Smith website, http://oberlinsmith.org/Library/Library-PDFs/Engel--Oberlin_Smith_2006.pdf; Jentery Sayers, "Making the Perfect Record: From Inscription to Impression in Early Magnetic Recording," *American Literature* 84, no. 4 (December 2013), doi:10.1215/00029831-2370230.

93. Oberlin Smith, "If Material, Why Mortal?" *Andover Review*, September 1887: 265–270. Smith revisited this subject in Oberlin Smith, *Tho Material, Why Not Immortal?* (Boston: Gorham, 1921).

94. Robert Darnton, *Mesmerism and the End of the Enlightenment in France* (Cambridge, Mass.: Harvard University Press, 1968), 3–4, 47–48.

95. Alison Winter, *Mesmerized: Powers of Mind in Victorian Britain* (Chicago: University of Chicago Press, 1998), 1–5; Robert C. Fuller, *Mesmerism and the American Cure of Souls* (Philadelphia:

Naturphilosophen like [Friedrich] Schelling and [Hans Christian] Oersted, electricity was a bridge between matter and mind, a manifestation of the soul that humans and nature shared." When Oersted and André-Marie Ampère demonstrated the unity of electricity and magnetism, such natural philosophers saw it as evidence for a grander underlying unity: "It was possible," Tresch surmises, "to move from etherian (and anti-Laplacean) theories of the underlying identity of the imponderable fluids to an identification between these fluids and the source of life and thought."[96]

Later in the nineteenth century, the electrical telegraph provided a prototype for new forms of communication with the dead; spiritualism, writes John Durham Peters, "explicitly modeled itself on the telegraph's ability to receive remote messages," with the dead producing patterns of rapping sounds analogous to Morse code. Radio—described by physicist John Townbridge in 1899 as "the nearest approach to telepathy that has been vouchsafed to our intelligence"—suggested another wave of psychic phenomena. Spiritualist and chemist William Crookes invented the cathode ray tube—essential to the development of both video cameras and television monitors—and suggested that "brain waves," like radio waves, could travel between human bodies. As magnetic audio recording became available in the twentieth century, it too became a tool for spiritualism. "Any source of white noise can both hide and reveal the whisperings of departed spirits," writes Peters, describing the practices of contemporary mediums. "One tapes the noise, then sorts and sifts—at high speed, low speed, running forward and backward, in what

---

University of Pennsylvania Press, 1982), x–xi.
96. Tresch, *Romantic Machine*, 32, 36–37.

must be a process of astronomical tedium—for utterances from the dead."[97] The idea that there was something spiritually powerful about electromagnetic phenomena found its way into experimental video as well. "I won't say it's an aura," explained videographer Ira Schneider in 1969, "but there's electromagnetic interference of different kinds that enters into videotaping. Somehow it's picking up vibes."[98]

More often, though, our contemporary sense that magnetic media harbor etherial voices is metaphorical. We've found kinship between recordings and consciousness not by imagining consciousness as material—as Smith did—but by imagining recorded information as immaterial. "A bit has no color, size, or weight," claims Nicholas Negroponte—and yet it can only exist if it's represented in some material form such as an electrical charge, which does indeed have a size and weight.[99] "One way of understanding this new digital domain," suggests Margaret Wertheim, "is as an attempt to recognize a technological substitute for the Christian space of Heaven."[100] As Donna Haraway wrote in 1985,

> Miniaturization has changed our experience of mechanism.
> Miniaturization has turned out to be about power; small is not so much
> beautiful as pre-eminently dangerous, as in cruise missiles. Contrast the
> TV sets of the 1950s or the news cameras of the 1970s with the TV wrist
> bands or hand-sized video cameras now advertised. Our best machines are
> made of sunshine; they are all light and clean because they are nothing but
> signals, electromagnetic waves, a section of spectrum. And these machines
> are eminently portable, mobile.…

---

97. John Durham Peters, *Speaking into the Air: A History of the Idea of Communication* (Chicago: University of Chicago Press, 1999), 94–95, 100, 104–105.

98. Frank Gillette and Ira Schneider, interview by Jud Yalkut, "Frank Gillette and Ira Schneider: Parts I and II of an Interview," *Radical Software* 1, no. 1 (Summer 1970): 10, reprinted from *The East Village Other*, July 30, 1969.

99. Nicholas Negroponte, *Being Digital* (New York: Alfred A. Knopf, 1995), 14.

100. Margaret Wertheim, *The Pearly Gates of Cyberspace: A History of Space from Dante to the Internet* (New York: W. W. Norton, 1999), 19.

> The ubiquity and invisibility of cyborgs is precisely why these sunshine-belt machines are so deadly. They are as hard to see politically as materially. They are about consciousness—or its simulation.[101]

By looking at how video cameras became "nothing but signals," how they became "portable, mobile," and most of how they became "about consciousness," this dissertation addresses the question of how technologies that are explicitly designed to help us see more themselves are "as hard to see politically as materially."

Magnetic recording devices make ephemeral phenomena like sound, light, and the whisperings of ghosts durable and reproducible by converting them first into electricity and then into magnetism. And while sound, light, and electricity are flows of matter, magnetism is a state. Videotape recording is thus a transformation from the visible but temporary to the invisible but (relatively) permanent—and, critically, it's a reversible transformation as long as we have the right equipment.

In *Mechanisms*, Matthew Kirschenbaum observes that studies of digital media in particular have focused on the conceptual and logical dimensions of "digital objects," such as software, files, and databases, to the neglect of their physical dimensions. In order to demonstrate the fruitfulness of considering the materiality of such artifacts, Kirschenbaum focuses his attention on their presence on storage media, and particularly the hard drive, a medium for magnetic recording. "Phenomena we call virtual," he argues, "are in fact *physical* phenomena lacking the appropriate mediation to supplement wavelength optics; that is, the naked eye."[102] While most people have the physical capacity to

---

101. Donna Haraway, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s," *Socialist Review*, no. 80 (1985), 70–71.

102. Matthew G. Kirschenbaum, *Mechanisms: New Media and the Forensic Imagination* (Cambridge, Mass.: MIT Press, 2008), 3–5, 19. For another application of Kirschenbaum's analysis to magnetic tape recording, see Jentery Sayers, "How Text Lost Its Source: Magnetic Recording Cultures" (PhD

perceive the images on a reel of film—and, using only a needle, even the sounds

inscribed on a phonograph record—we don't have the capacity to perceive the magnetic

fields on a tape or hard drive without the aid of a complex electronic machine. "The

simple, and possibly profound, truth," writes computer scientist David Levy, "is that you

can't see bits…. They are completely inaccessible to the human senses."[103]

As magnetism became central to science and technology starting in the eighteenth

century, the inability of humans to sense it became an impairment. "99.9 per cent of all

that is now transpiring in human activity and interaction with nature," wrote Buckminster

Fuller in 1970, "is taking place within the realms of reality which are utterly invisible,

inaudible, unsmellable, untouchable by human senses."[104] The history of magnetic

recording is at once the history of prostheses that remedy this impairment by enabling

mediated human access to magnetic fields, and of the multiplication throughout the

twentieth century of ever more magnetic fields—in the forms of audio recordings, then

video and digital computer data—that unaided humans could not perceive.

Korean-born artist Nam June Paik, who would later became famous for his work in

video, suggested this proliferating materiality of magnetic fields with his 1963

installation *Random Access*. Paik literally opened up the black box of an audiocassette

player, tacking strips of tape to a wall and putting the electromagnetic playback head on a

long wire so that a visitor to an art gallery could run it over the tape, playing bits of

diss., University of Washington, 2011).

103. David M. Levy, *Scrolling Forward: Making Sense of Documents in the Digital Age* (New York: Arcade, 2001), 138, quoted in Kirschenbaum, *Mechanisms*, 30.

104. R. Buckminster Fuller, introduction to Gene Youngblood, *Expanded Cinema* (New York: E. P. Dutton, 1970), 25–26.

different recordings at varying speeds.[105] He thus asked the listener to play a more active

role in the conversion of an magnetic field into an electrical signal and then into a sound.

"Paik acknowledged the materiality of sound," writes John Hanhardt, "through a violent

mix of found audio fragments that became an auditory and physical encounter between

composer and listener."[106]
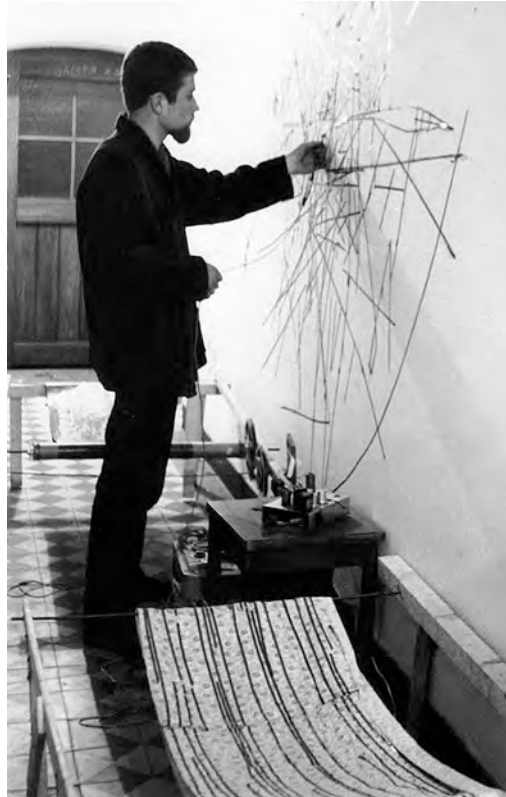
Nam June Paik, *Random Access***, March 1963.[107]**

The history of magnetism is also a history of debates over the degree of human

impairment that magnetism represents. Whether humans can sense magnetic fields

without technological assistance turns out to be a complicated question, both for

105. Jon Ippolito, "Random Access," *Vectors: Digital Art of Our Time* (2002), New York Digital Salon, http://nydigitalsalon.org/10/artwork.php?artwork=13.

106. John G. Hanhardt, *The Worlds of Nam June Paik* (New York: Guggenheim Museum, 2000) 35.

107. Photograph by Manfred Montwé, from Hanhardt, *Worlds of Nam June Paik*, 48.

physiology and for the history of science. Zoologists first suggested in 1859 that animals might navigate by sensing the earth's magnetic fields, and in 1883 William Thomson (later Lord Kelvin) suggested that humans also had a "magnetic sense." Beginning in 1958, experimentalists manipulating magnetic fields found that some birds navigate using such magnetoreception, and research since then suggested similar abilities in bees, ants, turtles, salmon, sharks, whales, and—according to the controversial work of zoologist Robin Baker—humans.[108] There is an artificial path to magnetoreception less obviously technological than an electromagnetic head: in a form of body modification, some people have subcutaneously implanted magnets in their fingers, making them able to feel electromagnetic fields as a tingling due to the vibrations of the magnet.[109] Even in this case, though, there is nowhere near enough acuity to read a tape recording or other magnetic media.

This imperceptibility is the characteristic that makes contemporary digital storage seem etherial, but it is neither specific to the digital nor present in all digital media; punch cards, for example, stored digital information in a form readable by human sight or touch.[110] Rather, imperceptibility is characteristic of electrical and magnetic media, which seem etherial or virtual—existing "in the cloud," for example, rather than on distant hard disks—because our access to them is always mediated, never through our unaided senses.

---

108. Howard C. Hughes, *Sensory Exotica: A World beyond Human Experience* (Cambridge, Mass.: MIT Press, 1999), 129–132, 137–138, 148–151; James Coates, *Seeing the Invisible: Practical Studies in Psychometry, Thought Transference, Telepathy, and Allied Phenomena* (London: Fowler, 1906), 6.

109. Quinn Norton, "A Sixth Sense for the Wired World," *Wired*, June 7, 2006, http://archive.wired.com/gadgets/mods/news/2006/06/71087.

110. Kirschenbaum, *Mechanisms*, 30.

This is a slippery and artificial distinction, as I hope my example of using a needle to play a phonograph record suggests—and the artificiality of this distinction between person and prosthesis is one of the great lessons of cybernetics. "When we seek to explain the behavior of a man or any other organism," writes Gregory Bateson, "this 'system' will usually *not* have the same limits as the 'self.'" When a man fells a tree with an ax, continues Bateson, it is the system of "tree-eyes-brain-muscles-axe-stroke-tree… that has the characteristics of immanent mind," not the man himself.[111] Haraway incorporates this analysis into her cyborg feminist ontology, writing that "there is no fundamental, ontological separation in our formal knowledge of machine and organism."[112] Similarly, Bruno Latour argues that "you are a different person with a gun in your hand,… the hybrid actor composed (for instance) of gun and gunman." Latour thus rejects the idea that technologies "mediate our actions," claiming instead that "they are us."[113] (One "form of survival of cybernetics," writes Bowker, "is in science studies. Donna Haraway (via Gregory Bateson) and Bruno Latour (via Michel Serres) have both been influenced directly by cybernetic theory and have both tried to establish their own forms of universal language."[114])

Katherine Hayles is critical of the "erasure of embodiment" that often accompanies this stance. "The posthuman view thinks of the body as the original prosthesis we all learn to manipulate," she writes, "so that extending or replacing the body with other prostheses

---

111. Gregory Bateson, "The Cybernetics of 'Self': A Theory of Alcoholism," in *Steps to an Ecology of Mind*, 317.
112. Haraway, "Manifesto for Cyborgs," 97.
113. Bruno Latour, "On Technical Mediation—Philosophy, Sociology, Genealogy," *Common Knowledge* 3, no. 2 (Fall 1994): 32–33, 64.
114. Geoffrey C. Bowker, *Memory Practices in the Sciences* (Cambridge, Mass.: MIT Press, 2005), 90n.

becomes a continuation of a process that began before we were born."[115] Rather than disembodying the self, though, this attitude also offers the opportunity of embodying one's tools, ideas, and interactions. "Why should our bodies end at the skin," writes Haraway, "or include at best other beings encapsulated by skin?"[116] Why not interpret a tape player as a material form of human agency just as one would an ear or finger?

Nonetheless, when we naively think of our tools as distinct from ourselves, we imagine magnetic media as inaccessible to us and therefore immaterial. Because magnetic media, like our minds, seem somehow disembodied, they are particularly ripe for invocation in discourses about human consciousness.

Turner elaborates on his concept of a technology of consciousness in an essay on *The Pygmy Gamelan*, a radio receiver which media artist Paul DeMarinis built in 1973 and described as "an installation piece… which responds to fluctuating electrical fields (generated by people moving around, radio transmissions, the births of distant stars and galaxies) by changing the patterns of five-note melodies it plays." Turner argues that the *Gamelan* shared with other technologies of consciousness a project of "reshaping their users' minds and with them, their habits of community" which emerged in the late 1960s from communes and other centers of communal life. "Each presented different tactics with which to reform their users' consciousness," he concludes. "To the acidheads of San Francisco, LSD offered the experience of melted psychological boundaries and the feeling of oneness; to rural communards, the birch-bark crib offered a way to put oneself

---

115. N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), 3–4.
116. Haraway, "Manifesto for Cyborgs," 97.

between industry and nature, and to build an artifact that unified the two realms. In its time, the Apple-I also offered much more than a simple hobbyist's experiment. It presented a chance to repurpose high technologies and so to extend the individual's reach into the universe of information."[117]

Though he didn't use the term, Roszak also saw this experimentation with technologies of consciousness as a distinguishing characteristic of the counterculture. "If we accept the proposition that the counter culture is, essentially, an exploration of the politics of consciousness," he wrote, "then psychedelic experience falls into place as one, but only one, possible method of mounting that exploration. It becomes a limited chemical means to a greater psychic end, namely, the reformulation of the personality, upon which social ideology and culture generally are ultimately based."[118]

Among the other possible methods of mounting that exploration, Turner argues, were the new media of the 1960s. "According to Roszak," he writes, "two tools had proven especially useful in changing people's mindsets: LSD and the poetry of the Beats. Both expanded the individual consciousness and enabled it to glimpse the organic interconnections that people shared with one another and the natural world, he argued. From a distance of several decades, though, we can see that two other forces also play an important role in shaping the politics of consciousness at the time: the sudden

---

117. Fred Turner, "The Pygmy Gamelan as Technology of Consciousness," in *Paul DeMarinis: Buried in Noise*, ed. Ingrid Beirer, Sabine Himmelsbach, and Carsten Seiffarth (Heidelberg: Kehrer Verlag, 2010), 23–27.
118. Roszak, *Making of a Counter Culture*, 156.

efflorescence of new media technologies and the arrival of a Canadian English professor who seemed to be able to explain them, Marshall McLuhan."[119]

Roszak had in fact commented on both McLuhan and new media, but had not given either credit for the development of the counterculture, instead describing McLuhan as "one who has little that is substantial to say, but who reveals a great deal about the cultural permissiveness of mid-century America," and arguing that, contrary to McLuhan's claim that television was an intrinsically "cool," participatory medium, "the major psychic effect of TV—and it comes through the content of the medium—is a narcotic disintegration of the sensibilities."[120] Roszak thus missed the constitutive influence which new media and their analyst McLuhan had on the counterculture, and particularly its experimental video incarnations. Although the Beats did not have a substantial direct influence on the use of video as a technology of consciousness, LSD, McLuhan, and new media—including television, synthesizers, and of course portable video recorders—all provided videographers with resources for exploring consciousness and conceptualizing it as a communal and even global phenomenon.

I build on Turner's work by suggesting that the category of technology of consciousness best fits devices whose use was accompanied by a particular theory of consciousness. I mean to make three particular points here: First, the mere fact that a technology reshapes the thought and experiences of those who use it cannot be sufficient

119. Turner, *Democratic Surround*, 272.

120. Theodore Roszak, "The Summa Popologica of Marshall McLuhan," *New Politics* 5, no. 4 (Fall 1966): 22, 28. The claim that the effect of television was narcotic is also of course related to the more positive analogies that both McLuhan himself and experimental videographer drew between drugs and media. It is also a metaphor exploited at greater length in Marie Winn, *The Plug-In Drug* (New York: Viking, 1977).

grounds for usefully classifying one as a technology of consciousness. Second, it is users, not inventors, manufacturers, or distributors, who make something a technology of consciousness. And third, this granting of a meaning to a device—this social construction of technology—is most explicit and therefore most legible to historians when actors employ a formal theory of consciousness, whether scientific, mystical, or both.[121]

If the definition of a technology of consciousness were merely that it reshaped the thought and experiences of those that used it, then any technology could be counted as such. Lewis Mumford analyzed the clock's effect on consciousness, for example, writing that "by its essential nature it dissociated time from human events and helped create the belief in an independent world of mathematically measurable sequences," while E. P. Thompson argued that it contributed to the development of "time-sense in its technological conditioning," a "new time-discipline," and ultimately the development of industrial capitalism, a transformation he described as a "growth of social consciousness."[122] Similarly, McLuhan and Harold Innis (and, perhaps independently, Benedict Anderson) argued that print brought about a new sense of territory and

---

121. Trevor J. Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other," in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, ed. Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch (Cambridge, Mass.: MIT Press, 1987), 17–50.

122. Lewis Mumford, *Technics and Civilization* (1934; New York: Harbinger, 1963), 15; E. P. Thompson, "Time, Work-Discipline, and Industrial Capitalism," *Past and Present*, no. 38 (December 1967), 80, 90, 97.

community, fostering the development of nationalism.[123] With few exceptions, though, users of clocks and books have not shared these perspectives.

What makes LSD an exemplary technology of consciousness, then, is not merely that it affected its users' experience beyond the moment when they used it, but that they themselves understood it as doing so. So too did theorists of video, for whom McLuhan's analysis of television, a technology which fostered a different sense of community, provided a foundation. "Technology typically is an outering of the inner being that feeds back into the self as it alters the environment," writes Lance Strate, "but that feedback is a secondary, indirect effect, whereas in the case of drugs it is the primary effect; typically, we employ media without any awareness of the effects that they have on ourselves, whereas drugs are used with the conscious purpose of effecting a change on body, and maybe mind."[124] Video too, though, was often used with the conscious purpose of effecting a change on mind.

In both these cases, experiences of the technology varied wildly: LSD could produce psychosis or enlightenment, depending on which experts one consulted or the conditions under which one used it, while video could produce narcissism or community. A single chemical or electronic device was not only thought to behave differently in different contexts but actually did—because it interacted with consciousness in different ways.

---

123. Harold A. Innis, *Empire and Communications*, ed. David Godfrey (1950; Victoria: Porcépic, 1986), 143–169; Marshall McLuhan, *Gutenberg Galaxy*, 261–263; Benedict Anderson, *Imagined Communities: Reflections on the Origins and Spread of Nationalism*, rev. ed. (London: Verso, 1991), 33–46.

124. Lance Strate, "Drugs: The Intensions of Humanity," in *Drugs & Media: New Perspectives on Communication, Consumption, and Consciousness*, ed. Robert C. MacDougall (New York: Continuum, 2012), 28.

These material technologies did not have monolithic effects because they were entangled in complex networks in which the technologies themselves, techniques of their use, and ideas of their users shaped each other and collectively contributed to the experience of using them. As one team of LSD researchers wrote, no single psychological effect could be attributed to the drug because "the psychedelic agent in this case is part of the complex, including the expectancy and motivation of [the research subject], which is being investigated."[125] There is a resonance here with French physicist and philosopher Pierre Duhem's claim that individual hypotheses cannot be tested in physics because the practice of testing them will necessarily implicate other theories, many embodied in instruments. For Duhem this meant that "physics is not a machine which lets itself be taken apart," but "a system that must be taken as a whole,… an organism in which one part cannot be made to function except when the parts that are most remote from it are called into play."[126] For LSD researchers, for experimental videographers, and for this history it means that the experience of using a technology of consciousness cannot be mechanically attributed to the device itself, nor to the culture surrounding it.

"A collaborative model affords several advantages for studying drugs," writes David Lenson. "If consciousness is a *relationship* of subject and object, then it is possible to imagine an almost infinite number of 'possible consciousnesses.'"[127] The same is true of all technologies, but especially technologies of consciousness. It is on interactions within

125. Willis W. Harman, Robert H. McKim, Robert E. Mogar, James Fadiman, and Myron J. Stolaroff, "Psychedelic Agents in Creative Problem-Solving: A Pilot Study," *Psychological Reports* 19, no. 1 (August 1966): 215.
126. Pierre Duhem, *The Aim and Structure of Physical Theory*, trans. Philip P. Wiener (Princeton: Princeton University Press, 1954), 187.
127. David Lenson, *On Drugs* (Minneapolis: University of Minnesota Press, 1995), 56.

a system of people, ideas, emotions, practices, and things that we must focus in order to understand these technologies. And conversely, the history of consciousness—even the history of ideas about consciousness—is also the history of techniques for manipulating it.

Periodization and Synopsis

In his 1991 book *Postmodernism*, Fredric Jameson granted video a privileged position in his understanding of postmodernity. "The most likely candidate for cultural hegemony today," he wrote, "is clearly video, in its twin manifestations as commercial television and experimental video, or 'video art.'" This relationship developed, though, only with experimental video itself which, Jameson wrote, "is rigorously coterminous with postmodernism itself as a historical period." The question of the periodization of video, then—one on which Jameson seems strangely agnostic, unconcerned "whether we date it from the work of the ancestor Paik in the early 1960s or from the very floodtide of this new art which sets in in the mid 1970s"—is critical to the relationship between the particular technology of video and the broader cultural forms in which it is implicated.[128]

Recently, both art critic Ina Blom and videographer (and Videofreex member) Skip Blumberg have argued that the history of video as a medium can be delineated in time. Blom's era of video extends from 1956 to the early 2000s: "It starts around the time when television producers could for the first time choose to record their transmission on videotape," she writes, "and ends when analog video is made obsolete by the digital

---

128. Fredric Jameson, *Postmodernism, or, The Cultural Logic of Late Capital* (Durham, N.C. Duke University Press, 1991), 69, 73.

platforms that reduce the difference between film and video to a question of rhetorical (as opposed to technical) formatting."[129]

Blumberg's era begins a bit later, when video declared its independence from television production. "Video was a unique and separate medium," he says, "from around 1965, when artists, activists, and mediamakers first began using video, to just a few years ago, say 2005, when digital video became completely ubiquitous as the recording medium of choice for the vast majority of filmmakers. It is a self-contained history delineated by the evolution of video technology from its analog invention to its digital near-replacement of film."[130]

In an account that bares some similarity to these two, Michael Newman presents a periodization of the history of video into three phases:

> In the first phase, the era of broadcasting's development and penetration into the mass market, *video* was another word for *television*…. In the second, TV was already established as the dominant mass medium. Videotape and related new technologies marked video in distinction to television as an alternative and solution to some of TV's widely recognized problems. It was also distinguished from film as a lesser medium visually and experientially, though at the same time it was positioned as a medium of privileged access to reality. In the third phase, video as digital moving image media has grown to encompass television and film and to function as the medium of the moving image. These phases are defined in terms of their dominant technologies (transmission, analog recording and playback, digital recording and playback) but more importantly by ideas about these technologies and their uses and users.[131]

---

129. Blom, "Autobiography of Video," 280.

130. Skip Blumberg, interview by Melanie La Rosa, "Early Video Pioneer: An Interview with Skip Blumberg," *Journal of Film and Video* 64, no. 1–2 (Spring/Summer 2012): 31.

131. Michael Z. Newman, *Video Revolutions: On the History of a Medium* (New York: Columbia University Press, 2014), 2–3.

In this schema based on the changing usage of the word *video* itself, Blom and Blumberg concern themselves only with video's second phase, the era of *videotape*. I too am concerned specifically with this phase, and share Blom and Blumberg's interpretation that the history of video as a distinct medium is essentially over.

My narrative, though, begins and ends earlier than 1956 and 2005, suggesting, perhaps, that this history cannot be so easily contained. Because video recording developed technically and institutionally out of magnetic audio recording, I contextualize it in a history that extends back into the nineteenth century, focusing in particular on the influence of World War II and the early Cold War on the technology and culture of experimental video. Within the history of video itself, I focus on a period delineated both technically and culturally that ranges from about 1965 to 1973. It is a period of open-reel half-inch tape recording, usually in black-and-white and always with an analog signal. It is also a period when this technology was associated with artists, hobbyists, and professionals in fields outside of television rather than with either television production on the one hand or home movies on the other. It is, in other words, the period before the videocassette helped make video a domestic technology, and before video became a digital medium.

Chapter one, "Transnational Tape: The Portability of Magnetic Recording," is a material history of magnetic tape, telling the story of both audio and video recording as a transnational history of technology shaped by Nazism during World War II and American hegemony afterwards. Chapter two, "Mind Manifesting: Psychedelic Drugs and Collective Consciousness," then follows tape engineer Myron Stolaroff into his second

career as a psychedelic drug researcher and advocate, using his networks to see how theories of consciousness affected the users of these technologies in the early 1960s, and how psychedelia in turn influenced the development of experimental video.

The following two chapters concern facets of video's use as a technology of consciousness. Chapter three, "Infolding the Self: Visual Anthropology, Video Therapy, and Electronic Art," explores its use for psychological exploration by following the practice of watching oneself on video, beginning with research and treatment in the human sciences of psychology, psychiatry, and anthropology and concluding with works of art and cybernetic theories. In chapter four, "The Videosphere: Media, Ecology, Community," video becomes instead a technology for making visible relationships between people and between humans and their natural environments. This chapter explores how, in the writings and projects of experimental videographers like Paul Ryan, Michael Shamberg, and Gene Youngblood, video networked using cable and satellite television became a tool for realizing visions of collective consciousness, participatory democracy, and ecological awareness proposed by figures like Bergson, Teilhard, McLuhan, and Bateson.

Chapter five, "The Revolution Will Not Be Televised: Taping the New Left," turns from the rhetoric of community television to its practice. Here I examine a series of attempts to bring together hip and left cultures that began with an ill-fated CBS television pilot, and later included Black Panther Party Minister of Information Eldridge Cleaver's use of the medium to communicate with Americans while he was a fugitive in Algeria. Finally, in a conclusion, "How VT Became TV," I consider how experimental video

became reincorporated into the institutions of television, and how videotape became a familiar, domestic medium for Americans rather than the exotic and revolutionary phenomenon it represented in the late 1960s and early 1970s.

Chapter 1

Transnational Tape: The Portability of Magnetic Recording

By the time experimental video emerged in the late 1960s, videotape was already a technology with a complex history. Although a medium for moving images, its origins "scientifically, commercially, and functionally," as Lucas Hilderbrand writes, were not in film or television but in audiotape recording.[1] "The full possibilities of the new medium of video can therefore only be properly understood," writes Roy Armes, "if we reject the limitations of the customary film-television-video line of approach and see video within an overall history of sound and image reproduction which stresses the interconnections between the various systems."[2]

As Ina Blom argues, in order to understand video in its specificity, as a medium whose development was historically contingent and dependent on but also distinct from television, "we need to return to those sites where the range of technical features available under the term *video*—the signaletic and electromagnetic materials, the genuinely audiovisual character of the video signal, the possibility for transmission and modification without recording, the immediacy of recording and playback, the potential for real-time and closed-circuit operations, the use of lo-fi, half-inch videotape versus the broadcast standard two-inch tapes (to mention but a few)—forge new associational events."[3] This chapter focuses on these technical developments that preceded and

1. Lucas Hilderbrand, *Inherent Vice: Bootleg Histories of Videotape and Copyright* (Durham, N.C.: Duke University Press, 2009), 37.
2. Roy Armes, *On Video* (London: Routledge, 1988), 11.
3. Ina Blom, "The Autobiography of Video: Outline for a Revisionist Account of Early Video Art," *Critical Inquiry* 39, no. 2 (Winter 2013): 278.

facilitated the development of experimental video itself, and on their political and

economic contexts. And from the development of audiotape recording on, both tape and

video were products of precisely the corporate, political, and military institutions that

many of their new users in the 1960s sought to turn them against.

The Magnetophon Comes to America

In 1944, Russian-American engineer Alexander Matveevich Poniatoff founded the

Ampex Corporation—reportedly named after his initials and the principle of

"excellence"—in San Carlos, California. The company initially made small motors and

generators for the Navy's airborne radar systems, but as World War II ended Poniatoff

searched for new markets. He hired a professor at Stanford University, seven miles down

El Camino Real, to design new motors as a consultant, and at the professor's

recommendation soon also hired electrical engineer Myron Stolaroff, who had earned a

master's degree from Stanford in 1942, to do so full time. While many alumni of

Stanford's rapidly growing electrical engineering department sought jobs at large eastern

firms, in 1946 Stolaroff returned to California from Washington, D.C., where he had been

working for the Navy's Bureau of Ships.[4]

   That May, several Ampex engineers attended a meeting of the San Francisco chapter of

the Institute of Radio Engineers, where they saw a demonstration of German

Magnetophon audiotape recorders that John Mullin, an Army Signal Corpsman and

---

4. John Leslie and Ross Snyder, "History of the Early Days of Ampex Corporation" (December 17, 2010), Audio Engineering Society Historical Committee, last modified April 19, 2012, http://www.aes.org/aeshc/docs/company.histories/ampex/leslie_snyder_early-days-of-ampex.pdf, pp. 1–2; Harold Lindsay, "Magnetic Recording Part I," *dB: The Sound Engineering Magazine*, December 1977, 39; Stuart W. Leslie, *The Cold War and American Science: The Military-Industrial-Academic Complex at MIT and Stanford* (New York: Columbia University Press, 1993), 48–50.

electrical engineer, had shipped back to the United States.[5] The technology of magnetic

recording was not entirely new; Danish telephone technician Valdemar Poulsen had

invented the telegraphone, which recorded telephone messages on steel wire, in 1898,

and German, British, American, and Swedish engineers built recorders that used steel

tape in the 1920s and 1930s.[6] In the 1920s, Austrian inventor Fritz Pfleumer developed a

process for adhering powdered bronze to cigarette paper, then built a machine that

recorded on a strip of paper coated in particles of iron. In 1932 he formed a partnership

with German electrical equipment company Allgemeine Elektricitäts-Gesellschaft to

make recorders. AEG in turn enlisted chemical company IG Farben, which began

developing paper and plastic tapes.[7]

The Magnetophon was a fascist technology, a means of centralizing state control of

instruments of propaganda, command, and communication—and particularly of radio,

which minister of propaganda Joseph Goebbels considered an essential tool for "spiritual

mobilization."[8] Its development and use were instances of what Gabrielle Hecht terms

5. Leslie and Snyner, "History of the Early Days of Ampex Corporation," 2–3; William Charles Lafferty, Jr., "The Early Development of Magnetic Sound Recording in Broadcasting and Motion Pictures, 1928–1950" (PhD diss., Northwestern University, 1981), 167–168.

6. Mark Clark and Henry Nielsen, "Crossed Wires and Missing Connections: Valdemar Poulsen, the American Telegraphone Company, and the Failure to Commercialize Magnetic Recording," *Business History Review* 69, no. 1 (Spring 1995): 1–7, 9; Mark H. Clark, "Steel Tape and Wire Recorders," in *Magnetic Recording: The First 100 Years*, ed. Eric D. Daniel, C. Denis Mee, and Mark H. Clark (New York: IEEE Press, 1999), 33–40.

7. Friedrich K. Engel, "The Introduction of the Magnetophon," in Daniel, Mee, and Clark, *Magnetic Recording*, 47–50, 65–66. See also Paul A. Zimmerman, *Magnetic Tapes, Magnetic Powders, Electrodes: New Communication Media* (Ludwigshafen am Rhein, Germany: Badische Anilin- & Soda-Fabrik AG, 1969); Heinz H. K. Thiele, "Magnetic Sound Recording in Europe up to 1945," *Journal of the Audio Engineering Society* 36 (May 1988): 396–408; Friedrich Karl Engel, "Magnetic Tape from the Early Days to the Present," *Journal of the Audio Engineering Society* 36 (July/August 1988): 606–616.

8. Jeffrey Herf, *Reactionary Modernism: Technology, Culture, and Politics in Weimar and the Third Reich* (Cambridge: Cambridge University Press, 1984), 195. The institutions in which the Magnetophon developed were also shaped by fascism; see Peter Hayes, *Industry and Ideology: IG*

technopolitics, "the strategic practice of designing or using technology to constitute, embody, or enact political goals."[9] After AEG began manufacturing the Magnetophon in 1935, it was gradually adopted by German radio network Reichs-Rundfunk-Gesellschaft, which had been taken over by the Nazi party in 1933. "Almost none of the radio station output was live," writes Basil Lane, "since tape was used as a method of censoring the programmes. This idea was developed way back in 1939 as an expediency for political broadcasts, all of which were carefully vetted."[10] According to David Morton, German radio stations, "once controlled by the Nazis, also used the magnetophon to broadcast lengthy classical music programs intended to inspire the public," recordings that might have been less effective if dependent on the low fidelity and short duration of contemporary phonograph records.[11]

During World War II, Magnetophons were installed in radio stations throughout occupied France as well as at Radio Luxembourg's high-power transmitter, facilitating the standardization of broadcasts.[12] The German government used them for wiretapping,

Farben in the Nazi Era, 2nd edition (Cambridge: Cambridge University Press, 2000); and Raymond G. Stokes, "From the IG Farben Fusion to the Establishment of BASF AG," in Werner Abelshauser, Wolfgang von Hippel, Jeffrey Allan Johnson, and Raymond G. Stokes, *German Industry and Global Enterprise: BASF: The History of a Company* (Cambridge: Cambridge University Press, 2004), 206–361.

9. Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, Mass.: MIT Press, 1998), 15. On political technologies, see also Langdon Winner, "Do Artifacts Have Politics?" *Daedalus* 109, no. 1 (Winter 1980): 121–136.

10. Lafferty, "Early Development of Magnetic Sound Recording," 137–138; Basil Lane, "75 Years of Magnetic Recording: 3—From Steel to Plastic," *Wireless World*, May 1975, 222. On RRG, see Horst J.P. Bergmeier and Rainer E. Lotz, *Hitler's Airwaves: The Inside Story of Nazi Radio Broadcasting and Propaganda Swing* (New Haven: Yale University Press, 1997); and Aristotle A. Kallis, *Nazi Propaganda and the Second World War* (Basingstone, England: Palgrave Macmillan, 2005), 31–39.

11. David Morton, *Off the Record: The Technology and Culture of Sound Recording in America* (New Brunswick: Rutgers University Press, 2000), 57–59.

12. Lafferty, "Early Development of Magnetic Sound Recording," 137.

recording domestic and diplomatic telephone calls.[13] "Magnetic tape also revolutionized

secret transmissions," writes Friedrich Kittler, by facilitating the recording and

comparison of spies' unique telegraph styles, as well as the analysis and editing of

telegraph messages composed by captured British spies.[14]

AEG Magnetophon K4, 1935.[15]

The Magnetophon's designers also imagined military applications from the beginning,

when, according to Raymond Stokes, "internal IG documents stressed the war potential

of the new recording medium."[16] AEG's portable models, called Tonschreiber, were used

by the military for dictation, war reporting, and recording coded signals. "A significant

change occurred after the Magnetophone was invented and thoroughly designed for the

purpose of war reports," explained Hasso von Wedel, chief of army propaganda.

"Original combat reports from the air, the moving armored vehicle, or the submarine,

---

13. Engel, "Introduction of the Magnetophon," 62.

14. Friedrich A. Kittler, *Gramophone, Film, Typewriter*, trans. Geoffrey Winthrop-Young and Michael Wutz (Stanford: Stanford University Press, 1999), 107.

15. Photograph from "Magnetic Recording History Pictures," Audio Engineering Society, last modified July 6, 2004, http://www.aes.org/aeshc/docs/recording.technology.history/tape.html.

16. Stokes, "From the IG Farben Fusion," 269.

etc., now became impressive firsthand accounts."[17] The Magnetophon not only became

part of both the military communications apparatus and the national propaganda system,

it linked them together.

What impressed American engineers about the Magnetophon, though, was a technical

feature added in 1941, after it had established its hegemony. Adding a high-frequency

alternating current signal to a recording, engineers at RRG discovered accidentally, could

compensate for noise introduced by the magnetic medium itself and produce higher

fidelity recordings, a phenomenon that became known as AC biasing.[18] Although this

discovery had been made independently in the United States and Japan in the 1930s, it

was only commercialized in Germany.[19] "A splendid mechanism, a highly developed

tape, and the employment of high frequency bias"—the contributions of AEG, IG Farben,

and RRG respectively—"placed the Magnetophon far above any other magnetic

recorders," wrote Mullin.[20] Although articles about the new high-fidelity Magnetophon

were published in German newspapers and magazines, and even distributed in neutral

Switzerland, Allied engineers remained ignorant of them throughout the war.[21] One

---

17. Hasso von Wedel, *Die Propagandatruppen der deutschen Wehrmacht* (Neckargemünd, Germany: Vowinckel, 1962), 116–117, quoted in Kittler, *Gramophone, Film, Typewriter*, 107.

18. Lafferty, "Early Development of Magnetic Sound Recording," 139–141. See also Friedrich Engel, "Walter Weber's Technical Innovation at the Reichs-Rundfunk-Gesellschaft," last modified August 28, 2006, http://richardhess.com/tape/history/Engel--Walter_Weber_2006.pdf.

19. Mark Henry Clark, "The Magnetic Recording Industry, 1878–1960: An International Study in Business and Technological History" (PhD diss., University of Delaware, 1992), 122–123; Peter Hammar, "The Birth of Tape Recording in the U.S.," paper presented at the 72nd Convention of the Audio Engineering Society, Anaheim, Calif., October 1982, last modified September 17, 2011, http://www.historyofrecording.com/support-files/aes_preprint_1928_1982-09_birth_of_tape _recording.pdf, p. 2.

20. John T. Mullin, "The Birth of the Recording Industry," *Billboard*, November 18, 1972, 58.

21. Aaron Foisi Nmungwun, *Video Recording Technology: Its Impact on Media and Home Entertainment* (Hillsdale, N.J.: Lawrence Erlbaum Associates, 1989), 66.

witness to Mullin's demonstration, mechanical engineer Harold Lindsay, would soon be hired to Ampex and suggest that they develop their own audiotape recorder based on the Magnetophon. "It was nothing short of astonishing," he wrote, "that while researchers here were still struggling with steel tape and wire recorders, our wartime enemies were fully a decade ahead of us—and we didn't even know it."[22]

The two Magnetophons which Mullin had disassembled in Germany were his property, classified as "war souvenirs" by the U.S. Army, as were the 50 reels of tape he shipped home with them. "Regulations specified that a war souvenir had to fit inside a mailbag in Paris or it couldn't be sent," Mullin later wrote, so he shipped 35 separate packages to San Francisco and spent months reassembling the Magnetophons.[23]

Mullin also acquired two Magnetophons for the Army, along with photographs or Magnetophon manuals and schematics.[24] His work in Germany was part of a systematic American and British effort to appropriate German technical knowledge that began during the war and expanded during the occupation. The Combined Intelligence Objectives Subcommittee, Technical Industrial Intelligence Committee, and Field Information Agency, Technical (FIAT) targeted companies like IG Farben, seizing machines and documents and interrogating scientists and engineers. These agencies investigated technologies from synthetic rubber to wind tunnels, from a butter-making machine to aerial photography.[25] "By mid 1946," writes Lafferty, "over one billion pages

---

22. Lindsay, "Magnetic Recording," 38.
23. John T. Mullin, "Creating the Craft of Tape Recording," *High Fidelity and Musical America*, April 1976, 63–64; Mullin, "Birth of the Recording Industry," 58.
24. Mullin, "Creating the Craft of Tape Recording," 63.
25. John Gimbel, *Science, Technology and Reparations: Exploitation and Plunder in Postwar Germany* (Stanford: Stanford University Press, 1990), 3–11, 22.

of German technical documents had been microfilmed and over 1300 FIAT reports on German industry published," 23 of them on the Magnetophon and magnetic tape.[26]

For the United States, then, tape recording techniques were part of the spoils of victory in World War II. If expertise in rocketry was seized from defeated Germany in the form of people, most famously Werner von Braun, then expertise in audio engineering was seized in the form of machines, which were then reverse engineered to produce American recording equipment. This was technology transfer from the barrel of a gun, or, in John Gimbel's words, "intellectual reparations." The influence of these spoils has been the subject of some scholarly debate. While Gimbel, Lafferty, and Morton have portrayed the American tape recording industry as built on German innovation, Mark Clark has argued that these postwar developments depended more strongly on American research during World War II.[27]

At the Brush Development Company in Cleveland, German immigrant Semi Joseph Begun oversaw the design of recorders which used steel tape and, Clark writes, were "used operationally by the United States Navy in Allied landings in Sicily in 1943 and France in 1944 to deceive observers on shore by playing the sounds of landing craft in areas where landings were not taking place." Brush also designed wire recorders which Air Force pilots and Army scouts used to dictate their observations. And Begun, aware of IG Farben's coated tape, directed researchers at the Battelle Memorial Institute in Columbus to produce their own. In 1947, Brush released the Soundmirror BK-401, an

---

26. Lafferty, "Early Development of Magnetic Sound Recording," 158.
27. Gimbel, *Science, Technology and Reparations*, vii, 72–73, 96–97; Lafferty, "Early Development of Magnetic Sound Recording," 151; David Lindsay Morton, Jr., "The History of Magnetic Recording in the United States, 1888–1978," (PhD diss., Georgia Institute of Technology, 1995), 288.

open reel recorder marketed to consumers but actually sold mostly to radio stations. Paper companies manufactured paper-backed iron oxide tape for it, while the Minnesota Mining and Manufacturing Company, or 3M, produced plastic-backed tape, taking on a role they would play in the electronics industry for decades. "Brush was enjoying considerable commercial success with its BK-401," concludes Clark, "well before any American company marketed its copy of the AEG Magnetophone."[28]

The Armour Research Foundation in Chicago, a private research institution, was the site of another line of magnetic recording research in the 1940s. There, electrical engineer Marvin Camras developed and patented magnetic recording techniques, including, in 1941, AC biasing. Though Armour manufactured wire recorders itself only briefly during World War II, it licensed patents to General Electric and other companies. The Navy used Armour-designed equipment to record training sessions for review by instructors, including the sounds generated by sonar equipment as well as a crew's voices. It was also used for dictation and occasionally for broadcasting. Camras held patents related to coated tape as well.[29]

These American research programs were crucial for the development of the American magnetic recording industry in general; as Johannes Bähr, Paul Erker, and Geoffrey Giles write, "several American big electrical companies like RCA, General Electric, or Westinghouse exhibited no interest in the magnetic tape recording technology developed by AEG [and] preferred to invest in their own technological concepts."[30] At the less

28. Clark, "Magnetic Recording Industry," 170–172, 188, 201–216; Morton, "History of Magnetic Recording," 301.
29. Clark, "Magnetic Recording Industry," 218–257.
30. Johannes Bähr, Paul Erker, and Geoffrey Giles, "The Politics of Ambiguity: Reparations, Business

established Ampex, though, the Magnetophon had a greater influence than the domestic

work of Brush and Armour. "Ampex engineers used Brush magnetic tape in their initial

tests of their machine," writes Clark, "but soon discarded it." Similarly, Ampex

eventually licensed Armour's patents, which they eventually used in their videotape

recorder—but there's no evidence Armour's research contributed to their earlier

development of audiotape recorders.[31]

When Stolaroff and Lindsay began designing their own compatible tape recorder at

Ampex, they learned about the mechanical components of the Magnetophon by

examining Mullin's, but he wouldn't let them see the electronics, which he had rebuilt

himself and licensed to the Rangertone Company, an Ampex competitor. Instead, they

studied microfilm copies of FIAT reports.[32]

Meanwhile, singer Bing Crosby began recording on Mullin's refurbished

Magnetophons. From 1935 to 1945 Crosby had broadcast *The Kraft Music Hall* on

National Broadcasting Corporation radio. He resented the requirement that he perform

live, though, particularly since he had to do so twice to reach both eastern and western

audiences. In 1946 Crosby left NBC for the new American Broadcasting Corporation,

which permitted him to record on acetate or lacquer "electrical transmission" disks

instead, but ratings suffered along with the fidelity of his broadcast voice. In 1947, then,

---

Relations, Denazification and the Allied Transfer of Technology," in *Technology Transfer out of Germany after 1945*, ed. Matthias Judt and Burghard Ciesla (Amsterdam: Harwood Academic, 1996), 141.

31. Clark, "Magnetic Recording Industry," 308–309.

32. Ibid., 307–308.

he began recording his new show *Philco Radio Time* on one of Mullin's Magnetophons, which he had set up at NBC's studios—shared with ABC—in Hollywood.[33]

Marketing brochure for the Ampex Model 200, c. 1948.[34]

Recognizing the potential of this new medium, Crosby became Ampex's distributor, selling machines to ABC and loaning Ampex the $50,000 they needed to put their Model 200 recorder into production. "In April 1948," write Martin McQuade and Peter Hammar, "the first two machines from the Ampex assembly line went to Mullin in Hollywood to record the *Philco* show. More recorders went to ABC's WLS Chicago affiliate to time-

33. Martin McQuade and Pete Hammar, "Bing Crosby's Magnetic Tape Revolution," in *Going My Way: Bing Crosby and American Culture*, ed. Ruth Prigozy and Walter Raubicheck (Rochester: University of Rochester Press, 2007), 151–155.
34. Image from Howard Sanner, "Ampex Literature," Ampex Virtual Museum and Mailing List, last modified July 31, 2010, http://recordist.com/ampex/apxlit.html.

shift the program for the Eastern and Central time zones, while yet more Ampex

machines went to New York and Hollywood to fill an instant demand for the incredible

new recording technology." 3M began producing tape for Ampex recorders as they had

for Brush.[35] Magnetic recording, then, facilitated the standardization of broadcasting in

the United States as it had in Europe, making it possible for the whole country to hear the

same program with the sound quality audiences associated with a live performance.

"Critical listeners," boasted Lindsay and Stolaroff, "have not been able to determine

which is the original program and which the reproduction."[36]

   Mullin became not only Crosby's recording engineer, but also a salesman for Bing

Crosby Enterprises. Working with Raytheon personnel at Naval Air Station Point Mugu

near Los Angeles, in 1949 he developed techniques for recording flight data received by

radio from experimental planes and missiles.[37] "This data," explained a 1957 Ampex

annual report, "once recorded on the tape, could be played back any number of times in

the laboratory and, in essence, the flight was re-created over and over again."[38] This new

military market quickly became critical for Ampex, where Stolaroff became responsible

first for engineering such "instrumentation recorders" and then for selling them.[39] In the

1950s, the company controlled the majority of the instrumentation recorder market, and

35. McQuade and Hammar, "Bing Crosby's Magnetic Tape Revolution," 155–156.
36. Harold Lindsay and Myron Stolaroff, "Magnetic Tape Recorder of Broadcast Quality," *Audio Engineering*, October 1948, 13.
37. McQuade and Hammar, "Bing Crosby's Magnetic Tape Revolution," 156; Finn Jorgensen, "Instrumentation Recording on Magnetic Tape," in Daniel, Mee, and Clark, *Magnetic Recording*, 317–318.
38. Ampex, *1957 Annual Report*, box 16, series 2, Ampex Corporation Records, Special Collections, Stanford University Libraries, p. 17.
39. Myron J. Stolaroff, "Performance Results of the Ampex Magnetic Tape Recorder Recording Frequency Modulated and Pulse Width Telemetering Data," in *Joint AIEE-NTF Conference on Telemetering* (New York: American Institute of Electrical Engineers, 1950), 205–208.

aerospace equipment accounted for half its sales. NASA installed Ampex data recorders in space capsules, and the military placed them in reconnaissance aircraft that flew over Vietnam.[40]

Ampex also manufactured tape recorders for data recording and playback in other fields. "The device found applications," noted Ampex, "in business to program and feed large computers, in medical research for heart and brain wave recording, and in such widely varied fields as oil exploration and automotive testing."[41]

Many of these applications were also driven by military concerns, though, like Ampex's research on machine tool control. Inventor Leif Eric de Neergaard had patented a "record-playback" device that recorded a machine's motions on magnetic tape, which could be replayed to control it, in 1945. As David Noble writes, engineers at General Electric began building such systems the next year with the aspiration of producing "Machines without Men"—the title of the *Fortune* article which inspired them—and winning their battles with labor unions. They first used a wire recorder designed by Camras, then modified a Brush Soundmirror to record four channels, each representing an axis of the machine's motion, in parallel on a single tape. This manual record-playback control was quickly replaced by algorithmically programmed numerical control, which, Noble argues, promised managers more direct control over production and the Air Force components machined with superhuman precision, and thus lighter airplanes. The Air

40. Glenn E. Bugos, "The Aerospace Impetus to Silicon Valley," *Journal of the West* 36, no. 3 (July 1997): 102.
41. Ampex, *1957 Annual Report*, 17. Remington Rand and IBM also developed data recorders in the late 1940s and early 1950s; see William B. Phillips, "Data Storage on Tape," in Daniel, Mee, and Clark, *Magnetic Recording*, 252–269.

Force was especially interested in five-axis machine tools, which could simultaneously control not only motion in three dimensions but also table rotation and cutter tilt, and Ampex was among the companies that contributed to their development, boasting of "a specially developed milling machine [with] motion in five axes precisely controlled by signals from magnetic tape" in their 1957 annual report.[42]

Like other electronics companies in the Santa Clara Valley, then, Ampex fueled its growth with military contracts and partnerships with Stanford University faculty. Once they had developed high-density magnetic recorders for video (see the next section), Ampex built systems for document and data storage based upon them. The Videofile, developed in the late 1960s, stored documents as analog signals on magnetic tape, resulting in a medium analogous to microfilm as videotape was analogous to film; eight units were produced, and customers included Southern Pacific Railroad and Scotland Yard, which used it for storing fingerprints. In 1970, Ampex built the Tera-Bit Memory, a system that used dozens of reels of magnetic tape to store over a terabit (or 125 gigabytes) of digital data. "Customers of TBM were exclusively in the intelligence community and in other government agencies," writes John Mallinson. "Fewer than six systems were made."[43]

When the company's fortunes waned in the 1970s, its engineers "fertilized the entire Silicon Valley," as Bugos writes, particularly "the burgeoning field of computer data

---

42. David F. Noble, *Forces of Production: A Social History of Industrial Automation* (Oxford: Oxford University Press, 1984), 83–85, 126, 153–159, 164, 357; Leif Eric de Neergaard, Method and means for recording and reproducing displacements, US patent 2,628,539, filed January 4, 1945, and issued February 17, 1953; Ampex, *1957 Annual Report*, 22.

43. John C. Mallinson, "The Ampex Quadruplex Recorders," in Daniel, Mee, and Clark, *Magnetic Recording*, 165–166.

storage."[44] Nolan Bushnell and other Videofile engineers left Ampex to found the video game company Syzygy, and then its successor Atari.[45] And, according to Michael Malone, "Ampex built the first modern high-technology publicity department and its veterans have subsequently played a key role in presenting Silicon Valley to the outside world, at one time or another creating the public image of Hewlett-Packard, Intel, Apple, National Semiconductor, Activision and the *San Jose Mercury News*."[46]

Scholars of the development of Silicon Valley as an industrial district have omitted Ampex from their accounts, though, often focusing on the vacuum tube and semiconductor industries to the exclusion of magnetic recording.[47] When Ampex has found attention in this literature, it has been as a marginal firm: in the late 1950s, writes Stuart Leslie, "even local magnetic tape-maker Ampex found a booming new market for its recording systems in reconnaissance satellites," a development he attributes to "the rain of defense contracts" on local aerospace companies rather than the experience and contacts Ampex had developed manufacturing radar components and telemetry recorders for the military.[48]

---

44. Bugos, "Aerospace Impetus to Silicon Valley," 103.

45. Marty Goldberg and Curt Vendel, *Atari Inc.: Business Is Fun* (Carmel, N.Y.: Syzygy, 2012), 20–39. See also Allan Alcorn, interview by Henry Lowood, April 26 and May 23, 2008, Computer History Museum, http://www.computerhistory.org/collections/catalog/102658257.

46. Michael S. Malone, *The Big Score: The Billion-Dollar Story of Silicon Valley* (Garden City, N.Y.: Doubleday, 1985), 67–68.

47. AnnaLee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (Cambridge, Mass.: Harvard University Press, 1996); Margaret Pugh O'Mara, *Cities of Knowledge: Cold War Science and the Search for the Next Silicon Valley* (Princeton: Princeton University Press, 2005); Christophe Lécuyer, *Making Silicon Valley: Innovation and the Growth of High Tech, 1930–1970* (Cambridge, Mass.: MIT Press, 2006).

48. Leslie, *Cold War and American Science*, 127.

Before the Valley devoted itself to Silicon, Ampex was not only a crucial part of its electronics industry, but a company that described its product as a technology for managing information. Tape recording, reported Ampex in 1959, "filled a need in each of these fields for a more convenient, economical, and accurate means of storing, transferring, and analyzing information. This information might be in the form of a minute electrical signal emanating from the brain, radioed data on the flight of a missile, or the picture and sound of a television performance."[49]

Audio to Video

"It was not until after AEG and BASF developed a high-frequency and thus an extremely high-fidelity magnetic audiotape during World War II," writes Kittler, "that it was also possible to conceive of an analog optical storage device."[50] Among those who did so was Mullin, who in 1950 began developing a video recorder at Bing Crosby Enterprises.[51] In 1951 David Sarnoff, the chairman of the Radio Corporation of America who was made a brigadier general for supervising the repair of radio stations in Paris after D-Day, announced that his company would make such a videotape recorder, or VTR, commercially available within five years.[52] "You can imagine the future importance of this development," read a 1954 RCA advertisement, "to television broadcasting, to

---

49. Ampex, *1959 Annual Report*, box 16, series 2, Ampex Corporation Records, p. 16.

50. Friedrich Kittler, *Optical Media: Berlin Lecture, 1999*, translated by Anthony Enns (Cambridge: Polity, 2010), 221. There was at least one exception: In 1928 Scottish electromechanical television inventor John Logie Baird also invented a system, Phonovision, for recording video onto phonograph records. Albert Abramson, *The History of Television, 1880 to 1941* (Jefferson, N.C.: McFarland, 1987), 128.

51. McQuade and Hammar, "Bing Crosby's Magnetic Tape Revolution," 157.

52. Albert Abramson, *The History of Television, 1942 to 2000* (Jefferson, N.C.: McFarland, 2003), 53; Erik Barnouw, *The Golden Web* (New York: Oxford University Press, 1968), 201.

motion pictures, education, industry and national defense. And you can see its

entertainment value to you, in your own home."[53]

RCA was the company most dedicated to research and development of new video

technologies. Their broadcast division, the National Broadcasting Corporation, had begun

television transmission at the 1939 World's Fair, using the electronic Iconoscope camera

developed by engineer Vladimir Zworykin. As executive Elmer Engstrom wrote, though,

"the outbreak of World War II effectively halted the further progress of commercial

television" as RCA's research efforts turned to military ends. "By June 1941," wrote

Kenyon Kilbon, "75 per cent of the RCA research staff was engaged in defense projects,"

and over the next year "the percentage rose to virtually 100."[54]

Under a contract with the Office of Scientific Research and Development, RCA

physicists Albert Rose, Paul Weimer and Harold Law developed increasingly sensitive

cathode ray tubes for video cameras. "Television," as Weimer explained, "was considered

useful to the military as a form of [reconnaissance]."[55] Like other video tubes, their Image

Orthicon had a photoemissive target, in this case a layer of cesium-silver oxide on the

front of a piece of Corning semi-conducting glass. Photons striking this surface released

53. Radio Corporation of America advertisement, *Time*, February 15, 1954, 14.

54. Erik Barnouw, *Tube of Plenty: The Evolution of American Television*, 2nd ed. (New York: Oxford University Press, 1990), 89; Kenyon Kilbon, "Pioneering in Electronics: A Short History of the Origins and Growth of RCA Laboratories, Radio Corporation of America, 1919 to 1964" (August 1964), David Sarnoff Library, last modified October 31, 2014, http://davidsarnoff.org/kil.html, pp. 48, 81, 133; Elmer W. Engstrom, "A History of Radio Corporation of America: The Years 1938 to 1958," *RCA Engineer* 4, no. 1 (June–July 1958): 29. For a technical description of the Iconoscope, see Albert Abramson, *Electronic Motion Pictures: A History of the Television Camera* (Berkeley: University of California Press, 1955), 65–71.

55. Paul K. Weimer, interview by Mark Heyer and Al Pinsky, July 8, 1975, IEEE Global History Network, last modified April 8, 2015, http://ieeeghn.org/wiki/index.php/Oral-History:Paul_K._Weimer. Brackets are present to correct a mistranscription of *recognizance* rather that *reconnaissance*.

electrons through the glass. An electron beam scanning across the back of the glass discharged the positively charged areas, returning a stronger current to the back of the tube when less light was hitting its front. This flow of electricity was then amplified to produce an inverted video signal up to a thousand times as sensitive to light as that of the Iconoscope.[56]

Inspired by newspaper reports that Japan "had organized a Suicide Corps to control surface and aerial torpedoes" in 1934—a decade before the formal adoption of the *kamikaze* tactic—Zworykin proposed that "one possible means of obtaining practically the same result is to provide a radio-controlled torpedo with an electric eye." The war provided RCA the opportunity to realize this vision of weaponizing their television cameras by building an Iconoscope camera and transmitter into a single system, BLOCK, which weighed as little as 35 pounds and was installed into drones and glide bombs. In 1942, the Army Air Forces began tests in which an unmanned plane equipped with a BLOCK I transmitter was flown by a pilot in another plane by remote control. The next year, they began installing the BLOCK III in GB-4 glide bombs, and replacing the Iconoscope cameras in BLOCK III systems with Image Orthicon ones, which "made it possible to use BLOCK equipment on dark cloudy days or at twilight." RCA's efforts to apply their technology to the Douglas Aircraft Company's "Roc" guided missile also led them to develop the smallest television camera yet, the Miniature Image Orthicon or MIMO, which incorporated a tube only nine inches long.[57]

---

56. Abramson, *History of Television, 1942 to 2000*, 7–8; Weimer, interview by Heyer and Pinsky; Kilbon, "Pioneering in Electronics," 154. On the development of video tubes in the 1930s and 1940s, see also Abramson, *Electronic Motion Pictures*, 87–107.

57. RCA Victor Division, Radio Corporation of America, "RCA's Contribution to the War Effort through

The Air Forces began deploying GB-4 glide bombs in June 1944 against German

rocket sites and submarine pens in France. In August, the Navy began using television-

guided TDR-1 missiles against Japanese shipping and radar stations.[58] BLOCK was also

installed in drones—a word first applied to remotely controlled aircraft in the 1930s—

that included "war-weary" B-17 and B-24 bombers packed with explosives in a program

called Project Aphrodite. "Live crews," wrote Paul Dickson, "were to get the planes in

the air and out over the [English] Channel, at which point they would bail out and a

manned mother ship would take control." The program was generally unsuccessful:

planes missed their targets, and some exploded before crews could bail out. The pilots

killed included Joseph P. Kennedy, Jr., eldest son of the businessman and ambassador.[59]

The BLOCK system was also used in nuclear testing, both in the laboratory and in the

field. "At key stages in the Manhattan Project," writes Kilbon, it provided "surveillance

of atomic production processes that could not be approached with safety by human

observers."[60] Later, reported RCA, "television-equipped, radio-controlled planes dived

through lethal radioactive clouds mushrooming upward from the atomic bomb in the

'Operations Crossroads' test at Bikini, revealing by television the immediate destructive

power of the world's most dreaded weapon."[61] When RCA began using the tube for

broadcast television after the war, it retained its military associations. "RCA had a big

---

Television, 1937–1946" (Camden, RCA Victor Division, 1946), Early Television Foundation and Museum, http://earlytelevision.org/military_tv.html, last modified April 7, 2015, pp. IV-1 to IV-3, IV-5, IV-12, V-7, VI-3; Kilbon, "Pioneering in Electronics," 155.

58. RCA Victor, "RCA's Contribution to the War Effort through Television," V-7 to V-8.
59. Steve Zaloga, letter to the editor, *Defense News*, May 13, 2013, 20; Paul Dickson, *The Electronic Battlefield* (Bloomington: Indiana University Press, 1976), 182.
60. Kilbon, "Pioneering in Electronics," 157–158.
61. RCA Victor, "RCA's Contribution to the War Effort through Television," X-1.

press conference when they announced the Image Orthicon," recalled Weimer. "They had Ben [Grauer] there, who was the top NBC announcer at the time, and I remember him saying that the Image Orthicon was the atomic bomb of television. I think that was a typical saying at the time." The Image Orthicon became the standard tube for broadcast television production for the next twenty years.[62]

Meanwhile, Weimer and other RCA researchers began designing tubes that used photoconductive chemicals like amorphous selenium and antimony sulfide—materials that conducted electricity better when exposed to light—rather than photoemissive ones. "Work done during the war on photoconductive materials for infrared detectors," they wrote, "has served to focus attention on the basic advantages which photoconductivity has to offer to television pickup tubes." More sensitive photoconductive tubes might operate at lower light, without the complex amplification of photoemissive ones. "It was easily conceivable," wrote the researchers, "that a simple, compact and dependable television pickup tube would find many applications in industry, business and in scientific investigation far wider than that of entertainment broadcasting."[63]

The result was the vidicon, a tube which "approaches the ultimate in simplicity," as Zworykin and engineer George Morton wrote in 1954. "It consists only of a photoconductive target on the glass end of the tube and an electron gun at the other.… For a small compact unit, such as is needed for industrial television, the tube is almost ideal. A slight lag at low levels of illumination has been the major obstacle to its use as a

---

62. Weimer, interview by Heyer and Pinsky.
63. Ibid.; Paul K. Weimer, Stanley V. Forgue, and Robert R. Goodrich, "The Vidicon: Photoconductive Camera Tube," *Electronics*, May 1950, 70–71.

general-purpose tube for broadcasting."[64] When RCA marketed the compact Telemite

camera, which used a vidicon tube, "to improve general military effectiveness," the first

application they suggested was "battlefield surveillance from remotely-controlled drone

aircraft.[65]" They also incorporated the tube into a portable camera called the Walkie-

Lookie, which could transmit a video signal to a master control unit a quarter mile

away.[66] For the next couple decades, the vidicon would be a standard feature of such

portable video cameras, as would the ghostly persistence of relatively bright parts of an

image that Zworykin and Morton described as lag.
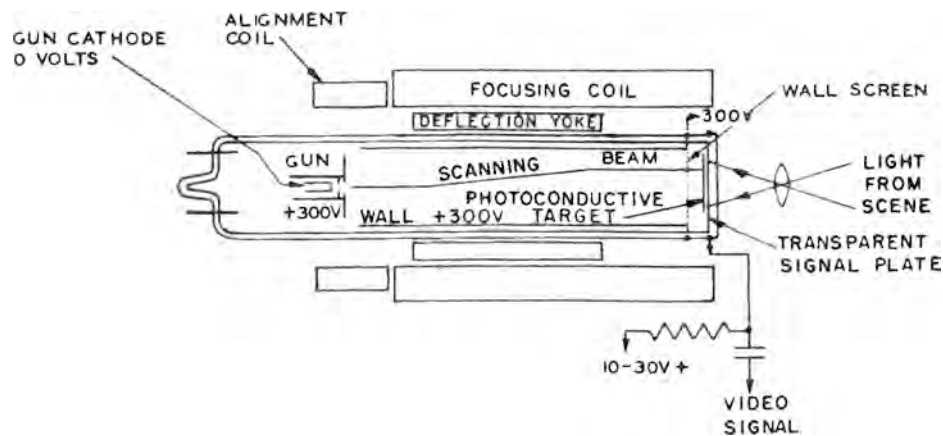
**In this diagram of a vidicon tube, light strikes a photoconductive target
on the right while an electron beam on the left scans over the back of the target.**[67]

This research at RCA would eventually contribute to portable video, but it was Ampex

that had a recorder—built largely from their audio components—ready for introduction at

the 1956 National Association of Radio and Television Broadcasters Convention. Funded

---

64. V.K. Zworykin and G.A. Morton, *Television: The Electronics of Image Transmission in Color and Monochrome*, 2nd ed. (New York: Wiley, 1954), 377.

65. RCA, Telemite marketing brochure (1957), in Southwest Museum of Engineering, Communications and Computation, "RCA Telemite Miniature Television Camera," last modified May 8, 2015, http://smecc.org/rca_telemite_miniature_television_camera.htm.

66. Abramson, *Electronic Motion Pictures*, 151–152.

67. Diagram from P.K. Weimer, S.V. Forgue, and R.R. Goodrich, "The Vidicon: Photoconductive Camera Tube," *RCA Review* 12, no. 3 (September 1951): 309.

in part by the Columbia Broadcasting System, a competitor of Sarnoff's NBC, the Ampex VR-1000 filled the same role in television that audiotape recorders did in radio, allowing broadcasters to capture otherwise ephemeral electrical signals.[68] "It was very clear in the United States," recalled Ampex engineer Martin Salter, "that there was only one seen application of the tape recorder and that was time-delay, to be able to have something at the same local time, on the East Coast, on the Mid and on the West Coast."[69] Such recording had previously been limited to the process of kinescoping, which involved filming a television monitor and, like vinyl records in radio, resulted in an aesthetic different from that of a live broadcast. Furthermore, film had to be chemically developed, whereas video recordings could be replayed instantly.[70]

The key technical challenges that video recording presented were recording with sufficient fidelity for broadcast television, and using tape efficiently enough to fit minutes or hours on a compact reel. This history thus forms a chapter in the "general history of compression" proposed by Jonathan Sterne, an attempt, like the codex or indeed the practice of rolling tape into a reel, "to economize communication in the service of facilitating greater mobility."[71] Both Mullin and RCA initially recorded signals linearly, using up to thirty feet of tape per second—an entire foot for each frame of the television

68. Leslie and Snyner, "History of the Early Days of Ampex Corporation," 10–11. For a more technical account, see Mallinson, "Ampex Quadruplex Recorders."

69. Jeff Martin, "The Dawn of Tape: Transmission Device as Preservation Medium," *Moving Image* 5, no. 1 (Spring 2005): 54.

70. Frederick Wasser, *Veni, Vidi, Video: The Hollywood Empire and the VCR* (Austin: University of Texas Press, 2001), 57–58.

71. Jonathan Sterne, *MP3: The Meaning of a Format* (Durham, N.C. Duke University Press, 2012), 5–6.

image.[72] Mullin then began recording ten tracks in parallel, reducing tape speed to eight

feet per second.[73]

TRANSVERSE RECORDER

AUDIO ERASE HEAD

VIDEO HEADS RECORD HEAD

CUE RECORD

CUE ERASE

CONTROL TRACK HEAD

CAPSTAN MOTOR
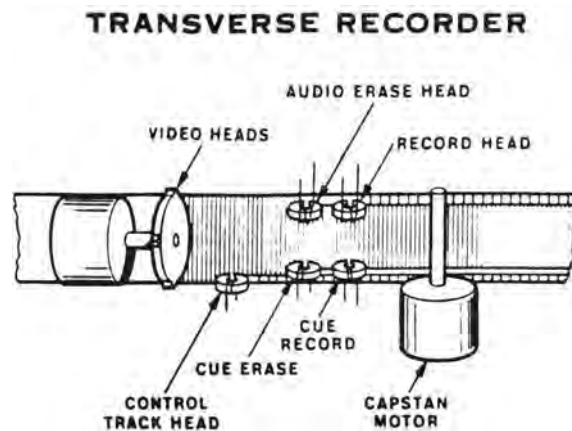
This figure depicts the rotating video heads of a transverse videotape recorder, as well as the stationary heads responsible for marginal audio and control tracks.[74]

In 1949, Camras considered a different approach which became known as "transverse

scanning," mounting a drum perpendicular to the tape so a rotating head could record a

signal across the width of the tape as it went by. Camras didn't fully develop this design

and didn't patent it until 1953, but he did show a mockup to Ampex engineer Walter

Selsted. It was in 1951, then, that Ampex began to benefit from developments at Armour,

when Selsted, Poniatoff, and Stolaroff decided that Ampex should build a such machine.[75]

As Glenn Bugos writes, "Ampex surged past companies like RCA by making magnetic

---

72. James Lardner, *Fast Forward: Hollywood, the Japanese, and the Onslaught of the VCR* (New York: W. W. Norton, 1987), 56; Finn Jorgensen, "Early Fixed-Head Video Recorders," in Daniel, Mee, and Clark, *Magnetic Recording*, 147.

73. John T. Mullin, "Video Magnetic Tape Recorder," *Tele-Tech & Electronic Industries*, May 1954, 77, 128. See also John Mullin, "Archive: The Crosby VTR," *Video*, March 1982, 28–31.

74. Figure from Charles P. Ginsburg, "The Birth of Video Recording," paper presented at the 82nd Convention of the Society of Motion Picture and Television Engineers, October 5, 1957, LabGuy's World, last modified July 11, 2005, http://labguysworld.com/VTR_BirthOf.htm.

75. Abramson, *History of Television, 1942 to 2000*, 51–53; Marvin Camras, Means for recording and reproducing video signals, US patent 2,900,444, filed January 12, 1953, and issued August 18, 1959.

recording a mechanical problem."[76] The design they arrived at came to be called

"quadraplex recording" because it mounted four heads on a drum. By taking advantage of

a tape's two inches of width as well as its length, the VR-1000 consumed only fifteen

inches of tape per second—or half an inch per frame—fitting ninety minutes of video

onto a reel fifteen inches in diameter.[77]

Quadruplex recording made the problem of fidelity more difficult, though. As Ampex

engineers Charles Ginsburg, Shelby Henderson, Ray Dolby, and Charles Anderson wrote

in their patent,

> the outputs of the several heads are subject to amplitude variations, due to
> various causes such as lack of exact registration on the recorded track,
> amplitude variations in the record because of slight variations in pressure
> between the several heads, and slight variations in the electrical
> characteristics of the heads. The conventional magnetic tape recording
> system, using currents varying in amplitude for application to the
> recording head, is particularly susceptible to undesired amplitude
> variations. The undesired signal variations cause distortion of the
> reproduced signal, and make it difficult if not impossible to reproduce the
> original frequency spectrum with reasonable fidelity, and particularly with
> sufficient fidelity to permit the recording and reproduction of television or
> like visual images.[78]

The obvious solution was to record the signal as variations in electrical frequency

(frequency modulation) rather than voltage (amplitude modulation), so that

miscalibrations in effective voltage between heads would no longer affect the image.

Frequency modulation was generally considered an impractical alternative, though,

---

76. Bugos, "Aerospace Impetus to Silicon Valley," 102.

77. Lardner, *Fast Forward*, 59. See also Julia A. Stanton and Michael J. Stanton, "Video Recording: A
     History," *SMPTE Journal* 96 (March 1987), 254–255.

78. Charles P. Ginsburg, Shelby F. Henderson Jr., Ray M. Dolby, and Charles E. Anderson, Broad band
     magnetic tape system and method, US patent 2,956,114, filed July 24, 1955, and issued October 11,
     1960, p. 1.

because it required more bandwidth and would thus use even more tape. It was Anderson and Dolby—a college student just back from a military tour of duty who would go on to fame and fortune after founding his own audio company, Dolby Laboratories, in 1965—who developed techniques to increase the efficiency of FM by representing the full range of the signal with only small changes in frequency, making it possible to incorporate FM into Ampex's recorder and produce an image with fidelity similar to that of live television.[79]
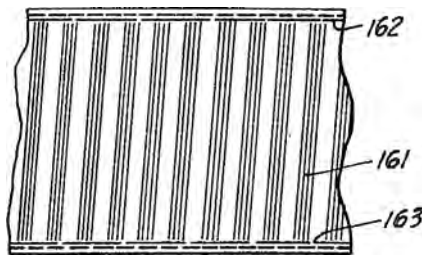
In this figure from Ampex's patent, video is recorded in transverse stripes like 161, control data in margin 162, and audio in margin 163.[80]

A margin at one edge of the tape was used for a control track, a regular rhythm of pulses marking the beginning of each frame used to regulate playback speed. The other margin was reserved for audio, which was recorded linearly using the circuitry from an Ampex Model 350 audiotape recorder.[81] Audio recording was thus assimilated into the new video system. Because both images and sounds were generated from electronic signals recorded on the same magnetic tape, Yvonne Spielmann describes video as "the

79. Ibid.; Leslie and Snyner, "History of the Early Days of Ampex Corporation," 9–10; Lardner, *Fast Forward*, 58–59.

80. Figure from Ginsburg et al., Broad band magnetic tape system and method, sheet 5.

81. Leslie and Snyner, "History of the Early Days of Ampex Corporation," 10.

first truly audiovisual medium."[82] Audio and video were not merged into a single track, however; rather, audio was literally marginalized in videotape recording.

**Ampex VR-1000 Videotape Recorder in use
at Dallas television station KRLD, c. 1960.[83]**

Ampex trademarked the word *Videotape* and sold recorders "to all major telecasting networks, and to many network-affiliate and independent TV station in the U.S. and several foreign countries," including Canada, Japan, England, and Germany by 1958 and another 23 by 1961.[84] For nearly a decade, though, the cost and bulk of video technology

---

82. Yvonne Spielmann, *Video: The Reflexive Medium*, trans. Anja Welle and Stan Jones (Cambridge, Mass.: MIT Press, 2008), 1.

83. Photograph from Andrew K. Dart, "The First Videotape Machines at KRLD-TV," akdart.com, last modified December 13, 2010, http://akdart.com/vtr/vtr3.html.

84. Ampex, *1958 Annual Report*, box 16, series 2, Ampex Corporation Records, pp. 9, 26; Ampex Corporation, *1961 Annual Report*, box 16, series 2, Ampex Corporation Records, p. 13.

made it accessible only to television broadcasters; the VR-1000, for example, weighed

1465 pounds and cost $45,000 in 1956.[85] For the most part, their use was limited to

recording programs so they could be rebroadcast to western audiences, replacing

kinescoping. In 1957, though, NBC and CBS "startled their viewers," according to the

Washington Post, by rebroadcasting Dwight D. Eisenhower's presidential inauguration

"within an hour" of its initial, live broadcast.[86] Six years later, CBS introduced instant

replay to American sports broadcasting during an Army/Navy college football game.

"This is not live!" explained the announcer. "Ladies and gentlemen, Army did not score

again."[87]

Ampex and RCA both continued to develop videotape recorders, introducing color,

electronic editing, and other technical improvements. Japanese electronics companies

were more dedicated, though, to making video equipment smaller and cheaper. As at

Ampex, the development of tape recording in Japan began with exposure to foreign

recorders as a result of the American occupations that followed World War II. During the

war, electrical engineer Masaru Ibuka had built precision instruments and—like

Poniatoff—radar systems for the military. When it ended in 1945, he and Morita Akio, a

young Japanese Imperial Navy officer who had worked with him on the design of a heat-

seeking missile, cofounded Tokyo Tsushin Kogyo, the Tokyo Telecommunications

Engineering Corporation, where they built voltmeters and repaired radios. In 1949 Ibuka

85. Ampex, *VR 1000 Videotape Recorder Instruction Manual* (1958), box 15, series 2, Ampex
    Corporation Records, p. PFD-1; Abramson, *History of Television, 1942 to 2000*, 73.
86. Martin, "Dawn of Tape," 54; Laurence Laurent, "Viewers Startled by Tape's Quick Repeat,"
    Washington Post and Times Herald, January 22, 1957.
87. Dylan Mulvin, "Game Time: A History of the Managerial Authority of the Instant Replay," in *The
    NFL: Critical and Cultural Perspectives*, ed. Thomas P. Oates and Zack Furness (Philadelphia:
    Temple University Press, 2014), 43.

heard an audiotape recorder while visiting the U.S. Office of Civil Information and Education in Tokyo. By reverse engineering American equipment, TTK began producing a range of audiotape recorders for government, education, and journalism markets; particularly notable as a predecessor of portable video was their Model M, released in 1951, which was originally designed to record on-location sound for movies, but could be carried on a shoulder strap and became popular for street interviews. Because plastic was scarce in Japan, the company's tape was made from sturdy paper coated with ferric oxide, which they branded Soni-tape from the Latin *sonus*. In 1958 TTK changed its name to Sony Corporation to appeal to an American market, hoping to convey youth with the similarity to the phrase *sonny boy*.[88]

Videotape recording in Japan began at Tokyo Shibaura Denki (Toshiba), where Norikazu Sawazaki began developing a recorder in 1953 after reading about RCA's floundering project. "Even though Ampex engineers were not aware of it," writes Ben Keen, "at about the same time as their Western counterparts these Japanese firms were pursuing independent lines of development." Sawazaki's recorder, built in 1958, used helical scan recording: by winding a tape around a drum at an angle—in a helix shape—it was possible to record signals diagonally on the tape rather than linearly or transversely, and to do so using only one or two moving heads, reducing the cost and size of the equipment. Compared to transverse scanning, the longer line traversed by the head as it moved across the tape made it possible to fit an entire field of video onto each stripe; as a result a recorder could display a frozen frame of video by moving a head repeatedly

---

88. John Nathan, *Sony: The Private Life* (Boston: Houghton Mifflin, 1999), 4, 13–15, 27–31, 52.

across a a single stripe on a stationary tape. Sawazaki was not the only engineer working on helical scan video, and indeed his patent was one of at least five filed between 1953 and 1958, including submissions by Ampex and RCA.[89]

Japanese television stations began importing Ampex VTRs in 1957, finding them especially useful for broadcasting sumo wrestling. Because sumo matches were very short, some only seconds long, viewers appreciated the opportunity to watch the rapid motions of the wrestlers more than once. "The station urged viewers to 'Look at the match by video tape recorder again!'" writes Hiroshi Sugaya, and the technology rapidly became familiar to Japanese audiences.[90] In 1958 the Ministry of International Trade and Industry began funding the development of video recorders at Toshiba and other companies in a protectionist effort to prevent Japanese broadcasters purchasing Ampex recorders and sending millions of dollars overseas. By the next year, Toshiba, Sony, Matsushita, and the Victor Company of Japan (JVC) had functioning prototypes, each of which used helical scanning.[91] Sony strived to turn video into a consumer technology. "We are not going to make broadcast equipment," said Ibuka. "We want to make home video."[92]

These companies were prevented from bringing their products to market, though, by Ampex's patent on their frequency modulation technique, which each manufacturer

---

89. Abramson, *History of Television, 1942 to 2000*, 54, 67–68, 87; Ben Keen, "'Play It Again, Sony': The Double Life of Home Video Technology," *Science as Culture* 1, no. 1 (1987): 20.

90. Hiroshi Sugaya, "Consumer Video Recorders," in Daniel, Mee, and Clark, *Magnetic Recording*, 182.

91. Lardner, *Fast Forward*, 61–62. On MITI's role on the development of Japanese industry more generally, see Chalmers Johnson, *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975* (Stanford: Stanford University Press, 1982).

92. Keen, "'Play It Again, Sony,'" 21; Nick Lyons, *The Sony Vision* (New York: Crown, 1976), 150.

found necessary for high fidelity video recording. At the same time, Ampex vice president Phil Gundy decided, as engineer Joseph Roizen recalls, "that Ampex had better transistorize its recorders to make them smaller and more reliable and less expensive."[93] Ampex had produced transistor-based instrumentation recorders for installation in Atlas, Thor, and Polaris missiles, but Sony, a pioneer of transistor radios, had already developed a prototype transistor-based VTR.[94] Gundy proposed a partnership to Ibuka and his cofounder Akio Morita, and in 1960, "with typical Sony dispatch," writes James Lardner, "they signed a one-page letter of agreement" permitting Sony to produce recorders for non-broadcast use in exchange for transistorized components for Ampex's equipment.[95]

Sony engineers contributed their expertise to Ampex's transistorized VR-1100 VTR, released in 1962, but the partnership soon broke down.[96] After Ampex lost $4 million in 1960 and 1961 due to an employee strike and poor sales during a recession, president George Long was replaced by William Roberts, an executive who had ambitions to take Ampex into the consumer market. Where Long and Gundy had sought only to preserve the broadcast market for themselves in their agreement with Sony, Roberts objected to the partnership as sharing technology with a competitor, and challenged its legitimacy given

93. Lardner, *Fast Forward*, 63.

94. Nathan, *Sony*, 31–35; Ampex, *1958 Annual Report*, 9; Nobutoshi Kihara, interview by William Aspray, May 24, 1994, IEEE Global History Network, last modified April 8, 2015, http://ieeeghn.org /wiki/index.php/Oral-History:Nobutoshi_Kihara. On Sony's surprise 1954 entry into the transistor industry, see Hyungsub Choi, "Manufacturing Knowledge in Transit: Technical Practice, Organizational Change, and the Rise of the Semiconductor Industry in the United States and Japan, 1948–1960" (PhD diss., Johns Hopkins University, 2007), 156–168.

95. Lardner, *Fast Forward*, 63.

96. Richard S. Rosenbloom and Karen J. Freeze, "Ampex Corporation and Video Innovation," in *Research on Technological Innovation, Management and Policy: A Research Annual*, ed. Richard S. Rosenbloom, vol. 2 (Greenwich, Conn.: JAI, 1985), 126; Ampex, *1963 Annual Report*, box 16, series 2, Ampex Corporation Records, p. 7.

that the letter of agreement lacked the verbosity and formality of a typical American

contract. Roizen later recalled that when he returned to Ampex with transistorized circuits

from Sony, they "were put in a cupboard and never installed in a machine."[97]

Sony, though, took the agreement seriously, releasing a transistorized, transverse

scanning recorder, the SV-201, in 1961. Other Japanese companies, meanwhile, began

selling broadcasters recorders that were similar to Ampex's, in the case of Shibaden's

"down to the useless holes in the top plate, which Ampex had put there by mistake."

Ampex found the Japanese government unwilling to enforce its patents unless it formed a

partnership with a Japanese company and licensed its patents to the infringers. Once

Ampex and Toshiba set up a joint venture to manufacture and sell recorders in Japan,

Toamco, Ampex's "various applications moved routinely through the bureaucracy," and

other electronics manufacturers began paying royalties. Sony, which continued to cite its

1960 agreement with Ampex, was the exception.[98]

Making Video Portable

Following the unsuccessful SV-201, in 1962 Sony released the helical scanning PV-100,

which weighed only 145 pounds and was designed to be carried by two people. "The

decks," writes Andy Uhrich, "were adopted by the Navy for on-ship training, the 1964

Tokyo Olympics for adjudicating close calls, and airlines replacing film prints for in-

flight movies."[99] It was at this point that video became portable not only materially but

---

97. Lardner, *Fast Forward*, 64–66; Ampex, *1961 Annual Report*, 1–3.
98. Lardner, *Fast Forward*, 66–67.
99. Lardner, *Fast Forward*, 67; L. C. Keene and T. E. Pierson, "Astrovision: An In-Flight Entertainment System," *Electronics World*, March 1965, 42; "PV-100 Product Design," Sony Design, http://www.sony.net/Fun/design/history/product/1960/pv-100.html; Andy Uhrich, "The Sony CV Videocorder: The Shared Origins, Uses and Marketing of Home Video and Video Art" (November 20,

also culturally, traveling not only around the world with ships and airplanes, but from the single industry of broadcasting into others, such as travel.

Trans World Airlines (TWA) had become the first airline to regularly screen films in-flight in 1961. Their technique consisted simply of projecting a 16 mm film on a screen in the first-class cabin, and providing audio to passengers through headphones.[100] According to an article by two of its engineers in the industry magazine *Electronics World*, American Airlines rejected this approach to in-flight entertainment. "It was desirable," they wrote, "that the passenger be given a choice of at least two forms of entertainment (one a full-length movie), but should also be free to follow his traditional habits of reading or working without serious intrusion by the entertainment selection of his fellow passengers. This precluded consideration of a big screen and movie projector set-up." American worked with Sony to design an in-flight entertainment system, Astrovision, which incorporated a PV-100 "shock-mounted on the bulkhead at the rear of the flight deck" for screening motion pictures, 26 monitors arranged throughout the cabin, headphones for each passenger, two audiotape systems playing music as alternative entertainment, a camera mounted near the plane's nose from which the flight attendant could show live video, and a television tuner which had limited reception in the air but was sufficient "to present special events, such as a baseball or football game, to

2008), Moving Image Archiving and Preservation student work, New York University, http://www.nyu.edu/tisch/preservation/program/student_work/2008fall/08f_2920_Uhrich_a1a.doc, p. 2.

100. Stephen Groening, "Film in Air: Airspace, In-Flight Entertainment, and Nontheatrical Distribution," *Velvet Light Trap*, no. 62 (Fall 2008), 6–7.

the passenger in flight with a reasonable expectation of adequately following the action."[101]

Ampex also began producing smaller recorders for institutional use. Like Sony's PV-100, the VR-1500, released at the end of 1962, recorded helically on two-inch tape.[102] "Small enough to be transported in the trunk of a car," explained Ampex in an annual report, the VR-1500 "is ideal for transmitting previously recorded educational programs over closed circuit systems and providing instant playback of 'role playing' and other classroom activities."[103] Ampex incorporated a VR-1500 into its 1963 Signature V home entertainment system, sold exclusively through department store Neiman-Marcus's Christmas catalog—which annually featured unlikely luxury items like his-and-hers airplanes, Egyptian sarcophagi, and, in 1969, the Honeywell Kitchen Computer. The $30,000 system, writes Max Dawson, "combined a 21-inch color television, AM-FM radio, stereo amplifier, automatic turntable, audio tape recorder, stereo speakers, black-and-white video tape recorder, and video camera in its elegant oiled walnut cabinet." It was nine feet long and weighed 900 pounds.[104] Even when Ampex produced "a portable fully transistorized Videotape recorder" that used one-inch tape in 1965, the VR-7000, it weighed 100 pounds.[105]

101. Keene and Pierson, "Astrovision," 42–43, 69–70.

102. Richard Diehl, "1963 Ampex VR-1500 Two Inch Helical Scan Consumer VTR," LabGuy's World, last modified June 29, 2008, http://labguysworld.com/Ampex_VR-1500.htm; Abramson, *The History of Television, 1942 to 2000*, 98.

103. Ampex, *1963 Annual Report*, 7.

104. Uhrich, "Sony CV Videocorder," 4; Paul Atkinson, "The Curious Case of the Kitchen Computer: Products and Non-Products in Design History," *Journal of Design History* 23, no. 2 (June 2010): 169; Max Dawson, "Home Video and the 'TV Problem': Cultural Critics and Technological Change," *Technology and Culture* 48, no. 3 (July 2007): 524.

105. Ampex, *Ampex Operating Manual for Videotape Recorder Model VR-7000* (1966), LabGuy's World, last modified January 11, 2005, http://labguysworld.com/Ampex-Manual_001.htm, pp. iii, 1.

Sony TCV-2010 Videocorder, 1965.[106]

Sony, in contrast, followed a trajectory established by their successful transistor radios by releasing increasingly compact video recorders.[107] Their 1965 TCV-2010 included both a nine-inch television and a video recording deck within a single 66 pound, $995 unit, while a premium model, the TCV-2020, came in a walnut case and included a timer for automatic television recording. The CV-2000, released a few months later, omitted the television. All three models used the CV, or "consumer video," format of half-inch open reel tape recorded in black-and-white using helical scan and a "skip field" technique in which only one field was recorded for each frame rather than two. This reduced the

---

106. Photograph from "A New Pastime with a Big Future: Tape-It-Yourself TV," *Life*, September 17, 1965, 57.

107. Kihara, interview by Aspray.

vertical resolution of the image but also the amount of tape necessary to record it, fitting

a full hour of video onto a seven-inch reel.[108] Sony also produced an accompanying

camera, the VCK-2000, which incorporated a vidicon tube.[109]

In marketing the CV recorders, Sony emphasized features that differentiated video

from the 8mm home movie camera many families already owned: "You can

electronically record anything you see or hear, and play it back instantly," explained one

advertisement in *Life* magazine. "You can record and keep anything you see on your TV

set. You can erase the tape immediately and reuse it, or keep it indefinitely. "[110] Despite

Sony's attempt to design VTRs fit for its customers' living rooms, Morita told the *New

York Times* in 1966 that "about one-third have been bought by individuals for their own

home use, while the remaining two-thirds are being used by companies for training films

or by schools for teaching."[111]

These recorders also found other uses. On October 4, 1965, Nam June Paik used

money from a John D. Rockefeller III Fund grant to purchase a TCV-2010 at Liberty

Music Shop on New York's Madison Avenue. Using a power inverter, Paik taped Pope

Paul VI on his way to the United Nations from his taxi cab, and played the tape that night

at the Café au Go Go in Greenwich Village.[112] He distributed to his audience a program

108. "New Pastime," 58; Christoph Blase, "Welcome to the Labyrinth of Machines: Tapes and Video Formats, 1960–1980," in *Record Again! 40jahrevideokunst.de Teil 2*, edited by Christoph Blase and Peter Weibel (Ostfildern, Germany: Hatje Cantz Verlag, 2010), 500–501; Richard Diehl, "1967 Sony CV-2000D First Consumer Videocorder," LabGuy's World, last modified January 9, 2005, http://labguysworld.com/Sony_CV-2000D.htm.

109. *Operation Manual for the SONY Video Camera Kit VCK-2000*, LabGuy's World, last modified January 9, 2005, http://labguysworld.com/Sony-Manual_001.htm, pp. 2–3.

110. Sony advertisement, *Life*, October 15, 1965, 121. See also Hilderbrand, *Inherent Vice*, 44.

111. Gene Smith, "Trial by Fire Tests New Sony TV Unit," *New York Times*, July 14, 1966.

112. Blase, "Welcome to the Labyrinth of Machines," 500–501; Nam June Paik, interview by Douglas Davis, in Douglas Davis, *Art and the Future: A History/Prophecy of the Collaboration between*

predicting that "as collage technic replaced oil-paint, the cathode ray tube will replace the canvas."[113] This "primal story," as Patricia Mellencamp describes it, has been retold in countless exhibit catalogs and works of art history. "The irony of Japanese consumer technology in the hands of a Korean in New York filming the Pope and triggering an art movement funded by NEA and the Rockefeller Foundation is delightful indeed," writes Mellencamp in 1995. "Perhaps that is why it has been told for now thirty years."[114]

**Nam June Paik points at the TCV-2010 displaying
one of his first videotapes, December 11, 1965.[115]**

Paik believed himself to be the first artist to use a video recorder, but in fact Norelco, the American branch of Dutch electronics manufacturer Philips, had loaned one to Andy Warhol two months earlier. The hundred-pound EL 3400, which contained 21 vacuum tubes and recorded on one-inch tape using helical scan, was delivered to Warhol's studio,

---

Science, Technology and Art (New York: Praeger, 1973), 149.

113. Nam June Paik, "Electronic Video Recorder" (1965), in *Nam June Paik: Videa 'n' Videology 1959–1973*, ed. Judson Rosebush (Syracuse, N.Y.: Everson Museum of Art, 1974), 11.

114. Patricia Mellencamp, "The Old and the New: Nam June Paik," *Art Journal* 64, no. 4 (Winter 1995): 41.

115. Photograph by Peter Moore, from John G. Hanhardt, *The Worlds of Nam June Paik* (New York: Guggenheim Museum, 2000), 115.

the Factory, on July 30, 1965.[116] Warhol was spending the day following actor Ondine with his portable audiocassette recorder, producing tapes which were later transcribed to create his 1968 "taped novel" *a*. Magnetic tape was becoming a preoccupation. "I didn't get married until 1964," wrote Warhol, "when I got my first tape recorder. My wife."[117]

Warhol's affair with his Philips EL 3400 was brief in comparison. "Norelco gave me this machine to play with," he wrote. "Then they gave a party for it. Then they took it away. The idea was for me to show it to my 'rich friends' (it sold for around five thousand dollars) and sort of get them to buy one."[118] The difference between film and video, Warhol told an interviewer, was "immediate playback.… We can do instant retakes and maintain our spontaneity and mood. It's terrific."[119]

In the time he had a recorder, Warhol made at least eleven videotapes. He incorporated one into his 1965 film *Outer and Inner Space*, in which actress Edie Sedgwick appears to converse with her own video image, displayed on a monitor behind her.[120] "Sedgwick

116. Paik, interview by Davis, 149; Blase, "Welcome to the Labyrinth of Machines," 502; Callie Angell, "Doubling the Screen: Andy Warhol's *Outer and Inner Space*," *Millennium Film Journal*, no. 38 (Spring 2002), 24; Richard Diehl, "Extinct Philips/Norelco Video Equipment," LabGuy's World, last modified January 9, 2005, http://labguysworld.com/Cat_Philips.htm; Philips, *Beeld + Geluid = Philips Video-Recorder EL 3400* (Eindhoven, Netherlands: Philips, c. 1965) Marcels TV Museum, last modified December 26, 2011, http://marcelstvmuseum.com/folders/Folder%20Philips%20EL3400.pdf.

117. Andy Warhol, *a: A Novel* (New York: Grove, 1968); Andy Warhol and Pat Hackett, *Popism: The Warhol '60s* (New York: Harcourt, 1980), 149; Andy Warhol, *The Philosophy of Andy Warhol (From A to B and Back Again)* (New York: Harcourt, 1975), 26, 95.

118. Warhol and Hackett, *Popism*, 119.

119. Andy Warhol, interview by *Tape Recording*, "Pop Goes the Videotape: An Underground Interview with Andy Warhol," *Tape Recording*, September–October 1965, 16–18.

120. Andy Warhol, *Outer and Inner Space*, film, two reels of 33 minutes each, 1965; Angell, "Doubling the Screen," 22–24. Angell makes two crucial assertions that appear to be based on a technical misunderstanding, writing first that "the Norelco system utilized an unusual video format, called 'slant scan video,' which differed from the helical scan format developed by Sony and other video companies," and second that "there are now no working slant scan tape players anywhere in the world." While the EL 3400 did use a proprietary format, "slant scan" and "helical scan" video seem to be synonymous, and recent videos of at least three EL 3400s in working order can be found on

seems to be unnerved," writes Callie Angell, "not by the film camera she is facing, but by the uncanny presence of her own prerecorded video image looking over her shoulder from the television behind her. Video—and perhaps television as well—seems to be directly implicated as her instrument of suffering."[121]

Andy Warhol, *Outer and Inner Space*, 1965.[122]

Despite Warhol's endorsement, Philips remained a relatively minor VTR manufacturer, particularly in the American market. Within the scope of this dissertation, Sony half-inch recorders were most popular among artists and political activists, while Ampex VR-7000s

---

YouTube. This suggests that Warhol's 1965 videos could be recovered, contrary to Angell's conclusion that "the only accessible footage from these early videos exists in this film."

For examples of working EL 3400s, see "Philips EL3400 open reel video," posted by "proxxima038," October 8, 2010, https://www.youtube.com/watch?v=BhC0SFYPcXU; "Philips EL3400 MrOldVTR," posted by Ron Brooks, October 19, 2010, https://www.youtube.com/watch?v=VAGeeeW0pvs; "PHILIPS EL3400 (Teil1)," posted by "vcrmaschinen," December 11, 2012, https://www.youtube.com/watch?v=8SgXQjFTC8Y.

121. Callie Angell, "Andy Warhol: Outer and Inner Space," in *From Stills to Motion & Back Again: Texts on Andy Warhol's Screen Tests & Outer and Inner Space* (North Vancouver, BC: Presentation House Gallery, 2003), 14.

122. Film frame from Whitney Museum of American Art, last modified October 16, 2013, http://whitney.org/image_columns/0050/6169/outer-and-inner-space_1140.jpg.

and their successors were the preferred VTRs of psychiatrists and other professionals.[123]
Educators could be found using either model.

Sony VideoRover DV-2400, c. 1967.[124]

In 1967 Sony released its first battery-powered recorder, the VideoRover DV-2400, which came with a carrying strap and weighed only 11 pounds. Accompanied by a five-and-a-half pound DVC-2400 camera, the VideoRover could record 20 minutes of CV format video on a small reel, but had no playback or even rewind feature; users were expected to return home to play their tapes on a larger CV recorder.[125] The DV-2400 was among the first of many compact recorders, manufactured by various companies but most successfully by Sony, which users referred to as "portapaks"—a term which previously

---

123. A 1970 survey of American "departments of psychiatry, mental hospitals, and psychiatric clinics" found 176 VR-7000s and 95 other Ampex one-inch recorders, as well as 91 Sony CV recorders. Other models of VTR were less common. "Survey! Survey! Survey!" *TV in Psychiatry Newsletter and Progress Report* 2, no. 1 (February 1970): 2–4.

124. Marketing photograph from Southwest Museum of Engineering, Communications and Computation, "Sony CV Series Video," last modified May 8, 2015, http://smecc.org/sony_cv_series_video.htm.

125. Blase, "Welcome to the Labyrinth of Machines," 501; Sony, *Sony Portable Videocorder Kit DVK-2400 Owner's Instruction Manual*, LabGuy's World, last modified February 27, 2005, http://labguysworld.com/Sony-Manual_017.htm, pp. 1, 15; Sony, *Sony Video Camera Kit VCK-2400 Owner's Instruction Manual*, LabGuy's World, last modified February 27, 2005, http://labguysworld.com/Sony-Manual_018.htm, p. 1.

referred to any kind of portable electronic equipment, but by the 1970s usually referred specifically to video recorders.[126]

Ampex VR-3000, 1967.[127]

Demonstrating the different priorities of the two companies, Ampex released its own battery-powered recorder the same year, the VR-3000. While the CV format produced only 220 lines of vertical resolution, the broadcast quality VR-3000 produced up to 625 lines—but it weighed 35 pounds, came with a 13 pound camera that incorporated a state-of-the-art Philips Plumbicon tube, and cost $65,000.[128] "An alpine-type back-pack is available as an accessory item so that the recorder may be 'worn' when it is necessary that the operator be mobile," explained the VR-3000 manual, but putting on the backpack was a complex task which "requires the services of a second man to hold the unit while it is being strapped on."[129]

---

126. *Oxford English Dictionary*, 3rd ed., s.v. "portapak."

127. Marketing photograph from Richard Diehl, "Ampex VR-3000 Portable Quadruplex VTR 40th Anniversary!" LabGuy's World, last modified March 31, 2007, http://labguysworld.com /Ampex_VR-3000-Anniversary.htm.

128. Ampex press release (March 31, 1967), in Diehl, "Ampex VR-3000."

129. Ampex, *VR-3000 Videotape Recorder Operation and Maintenance Manual* (1969), box 32, series 2, Ampex Corporation Records, pp. 1-1, 2-5.

In 1968 Richard J. Elkus, Jr., assistant to the president of Ampex, wrote a report in which he argued that the company was failing to compete effectively in the home and industrial video markets because it made machines for repetitive and semi-repetitive viewing but not for a third use, instantaneous response. Applications in which people would watch themselves would multiply, suggested Elkus, and they demanded reliable, portable, uncomplicated machines. He began designing his own compact recorder, the Instavideo, to fill this gap in Ampex's product line, and gained the support of the board of directors. The prototypes the company demonstrated in 1970 weighed only 16 pounds and used cartridges rather than open reels, eliminating the task of threading tape through the machine. Ampex lost $12 million in 1971 and $90 million in 1972, though, and simply didn't have the resources to mass produce the Instavideo. They ceased development in October 1972, leaving the portable video market to Sony.[130]

In the 1970s, portapaks became the basis for an experimental video culture partly because of their relatively small size and cost, but also because of a standard format, EIAJ Type I, which made it possible for tape recorded on one brand of VTR to be played on another. This format, developed by the Electronic Industries Association of Japan in 1969, was similar to Sony's CV format, recording helically on half-inch tape, but utilized full field rather than skip field recording for higher definition. The standard specified that "two video heads must be installed on the rotating platform." Following the early model of the Ampex VR-1000, the EIAJ-I standard also included two stationary heads,

---

130. Rosenbloom and Freeze, "Ampex Corporation and Video Innovation," 156–158, 161, 166, 173–175.

recording an audio track linearly on one margin of the tape and a control track on the

other. Both these marginal spaces were very narrow, 1 mm and 0.8 mm respectively.[131]
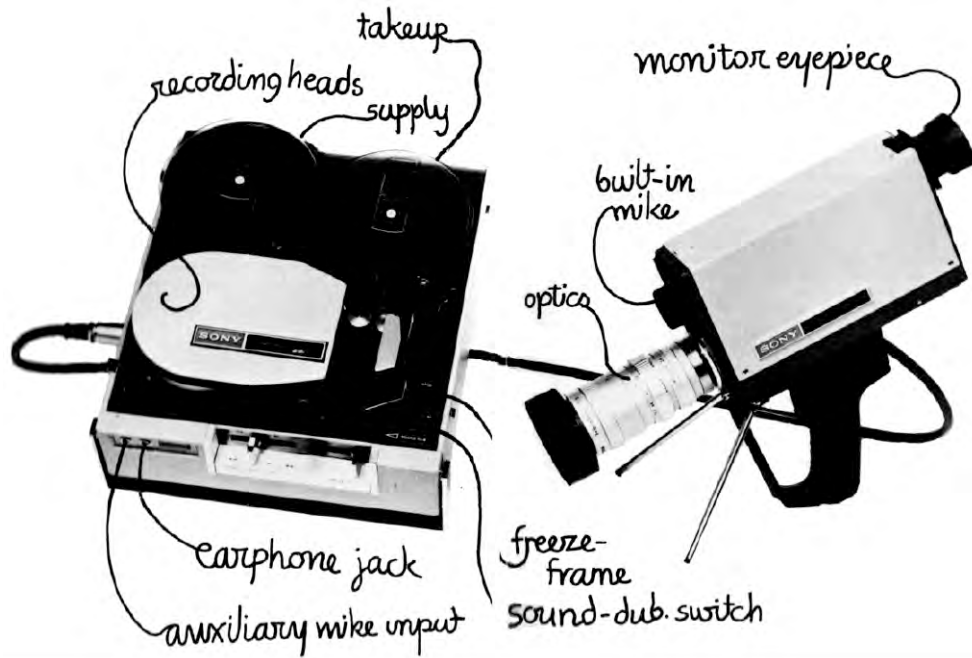
Sony VideoRover II AV-3400, 1970.[132]

Ampex's Instavideo implemented this new standard, but Sony's 1970 AV-3400, or

VideoRover II, was the first EIAJ-1 recorder to market. It became the most popular

portapak for several years, selling for $1495, weighing 19 pounds (and used with a six

pound camera), and recording 30 minutes of video on a tape.[133] Unlike its predecessor,

the AV-3400 could play video as well as record it, either on a monitor, on a standard

---

131. Yoshio Sawaji, "EIAJ Standards for ½-in Videotape Recorders," *Journal of the Society of Motion Picture and Television Engineers* 79 (December 1970): 1091–1093; Richard Robinson, *The Video Primer: Equipment, Production and Concepts* (New York: Links, 1974), 224–225. Shibaden and Victor apparently favored a slightly different standard involving a larger head canister, faster tape speed and thus less efficient use of tape. "Standardization," *Radical Software* 1, no. 1 (Summer 1970): 3.

132. Annotated photograph from Michael Shamberg and Raindance Corporation, *Guerrilla Television* (New York: Holt, Rinehart and Winston, 1971), section II, pp. 22–23.

133. Blase, "Welcome to the Labyrinth of Machines," 504; Shamberg and Raindance, *Guerrilla Television*, section II, p. 100.

television with an FM modulator accessory, or even through its own viewfinder, making immediate playback not only feasible but convenient.[134] With the portapak, the transnational mobility of video recording extended across the Iron Curtain when the Soviet brand Электроника (Electronika) modeled their VMP-1 and 501 video recorders on Sony's AV-3400, directly copying its electronic and mechanical components.[135]

Cultural Portability

Perhaps because VideoRover II's price was out of reach of consumers, Sony continued to market to institutions. The owner's manual, for example, stated that it "will greatly aid in teaching, training, promotional activities and in hundreds of other applications," and other marketing materials described the portapak as "a highly practical industrial tool, equally valuable for keeping salesmen in the field abreast of home plant developments and for training other employees in such matters as getting the most out of a computer."[136] Sony also marketed portapaks in military magazines with an advertisement featuring a soldier with an untrustworthy memory "returning in the afternoon to the site of this morning's reconnaissance patrol." With a VideoRover, explained the ad, "he'll record everything he sees (or thinks he sees) without burdening his memory or worrying about on-the-spot identification. For as soon as he reaches headquarters, he'll play back the tape

---

134. Sony, *Sony Videocorder AV-3400 Owner's Instruction Manual*, LabGuy's World, last modified January 9, 2005, http://labguysworld.com/Sony-Manual_003.htm, pp. 1, 4–5.

135. "Electronica-Video VMP-1," Vintage Technics, last modified November 30, 2014, http://vintage-technics.ru/Eng-Electronica-video_VMP-1.htm; "Electronica-501-Video," Vintage Technics, last modified November 30, 2014, http://vintage-technics.ru /Eng-Electronica-501-video.htm.

136. Sony, *Sony Videocorder AV-3400 Owner's Instruction Manual*, 1; Sony Corporation of America Application Bulletin, in Shamberg and Raindance, *Guerrilla Television*, section II, p. 6.

and so relive the patrol, this time letting the G-2 staff share his on-the-spot views and enabling its members to make their own interpretations."[137]

These advertisements suggested that portable video would allow managers and officers to control their workers more thoroughly by surveilling and regimenting their lives. "The first market for video, then, was corporate training programs," wrote Jonathan Price in *Video-Visions*, his 1977 survey of applications of the medium. Such a training video was effective, according to Teletronics International executive Bruce Lang, because "it uses a television set, which has become the most influential piece of equipment in the average person's life, and which conjures up high believability."[138] As Lloyd Green of Videograph, another company that made training videos, explained to a public television reporter, video was particularly popular in "industry that has a specific problem like distribution of communications over a broad area, through field offices, like insurance companies."[139]

Over the next decade, portable video was subject to interpretive flexibility.[140] Opposed to Green's ethic of control over distance was one of decentralization espoused by experimental videographers, who saw the broadcast medium of television as a force which projected the powerful institutions NBC, ABC, and CBS into millions of households. Although generally unaware of tape recording's fascist origins, they

137. Sony, advertisement, *Army* 19 (1969): 31.

138. Jonathan Price, *Video-Visions: A Medium Discovers Itself* (New York: Plume, 1977), 13–14.

139. "The Very First On-the-Air Half-Inch Video Tape Festival Ever," television broadcast, directed by David Atwood (1972), WGBH Media Library and Archives.

140. Trevor J. Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other," in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, ed. Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch (Cambridge, Mass.: MIT Press, 1987), 40.

perceived something authoritarian in the coast-to-coast television empires that massive

Ampex videotape recorders facilitated.

"Many of these early users," writes Martha Rosler, "saw themselves as carrying out an

act of profound social criticism, criticism specifically directed at the domination of

groups and individuals epitomized by broadcast television and perhaps all of mainstream

Western industrial and technological culture."[141] For these videographers, portapaks

represented an alternative "human scale" form of television, which would reflect the

specific identities and interests of small groups rather than imposing those of large

corporations. If the form of consciousness fostered by broadcast television was one of

homogenous obedience to state and corporate power, experimental video would

organically foster better understanding of oneself, of others, and of the world.

Ben Keen grapples with this interpretive flexibility by writing that video had a "double

life," a phrase borrowed from David Noble. "The power residing with the engineers and

designers of the large electronics firms," he writes, "has not allowed them to define

completely the range of possible use values and social relations that come to be associate

with the video technology that they have produced." As video recording found its way

into fields other than broadcast television production, it developed new cultural

significance. "It is the portapak development, in particular," writes Keen, "which has

come to represent a new period of increased access to television technology. Indeed, for

many people the notion of video conceived as alternative or independent televisual

---

141. Martha Rosler, "Video: Shedding the Utopian Moment," *Block*, no. 11 (1985/1986), 27.

practice began with the take-up of this technology. It captured people's imagination; it symbolized a new wave of experimentation with televisual technology."[142]

As Kittler writes, video's early uses included "the surveillance of shopping centers, prisons, and other centers of power, but through the misuse of army equipment"—that is, by repurposing of military technology—"users themselves also succeeded in mutating into television reporters and cutters."[143] These users themselves sometimes shared Kittler's understanding of their practices as an appropriation of military equipment. "This is the same wonderful technology that brought you bombs guided by video cameras, wiretaps and other forms of covert surveillance," wrote one video collective, the Videofreex. "This technology has provided us with tools that are at the same time exciting and frightening."[144]

There were also rumors that the vidicon tube in particular was originally designed for use in the Vietnam War.[145] Although this wasn't strictly the case, it was a rumor with several kernels of truth: the vidicon had developed out of the aerial videography of World War II; American fighting in Vietnam also involved surveillance drones and guided bombs that incorporated video cameras; and the American military was deploying a variety of other kinds of sensors—"designed to detect all kinds of human activity, such as

---

142. Keen, "'Play It Again, Sony,'" 9, 26; Noble, *Forces of Production*, 325,

143. Kittler, *Optical Media*, 221. I am admittedly quoting Kittler selectively here, because he begins this sentence with the dubious assertion that "Sony's first video recorders were not actually designed for household use, but rather for… surveillance." Sony's most compact video recorders do seem to have been designed for consumers, while their larger systems were intended for broadcasting and industrial training. In the 1960s, Sony emphasized training over surveillance in the short term, and consumer markets over institutional ones in the long term.

144. Videofreex, *The Spaghetti City Video Manual: A Guide to Use, Repair, and Maintenance* (New York: Praeger, 1973), 113.

145. Conversation with Ben Levine, April 5, 2013.

the noises of truck engines, body heat, motion, even the scent of human urine"—for

surveillance in the jungles of southern Laos.[146] "For me and for that whole period,"

Videofreek Parry Teasdale later said, "the central issue was the war in Vietnam.… It

spawned the technology and it created the necessary groundwork for an adversarial

relationship within the society that defined sides so clearly that people could choose and

choose righteously to be part of something. And without understanding the dynamics of

the war in Vietnam and what that did to society I don't think you can understand

video."[147]

As Theresa Mack wrote in 1976, "there was growing awareness that information was

power, and that media were tools which could if necessary be used as weapons."[148] There

was also a sense that these weapons could be turned against the military-industrial

complex from which they emerged. "The Japanese, the people we dropped the A-Bomb

on in '45," wrote Paul Ryan, "introduced the portable video system to this country in

1967, at a price low enough so that independent and semi-independent users could get

their hands on it and begin to experiment. This experimentation, this experience, carries

---

146. John David Blom, *Unmanned Aerial Systems: A Historical Perspective* (Fort Leavenworth, Kans.: Combat Studies Institute Press, 2009), 58; James William Gibson, *The Perfect War: Technowar in Vietnam* (Boston: Atlantic Monthly Press, 1986), 364; Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge, Mass.: MIT Press, 1996), 3.

On Vietnam-era drones, see also William Wagner, *Lightning Bugs and Other Reconnaissance Drones* (Fallbrook, Calif.: Armed Forces Journal International, 1982), and Curtis Peebles, *Dark Eagles: A History of Top Secret U.S. Aircraft Programs* (Novato, Calif.: Presidio, 1995), 83–113.

147. Parry Teasdale, interview by Chris Hill, May 1995, Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive/Contributors/ChrisHill/InterviewParryTeasdale.pdf, p. 11.

148. Theresa H. Mack, "Portable Video Documentary: An Historical Perspective" (May 1976), Downtown Collection, Fales Library & Special Collections, New York University, p. 26.

within it the logic of cybernetic guerrilla warfare… because the portable video tool only enables you to fight on a small scale in an irregular way at this time."[149]

This metaphor of videography as war wasn't the only one circulating among experimental videographers, though. Video led not only a double life, but a multifaceted one, as communities of users applied video to various fields and adopted understandings of technology and the self from psychiatry, anthropology, and the emerging discipline of media theory. As they grasped for understanding of video as a technology of consciousness, another influential model that experimental videographers found was that of psychedelic drugs.

---

149. Paul Ryan, "Cybernetic Guerrilla Warfare," *Radical Software* 1, no. 3 (Spring 1971): 1.

Chapter 2

Mind Manifesting: Psychedelic Drugs
and Collective Consciousness

In 2010, members of the video collective Raindance—active from 1969 through the

1970s—reunited on a stage at Loyola University Chicago to discuss their work. Ira

Schneider, who kept the collective's tapes after the group broke up, screened a number of

videos that had been digitized by the Center for Art and Media in Karlsruhe, Germany,

including one of collective members laying out the first issue of their magazine *Radical*

Software in 1970. On a screen, in black-and-white, younger simulacra of the artists on the

stage read from their magazine, interviewed each other about editorial policy, and joked

about drugs, particularly LSD. "I found that enormously embarrassing," said member

Beryl Korot after the video ended. "Recently… when I was moving from one place to

another, I threw out… maybe sixty videotapes.… I would do that with some of what you

just saw. Not everything that's recorded is worth seeing."[1]

For many of her colleagues, though, drugs were an essential model for what video

could be as a technology of consciousness. As Raindance member Marco Vassi wrote in

that first issue of *Radical Software*:

> To write about… to write… about…
>
> Tape is explaining a trip to someone who's never dropped acid. You have
> to say, it's *like* this.…

---

1. Elizabeth Coffman, who organized the event, documented it both on video and in an academic journal
   article. The discussion of LSD is omitted from the video documentation, but my own notes confirm
   my memory that it was screened. Elizabeth Coffman, "Raindance Reunion," video, 2:04:16, from an
   event on November 30, 2010, Vimeo, posted June 11, 2011, https://vimeo.com/24978087; Elizabeth
   Coffman, "'VT Is Not TV': The Raindance Reunion in a Digital Age," *Journal of Film and Video* 64,
   no. 1–2 (Spring/Summer 2012): 65–71.

When the image on the tube turns out to be you, seen through the eyes of someone who knows you well, or who knows how to look, catching you in an unguarded moment, when you see all the intimations you have had about yourself in electronically impacted reality, objectified, then your mind expands.

That's right, kiddies, just like with grass. Only different, and in some ways, more. When the technology really gets sophisticated, it will definitely be more. And for full effect, combine the electric and the chemical inputs.[2]

"Just like with grass" and other "chemical inputs," then, video recording enabled new experiences of the self which in turn facilitated mind expansion.

Edwin Varney, *Video Is As Powerful As LSD***, 1971.[3]**

"Dope is software in the information environment," wrote Raindance member Michael Shamberg. "For better or worse, it's perhaps the best psychological software we have until the electronic media are made more accessible.… The synergy of dope is that in less than a decade media evolution has radically altered collective perception. People aren't just getting different experience, they're experiencing differently."[4] With drugs, in other words, the medium was the message.

---

2. Marco Vassi, "Zen Tubes," *Radical Software* 1, no. 1 (Summer 1970): 18.
3. Edwin Varney, "Video Is As Powerful As LSD," *Radical Software* 1, no. 3 (Spring 1971): 6.
4. Michael Shamberg and Raindance Corporation, *Guerrilla Television* (New York: Holt, Rinehard and Winston, 1971), section I, p. 19.

As Victor Gioscia, a philosopher, sociologist, and friend of Raindance, searched for methods of adapting to social change by helping people "accelerate the formation of generalization," he asked, "Does acid do it? Will videotape?"[5] A cartoon by poet Ed Varney in *Radical Software* summed up the claim these videographers were making, "video is as powerful as LSD."[6]

Videographers used these references to hallucinogenic drugs to invoke a sophisticated conception of consciousness that psychiatrists and mystics had constructed in order to comprehend the psychedelic experience, a conception drawn from Christian and Hindu theology, humanistic psychology, and their own experiences of disability and hallucination. Among the sites of that construction was Ampex, one of the first places where people had tried using LSD to make people more adaptable and creative.

The Perennial Philosophy

Transistors were not the only technology Ampex rejected around 1960; the company was also the site of a short-lived experiment conducted by Myron Stolaroff, now assistant to the president for long-range planning, in using psychedelic drugs to foster creativity among engineers. "I was familiar with the frontiers of many technological fields of knowledge," wrote Stolaroff, "for we were designing special magnetic recording equipment to aid research in most of those fields: telemetering essential information from missiles and aircraft that would aid in making design decisions, automotive engineering, geophysical exploration, recording the output of various sensing devices in laboratories,

---

5. Vic Gioscia, "Frequency and Form," *Radical Software* 1, no. 2 (Fall 1970): 7.
6. Varney, "Video Is As Powerful As LSD," 6.

computers, and finally developing the world's first successful video tape recorder. I felt abreast of most scientific developments. Yet after my first LSD experience, I stated with confidence about LSD: 'This is the greatest discovery that man has ever made.'"[7] He soon left Ampex, founded the International Foundation for Advanced Study in Menlo Park, and became an influential LSD researcher.

Stolaroff began pursuing this second career in the 1950s. A mechanical engineer at Ampex invited him to a series of lectures on human potential by Harry Rathbun, an electrical engineer and professor of business law at Stanford. "Harry convinced me of the enormity of human potential," wrote Stolaroff, "of the necessity to wake up and take charge of our evolution." Despite identifying as Jewish, Stolaroff became involved in the Sequoia Seminar, a mystical movement based on the study of the Christian gospels that Rathbun had founded with his wife Emilia Rathbun in 1946. Although the Sequoia Seminar's roots were in the work of the Rathbuns' spiritual teacher Henry Sharman—a chemist, industrialist, and New Testament scholar with a Ph.D. from the University of Chicago—it also incorporated Jungian psychology and the esotericism of British theologian and mystic Gerald Heard.[8]

It was from Heard, who had moved to Los Angeles in 1937 with his friend Aldous Huxley, that Rathbun borrowed his evolutionary rhetoric. Heard was a man of many interests who worked in the Irish cooperative movement and as a BBC science journalist

7.   Myron J. Stolaroff, *Thanatos To Eros: Thirty-Five Years of Psychedelic Exploration* (Berlin: Verlag für Wissenschaft und Bildung, 1994), 18.

8.   Ibid., 18–20; Steven M. Gelber and Martin L. Cook, *Saving the Earth: The History of a Middle-Class Millenarian Movement* (Berkeley: University of California Press, 1990), 12–14, 33, 36–37, 46, 65–66, 68.

in the 1930s, wrote mysteries and science fiction, and published dozens of books on topics from fashion to prayer to flying saucers. His central concern, though, was the evolution of human consciousness. Like Henri Bergson, Heard worked with the Society for Psychical Research, and according to biographer Alison Falby, he was familiar with Bergson's theories of creative evolution through the work of his friend George Bernard Shaw, particularly his 1921 series of plays *Back to Methuselah*. "The aspects of Heard's thought dealing with methodology, biological evolution, the fundamental nature of consciousness, and mysticism," wrote minister Howard Louis Love, "evince a striking resemblance to the same areas of thought in the philosophy of Bergson." In particular, Heard believed that the "limen," or boundary of individual consciousness, could be intentionally traversed using prayer and meditation, facilitating "the complete evolution of consciousness through unity."[9]

In Los Angeles both Heard and Huxley studied Vedantic Hinduism, a tradition which also incorporated a belief that individual humans share in a larger self. Heard's idiosyncratic mystical practices became ascetic in the 1940s, as he began to meditate six hours a day, eat "a diet of raw carrots, eggs, tea, and raisons," and wear worn out clothes rather than the flamboyant ones he'd been known for in London. In 1942 Heard founded

---

9.　Gelber and Cook, *Saving the Earth*, 68–71; Alison Falby, *Between the Pigeonholes: Gerald Heard, 1889–1971* (Newcastle upon Tyne, England: Cambridge Scholars, 2008), 12–17, 66–69, 88, 93; Jeffrey J. Kripal, *Esalen: America and the Religion of No Religion* (Chicago: University of Chicago Press, 2007), 91; Howard Louis Love, "Gerald Heard's Natural Theology in Relation to the Philosophy of Henri Bergson" (PhD diss., Boston University, 1962), 244.

　　Shaw himself claimed to have discovered Bergson's work only after developing similar ideas on his own. Shaw to H. G. Wells, July 7, 1921, *Bernard Shaw and H. G. Wells*, ed. J. Percy Smith (Toronto: University of Toronto Press, 1995), 105; Piers J. Hale, "The Search for Purpose in a Post-Darwinian Universe: George Bernard Shaw, 'Creative Evolution', and Shavian Eugenics: 'The Dark Side of the Force,'" *History and Philosophy of the Life Sciences* 28, no. 2 (2006): 201–202.

Trabuco College, a monastery in the Santa Ana Mountains, to practice what he described

as "a new syncretism of Vedanta, Buddhism, and some elements of Christianity"; it

formed a kernel of California's emerging human potential movement until it dissolved in

1947.[10] Heard also served as a spiritual guide to Alcoholics Anonymous founder Bill

Wilson, Republican politician Clare Boothe Luce, and her husband Henry Luce,

publisher of *Time* magazine (who also contributed both money and his own presence to

the first major American conference on Pierre Teilhard de Chardin in 1964).[11]

When Stolaroff met Heard through the Sequoia Seminar in 1955, he came to respect

him as a mystic and was surprised to hear him speak about experiences with lysergic acid

diethylamide, or LSD. "I could not understand," Stolaroff later wrote, "why a person of

his gifts who could freely explore the cosmos with his mind would want to take a drug."[12]

Heard's answer, in an essay he published in the inaugural issue of *The Psychedelic*

Review in 1963, was that LSD could facilitate "a free flow of comprehension beyond the

everyday threshold of experience [through] a confronting of one's self, a standing outside

one's self, a dissolution of the ego-based apprehensions that cloud the sky of the mind."

Mystics might occasionally reach such "indescribable experiences that did change their

---

10. Falby, *Between the Pigeonholes*, 103–106; Timothy Miller, "Notes on the Prehistory of the Human Potential Movement: The Vedanta Society and Gerald Heard's Trabuco College," in *On the Edge of the Future: Esalen and the Evolution of American Culture*, ed. Jeffrey J. Kripal and Glenn W. Shuck (Bloomington: Indiana University Press, 2005), 87–92.

11. Falby, *Between the Pigeonholes*, 117–122, 137; Winifred McCulloch, *A Short History of the American Teilhard Association* (Chambersburg, Penn.: ANIMA Publications, 1979), 9. See also Don Lattin, *Distilled Spirits: Getting High, then Sober, with a Famous Writer, a Forgotten Philosopher, and a Hopeless Drunk* (Berkeley: University of California Press, 2012), which weaves together a collective biography of Huxley, Heard, and Wilson, a recovery memoir, and a theory of spirituality and intoxication.

12. Myron Stolaroff, "How Much Can People Change?" in *Higher Wisdom: Eminent Elders Explore the Continuing Impact of Psychedelics*, ed. Roger Walsh and Charles S. Grob (Albany: State University of New York Press, 2005), 55; Stolaroff, *Thanatos to Eros*, 21.

lives and bring a 'better order' in their living," wrote Heard, "but these experiences came as the result of many years of severe mental and physical discipline carried out within a doctrinal frame of reference, which often brought them to the brink of insanity. For many the experience was only a brief flash. For some it came two or three times during a lifetime of discipline."[13]

As David Farber argues, for many LSD was "an agent in the production of cultural reorientation," a catalyst for changing one's mind and life subtly or radically. "Some people used LSD," he writes, "as a 'resource' that enabled them to hunt out, recombine, and produce cultural schemata that changed their trajectory on the social map of space and time."[14] This reorientation was the sort of result that Heard associated with mystical experiences as well, suggesting that the result could be "a better order in all my living," a phrase he borrowed from the 13th century Franciscan Jacopone da Todi.[15] Although his hagiographic knowledge was extensive, it's difficult to avoid finding Heard's own experience in his account of the frustrations of mysticism. Indeed, Heard's work is a reminder that mysticism, like science, is a set of practices just as much as a body of knowledge or a way of seeing the world. For him, using LSD was among those practices.

Both Heard and Huxley had read accounts of hallucinogens by turn-of-the-century physicians Havelock Ellis and Weir Mitchell, but their first direct exposure to these drugs came in 1953 through Humphry Osmond, an English psychiatrist who had started

13. Gerald Heard, "'Can This Drug Enlarge Man's Mind?'" *Psychedelic Review* 1, no. 1 (1963): 10, 14.
14. David Farber, "The Intoxicated State/Illegal Nation: Drugs in the Sixties Counterculture," in *Imagine Nation: The American Counterculture of the 1960s and '70s*, ed. Peter Braunstein and Michael William Doyle (New York: Routledge, 2002), 19.
15. Heard, "'Can This Drug Enlarge Man's Mind?'" 9.

working with hallucinogenic drugs in London in the 1940s. Osmond and neuropsychiatrist John Smythies had observed that mescaline, a chemical derived from cactuses such as peyote, produced an effect in volunteers that was similar to schizophrenia.[16] Osmond's own personal experience of mescaline's psychotomimetic properties came when the tape recorder he had borrowed to record his drug experience, the very tool that would facilitate an objective analysis of the thoughts he verbalized while high, came to seem menacing. "First it glowed a deep purple, then a cherry red," writes Jay Stevens. "Putting his hand close to it, it felt as though someone had thrown open the door to a blast furnace."[17]

If such symptoms could be produced chemically, it made sense to Osmond to understand their natural occurrence chemically as well. In her history of LSD research *Psychedelic Psychiatry*, Erika Dyck writes that "their findings led to their theory that schizophrenia resulted from a biochemical imbalance in the sufferer… caused by a dysfunction in the process of metabolizing adrenaline, which in turn created a new substance that chemically resembled mescaline." In contrast to purely social and psychological theories of schizophrenia, Smythies and Osmond believed it had a comprehensible biochemical basis.[18] And, as Elizabeth Donaldson writes, "participants in LSD trials were changed by this experience, and often left with a new-found sense of empathy for people with mental illnesses. In these cases, LSD functioned as a prosthetic

---

16. Gerald Heard, "The Poignant Prophet," *Kenyon Review* 27, no. 1 (Winter 1965): 65; Erika Dyck, *Psychedelic Psychiatry: LSD from Clinic to Campus* (Baltimore: Johns Hopkins University Press, 2008), 17.
17. Jay Stevens, *Storming Heaven: LSD and the American Dream* (New York: Grove, 1987), 27.
18. Dyck, *Psychedelic Psychiatry*, 17–18.

tool that produced what might be described as a disability immersion experience of schizophrenia for neurotypical people."[19]

Finding little support for his work in Great Britain, in 1951 Osmond moved to Weyburn, Saskatchewan, where a socialist government attracted progressive professionals from around the anglophone world. There he met began experimenting with LSD, which had a similar effect to mescaline but was readily available from its manufacturer Sandoz, the Swiss pharmaceutical company where Albert Hofmann had first synthesized it in 1938. Osmond gave the drug to colleagues and their wives and observed their reactions, while his colleague Abram Hoffer, who had a Ph.D. in agriculture and a background in biochemistry in addition to an M.D., researched the biochemical interactions between LSD and enzymes in the human body. The drug, which was distributed as a liquid, was generally administered mixed into a glass of water, although Dyck writes that "Osmond discovered that the same effects occurred when LSD was absorbed by the skin or injected into the body directly."[20]

In 1953 Osmond wrote Huxley a letter and included articles he and Smythies had written about mescaline. Huxley wrote back to invite Osmond to stay with him in Los Angeles during the upcoming meeting of the American Psychiatric Association. "Huxley accompanied Osmond to several APA sessions, which he found deadly dull," writes Stevens, "and amused himself by genuflecting whenever Freud's name was mentioned." He was more interested in mescaline, to which Osmond introduced him during the visit,

19. Elizabeth J. Donaldson, "Psychomimesis: LSD and Disability Immersion Experiences of Schizophrenia," *Disability Studies Quarterly* 33, no. 1 (2013), http://dsq-sds.org/article/view/3431.
20. Dyck, *Psychedelic Psychiatry*, 19–26, 36–38.

an experience Huxley—like Osmond—was careful to tape, and which he then chronicled in his 1954 book *The Doors of Perception*.[21]

Huxley's experience of mescaline was shaped by his experience of disability. Huxley lost most of his eyesight at the age of sixteen to inflammation of his corneas. Nearly blind, he left Eton, taught himself to read Braille, type, and play piano, and then regained some of his sight over the next two years to the point where he could read print with a magnifying glass and attend the University of Oxford.[22] Decades later, as his sight became more impaired once again, Huxley began to practice the Bates method, an alternative therapy based on the principle that—as Huxley himself wrote in a manual of its use—"when patients had learnt to use their eyes and mind in a relaxed ways, vision was improved and refractive errors tended to correct themselves." The techniques of Dr. W. H. Bates, he claimed, aided him to the point that "my vision, though very far from normal, is about twice as good as it used to be when I wore spectacles."[23]

When he tried mescaline a decade later, Huxley was struck by the further intensification of his visual experience. He saw "flowers shining with their own inner light and all but quivering under the pressure of the significance with which they were charged," "lapis lazuli books whose color was so intense, so intrinsically meaningful, that they seemed to be on the point of leaving the shelves to thrust themselves more instantly on my attention." At the same time, Huxley found that he was aware of space and time,

21. Stevens, *Storming Heaven*, 44–45; Aldous Huxley, *The Doors of Perception* (New York: Harper, 1954).
22. Sybille Bedford, *Aldous Huxley: A Biography* (New York: Knopf, 1974), 32–34, 43.
23. Aldous Huxley, *The Art of Seeing* (New York: Harper, 1942), viii–ix, 25.

but indifferent to them. "'There seems to be plenty of it,' was all I would answer," he wrote, "when the investigator asked me to say what I felt about time."[24]

Huxley interpreted his overwhelming sensory experience in explicitly Bergsonian terms. "According to such a theory," he wrote, "each one of us is potentially Mind at Large [but] to make biological survival possible, Mind at Large has to be funneled through the reducing valve of the brain and nervous system. What comes out at the other end is a measly trickle of the kind of consciousness which will help us to stay alive on the surface of this particular planet."[25] By limiting the glucose available to the brain, though, mescaline could produce

> the sort of effects you could expect to follow the administration of a drug having the power to impair the efficiency of the cerebral reducing valve. When the brain runs out of sugar, the undernourished ego grows weak, can't be bothered to undertake the necessary chores, and loses all interest in the spatial and temporal relationships which mean so much to an organism bent on getting on in the world. As Mind at Large seeps past the no longer watertight valve, all kinds of biologically useless things start to happen. In some cases there may be extra-sensory perceptions. Other persons discover a world of visionary beauty. To others again is revealed the glory, the infinite value and meaningfulness of naked existence, of the given, unconceptualized event. In the final stage of egolessness there is an 'obscure knowledge' that All is in all—that All is actually each. This is as near, I take it, as a finite mind can ever come to "perceiving everything that is happening everywhere in the universe."[26]

For Huxley, then, the individual experience of mind was a biological phenomenon, produced through the natural selection of organisms capable of mentally focusing on their individual survival. And mescaline was a biochemical solution to the problem of solipsism, or more precisely to the impossibility of truly sharing experiences. "To see

---

24. Huxley, *Doors of Perception*, 17–21.
25. Ibid., 23.
26. Ibid., 26.

ourselves as others see us is a most salutary gift," wrote Huxley, paraphrasing the 18th century Scottish poet Robert Burns. "Hardly less important is the capacity to see others as they see themselves." By opening the valve between individual consciousness and Mind at Large, mescaline seemed to make this sharing of experience possible, to produce a continent from "a society of island universes."[27] In 1956 Osmond named these phenomena, coining the word *psychedelic* in a letter to Huxley.[28]

Huxley became an influential advocate for psychedelic drugs, granting them legitimacy across scientific, literary, and mystical circles. A brief further digression into his brother Julian's "evolutionary humanism" will illustrate this point, as well as how Pierre Teilhard de Chardin's more contemporary creative evolutionism replaced that of Bergson for some. In its current "psychosocial phase," argued Julian Huxley in a 1963 essay, "the process of evolution is predominantly cultural" rather than biological. The critical challenge to human wellbeing, then, was "the increasing psychosocial pressure caused by the convergence of the psychosocial process upon itself," the extent to which "the world has become a unit *de facto*" as communities came into increasing contact with one another. "This, as Teilhard de Chardin pointed out in *The Phenomenon of Man*," wrote Julian, "is due to the apparently banal fact that man's habitat is the surface of the globe. During his brief history, he has multiplied his numbers and improved his communications, until his societies have spread over the whole habitable area of the earth, and are impinging on each other politically, economically, and ideologically."[29]

27. Ibid., 13.
28. Dyck, *Psychedelic Psychiatry*, 2.
29. Julian Huxley, "The Future of Man: Evolutionary Aspects," *Man and His Future*, ed. Gordon Wolstenholme (Boston: Little, Brown, 1963), 1–2, 5–7.

Julian Huxley thus interpreted Teilhard as a theorist of globalization, and suggested that a response to this situation would require first understanding that "evolution is a dialectic or cybernetic process operating by feedback," and then producing both a natural and a psychological ecology conducive to positive human evolution. The study of psychological ecology, he wrote, involved "the exploration of our own individual minds and their operations, and also exploration of the nöosphere, the realm of thought and feeling which our minds create in interaction with the face of experience, the psychological habitat in which we live and on whose resources we must draw." Understanding it would require "co-ordinated research on all methods of attaining states of self-transcendent experience," including yoga, meditation, hypnotism, "apparent 'possession' by an alien personality or spirit," and ecstatic dance—as well as the psychedelic drugs "mescalin, lysergic acid, and psilocybin, which can produce astonishing results in minute doses [and] reveal new capacities of the human psyche." These drugs, suggested Julian, could be harnessed by "the ritualization of shared transcendent experience to serve as a communal bond,… as in the mescalin-induced but essentially religious peyote ceremonies of some North American Indians," supporting the evolutionary development of more harmonious and cohesive human societies.[30] Not only for mystics like Aldous, then, but also for progressive scientists like Julian, the technology of psychedelic drugs could contribute to human enlightenment and cultural evolution.

---

30. Ibid., 8, 11–13.

After several pages of background, then, we can now return to Heard and Stolaroff in 1955. In order to participate in these mystical experiences, Heard suggested Stolaroff contact his source of LSD, Al Hubbard. Some time later Ampex founder Alexander Poniatoff, now chairman of the company's board of directors, told Stolaroff that he had met Hubbard, who had claimed to use LSD to cure diseases, on a trip to Canada. "This second exposure to Hubbard piqued my interest," wrote Stolaroff, "and I wrote a long letter to Al concerning my spiritual aspirations and requesting more information about LSD."[31]

Hubbard, who soon acquired nicknames like "Captain Trips" and "the Johnny Appleseed of LSD," wore a paramilitary uniform, carried a handgun, and owned his own boat and airplane, as well as an island near Vancouver. Born in Kentucky, he had been an inventor himself in his youth, responsible for a source of electrical energy which he first called an "atmospheric power generator" and later claimed was powered by radium, though according to a 1948 FBI report one man who examined the machine found a battery concealed inside it.[32] In the 1920s Hubbard worked as a Prohibition Agent, but also built radio equipment for rum runners, for which he was convicted of conspiracy to violate the liquor laws.[33] He would later claim that he was recruited by American spies before the U.S. entered World War II, and given the task of sneaking weapons to Canada

---

31. Stolaroff, *Thanatos to Eros*, 21.
32. Stevens, *Storming Heaven*, 53–55; Matthew Roach, "Too Good to be True—The Hubbard Coil," Between the Lines: Washington State Library Blog, December 20, 2012, http://blogs.sos.wa.gov /library/index.php/2012/12/too-good-to-be-true-the-hubbard-coil/; Federal Bureau of Investigation report on Captain Alfred Matthew Hubbard (May 5, 1948), FBI file on Alfred M. Hubbard, Memory Hole, archived by the Internet Archive, https://web.archive.org/web/20100513035940 /http://www.thememoryhole.org/hubbard/hubbard_al_fbi_file.pdf, p. 2.
33. FBI report on Alfred Matthew Hubbard (January 30, 1975), pp. 1–2, FBI file on Hubbard; FBI interview with Alfred Matthew Hubbard (November 10, 1966), FBI file on Hubbard.

by sea so they could be shipped to England.[34] After the war, Hubbard founded a company

that sold radium and other radioactive materials, with which he also experimented

himself. In the early 1950s his interests turned to mescaline and he wrote to invite

Osmond to lunch at the Vancouver Yacht Club.[35]

   In 1955, Huxley met Hubbard through Osmond and described him in a letter as "a

millionaire businessman-physicist, scientific director of the Uranium Corporation, who

took mescalin last year, was completely bowled over by it and is now drumming up

support among his influential friends—(if you have anything to do with uranium, all

doors, from the Joint Chiefs of Staff's to the Pope's, are open to you)—for a commission

to work on the problems of pharmaco-psychology in relation to religion, philosophy, ESP,

artistic and scientific investigation, etc."[36] Hubbard's Commission for the Study of

Creative Imagination, founded in 1955, formalized the community of researchers into

these consciousness-manipulating drugs. Heard and Huxley were among its board

members, as were psychiatrists Osmond, Smythies, and Hoffer.[37]

---

34. Stevens, *Storming Heaven*, 54. Some accounts, including that of Martin Lee and Bruce Shlain, assert that Hubbard was an agent of the Office of Strategic Services, the World War II predecessor to the Central Intelligence Agency in which Gregory Bateson served, and that he "continued to serve as an undercover operative for various agencies within the US government." While Hubbard's biography is undoubtedly murky, his name is not included in the list of declassified OSS personnel files. Martin A. Lee and Bruce Shlain, *Acid Dreams: The Complete Social History of LSD; The CIA, The Sixties, and Beyond* (New York: Grove, 1992), 44–45; U.S. National Archives and Records Administration, "OSS Personnel Files" (December 23, 2010), http://archives.gov/iwg/declassified-records/rg-226-oss /personnel-database.pdf.

35. FBI Interview with Hubbard, 5; Canadian Atomic Energy Control Board report on Hubbard's request to use uranium (n.d.), 1–2, 5, FBI file on Hubbard.

36. Aldous Huxley to Eileen J. Garrett, January 31, 1955, *Letters of Aldous Huxley*, ed. Grover Smith (London: Chatto & Windus, 1969), 729.

37. Dyck, *Psychedelic Psychiatry*, 97.

The same year, Taylor University of Biocycle Dynamic Sciences in Colorado Springs granted Hubbard a Ph.D. in biocycle dynamic education through a correspondence program, which he would represent as a degree in biopsychology in applications to use LSD in research.[38] Despite his questionable credentials, Hubbard sometime joined Osmond and Hoffer in clinical research on therapies such as treating alcoholism with LSD. In 1958, J. Ross MacLean, medical director of Hollywood Hospital in New Westminster, British Columbia, gave Hubbard space there to set up a private clinic for LSD therapy.[39]

Hubbard was responsible for the theory that a subject's experience of LSD was critically influenced by their state of mind and physical environment, or "set and setting."[40] "LSD-25 is not a medication in the usual sense," wrote Hubbard and his physician colleagues in his one published article. "It is simply a triggering mechanism that initiates an experience…. Since it is, therefore, the experience and not the medication that is therapeutic, the treatment situation or milieu becomes the overwhelmingly important factor."[41] Concern with set and setting gave LSD research a social constructivist bent, as not only the chemistry of the drug but the emotions, companions, and even cultural background of a subject could affect whether their trip was enlightening or traumatizing.

---

38. FBI investigation of Hubbard's degree (November 23, 1966), FBI file on Hubbard; Alfred M. Hubbard, "Statement of Investigator" (c. 1967), Memory Hole, archived by the Internet Archive, http://web.archive.org/web/20100513043530/http://www.thememoryhole.org/hubbard/hubbard17.htm.

39. Dyck, *Psychedelic Psychiatry*, 89–90; Stevens, *Storming Heaven*, 175–176; J. Ross MacLean, D. C. MacDonald, Ultan P. Byrne, and A. M. Hubbard, "The Use of LSD-25 in the Treatment of Alcoholism and Other Psychiatric Problems," *Quarterly Journal of Studies on Alcohol* 22 (1961): 34.

40. Dyck, *Psychedelic Psychiatry*, 90.

41. MacLean et al., "Use of LSD-25," 43.

On this model, the psychotomimetic (*madness mimicking*) experience which Osmond and Smythies induced with LSD was not a necessary effect of the drug, but rather only its effect given a particular set and setting. As Stevens puts it, "To drive someone crazy with LSD was no great accomplishment, particularly if you told the person he was taking a psychotomimetic and gave it to him in one of those pastel hospital cells with a grim nurse standing by scribbling notes."[42] This meant that truly therapeutic use of psychedelics would be, in Heard's words, "contrary to present clinical and laboratory protocol," set not in "a hospital or research lab, but rather an environment that is neither aggressive nor austere, and in which he may feel at home."[43] To produce such an experience, Hubbard utilized not only his own renowned charisma, but colored lamps, stroboscopes, "music, paintings, flowers, photographs, and religious iconography."[44] Such techniques, and even rooms designed for them, became ubiquitous in psychedelic therapy.[45]

Following a correspondence, Hubbard visited Stolaroff at Ampex in February 1956, and gave him methamphetamine as well as carbogen, a mixture of carbon dioxide and oxygen gas which—as Stolaroff recalled a few years later—Hubbard described it as "another one of the agents which shuts down the cortical mind, thus allowing access to the deep unconscious."[46] Although carbogen was generally believed to induce anxiety, under Hubbard's guidance Stolaroff instead experienced a sensation of instant meditative

---

42. Stevens, *Storming Heaven*, 59.
43. Heard, "'Can This Drug Enlarge Man's Mind?'" 10.
44. Dyck, *Psychedelic Psychiatry*, 93.
45. Stevens, *Storming Heaven*, 176.
46. Stolaroff, *Thanatos to Eros*, 22; Stevens, *Storming Heaven*, 58.

tranquility.[47] Two months later, he travelled to Vancouver to try LSD, 43 boxes of which Hubbard had purchased from Sandoz.[48]

Hubbard, a devout Catholic, administered LSD with the literal blessing of Father J. E. Brown and showed Stolaroff an image of Christ during his trip.[49] His subject found himself reliving the traumatic experience of being born, to which he began to trace his adult neuroses, but wrote a few days later that "the remainder of the session is more enjoyable." In addition to his new—and, as Stevens notes, strikingly Freudian— understanding of his psyche, Stolaroff wrote that "the revelations also included profound realizations that God is absolutely real, and that there is only One Person, of which we are all a part. I held LSD to be the most important discovery man has ever made, and would devote my life to learning more about it and how to use it effectively, not only for myself but for others."[50]

---

47. M. J. Stolaroff, "History of Experiences with CO_2" (December 8, 1958), Erowid, last modified August 27, 2009, http://www.erowid.org/experiences/exp.php?ID=80817.

48. Stevens, *Storming Heaven*, 55; P. Hartman to Dr. A. M. Hubbard, May 31, 1955, Memory Hole, archived by the Internet Archive, http://web.archive.org/web/20100513043506/http://www .thememoryhole.org/hubbard/hubbard02.htm.

49. Lee and Shlain, *Acid Dreams*, 51; Stolaroff, *Thanatos to Eros*, 23. Stolaroff describes Brown as "archbishop of the local Catholic diocese." He is not included on a list maintained by the Archdiocese of Vancouver, but was the author of a document, on Cathedral of the Holy Rosary letterhead, which sought to "humbly ask Our Heavenly Mother the Virgin Mary, help of all who call upon Her to aid us to know and understand the true qualities of these psychedelics, the full capacities of man's noblest faculties and according to God's laws to use them for the benefit of mankind here and in eternity." Roman Catholic Archdiocese of Vancouver, "Archdiocese of Vancouver Former Bishops," http://rcav.org/archdiocese-of-vancouver-former-bishops/; Rev. J. E. Brown, "Introduction to LSD Experience" (December 8, 1957), Memory Hole, last modified April 2, 2003, archived by the Internet Archive, http://web.archive.org/web/20100513043508/http://www.thememoryhole.org/hubbard /hubbard03.htm.

50. Stolaroff, *Thanatos to Eros*, 24; Stevens, *Storming Heaven*, 70.

The Creative Mind

When he returned to California, Stolaroff began sharing LSD with other participants in

the Sequoia Seminar, and soon formed a group of engineers and their wives who met

every Monday to discuss philosophy and experiment with the drug, including his Ampex

colleague Don Allen, fellow Sequoia Seminar participant and Stanford electrical

engineering professor Willis Harman, and others from Stanford and Hewlett-Packard.

Stolaroff's LSD experimentation, like that taking place in psychiatric clinics, was formal

compared to the recreational drug use of a decade later. "One Monday night a member of

the group would take LSD," wrote Stolaroff, "and the rest of us would support him or

her. The following Monday night the subject would share in detail his/her experience, and

the following week we would proceed to the next member." This methodology revealed,

according to Stolaroff, "a great variety of response, varying from psychological dynamics

to mystical realizations."[51]

Under the influence of LSD, wrote Stolaroff, "fresh ideas and perspectives flow

unhindered, presenting many new possibilities, often of great value. I felt that such

heightened perceptions could be valuable in improving business operations."[52] According

to Stevens, Stolaroff's plans, hatched with Hubbard, were more ambitious: "Using LSD,"

---

51. Stolaroff, *Thanatos to Eros*, 24–25; Gelber and Cook, *Saving the Earth*, 84; John Markoff, *What the Dormouse Said: How the Sixties Counterculture Shaped the Personal Computer Industry* (New York: Penguin, 2005), 26. Harman is himself an fascinating figure who eventually became director of the Center for the Study of Social Policy at Stanford Research Institute, president of the Institute of Noetic Sciences, and a regent of the University of California. He continued to pursue the study of consciousness in a holistic evolutionary framework, producing works like O.W. Markley and Willis W. Harman, eds., *Changing Images of Man* (Oxford: Pergamon, 1982) and Willis W. Harman and Elisabet Sahtouris, *Biology Revisioned* (Berkeley: North Atlantic, 1998). On Harman at SRI, see Art Kleiner, *The Age of Heretics: A History of the Radical Thinkers Who Reinvented Corporate Management*, 2nd ed. (San Francisco: Jossey-Bass, 2008), 156–172, 238–243.

52. Stolaroff, *Thanatos to Eros*, 25.

he writes, "they would turn Ampex into the most creative, successful, and lucrative corporation in the world. They would use the drug to stimulate not only creative insight, but also mental health, doing away with all the debilitating egotism and neurosis, the petty jealousies, the failures of communication. Using LSD, they would foster an environment in which individuality would flower and mesh with the budding genius of everyone else's individuality, thus creating a corporation that served the impossible task of enhancing not only the individual, but the group as well."[53]

Stolaroff proposed to Ampex's management committee that they incorporate LSD into the company's operations and, he wrote, "immediately encountered enormous resistance" based on the concern that the drug would damage employees' valuable minds. Stolaroff and Hubbard carried out their experiment with Ampex engineers anyway, taking eight of them to a cabin and giving them LSD. "All were impressed," wrote Stolaroff, "with the enormous openings of the mind, the ability to experience new levels of thought and comprehension, the gain in self-knowledge, and in some cases, the ability to solve technical problems. But much to my amazement, the results were totally ignored by management."[54]

In 1961, then, Stolaroff resigned from his job to found the International Foundation for Advanced Study in Menlo Park, a nonprofit which he funded by selling his stock in Ampex. The foundation's staff, including engineers Allen and Harman from Stolaroff's weekly discussion group and National Institute of Mental Health psychiatrist Charles

---

53. Stevens, *Storming Heaven*, 71.
54. Stolaroff, *Thanatos to Eros*, 25.

119

Savage, administered psychedelic therapy for a $500 fee.[55] They were soon joined by

James Fadiman, a psychology graduate student at Stanford who had first tried

psychedelic drugs, specifically psilocybin, at the suggestion of Harvard psychologist

Richard Alpert.[56]

    The Foundation's initial report, "The Psychedelic Experience—A New Concept in

Psychotherapy" by Stolaroff, Harman, and physician J. N. Sherwood, was published in

1962 in the short-lived *Journal of Neuropsychiatry*. Based on the experiences of 25

patients treated over a five month period, its authors argued "that an individual can have a

single experience which is so profound and impressive that his life experience in the

months and years that follow become a continuing growth process." The Foundation's

therapeutic practice was closely modeled on Hubbard's, though Stolaroff incorporated an

audiotape recorder, the use of which he unfortunately did not describe, into his own

"tastefully furnished room." Over the course of a day, the patient was given large doses of

both LSD and mescaline, as well as methamphetamine, "which appears to intensify the

LSD effect and increase the subject's ability to integrate his experience in the remaining

hours."[57]

---

55. Ibid., 26; Stolaroff, "How Much Can People Change?" 56–57; Stevens, *Storming Heaven*, 177–180, 186. "I made out quite well with Ampex," Stolaroff told an interviewer. "I acquired stock at 13¢ a share, which I sold for $40 a share. I only wish I'd had more." Stolaroff, "How Much Can People Change?" 57.

56. James Fadiman, "Transpersonal Transitions: The Higher Reaches of Psyche and Psychology," in Walsh and Grob, *Higher Wisdom*, 25–28. See also James Fadiman, *The Psychedelic Explorer's Guide: Safe, Therapeutic, and Sacred Journeys* (Rochester, Vt.: Park Street, 2011); Tim Doody, "The Heretic," *Morning News*, July 26, 2012, http://www.themorningnews.org/article/the-heretic.

57. J. N. Sherwood, M. J. Stolaroff, and W. W. Harman, "The Psychedelic Experience: A New Concept in Psychotherapy," *Journal of Neuropsychiatry* 4 (November/December 1962): 69, 73–74.

The peak of this experience, wrote Sherwood, Stolaroff, and Harman, was when a patient "sees that his own self is by no means so separate from other selves and the universe about him as he might have thought," leading them to value themself more and "accept the previously known self as an imperfect reflection." Such self acceptance could in turn decrease anxiety and other neuroses; of their 25 cases of marital problems, alcoholism, ineffectual personality, neuroses, and a "near homicidal" patient, they found 12 to be much improved following psychedelic therapy, 9 improved, and 4 unimproved. "Because the individual's new knowledge of himself results from deeply felt experience and is not merely intellectual," they suggested, "with the passage of time his behavior does tend to change to become more appropriate to his expanded picture of himself."[58]

In an appendix, the researchers described this experience more speculatively, writing that patients perceived "that behind the apparent multiplicity of things in the world of science and common sense there is a single reality, in speaking of which it seems appropriate to use such words as infinite and eternal. All beings are seen to be united in this Being."[59] The paper concluded with a epigram quoting a lecture Bergson gave on "The Perception of Change" in 1911:

> Radical instability and absolute immutability are therefore mere abstract
> views taken from outside of the continuity of real change, abstractions
> which the mind then hypostasizes into multiple states on the one hand,
> into thing or substance on the other. The difficulties raised by the ancients
> around the question of movement and by the modern around the question
> of substance disappear, the former because movement and change are
> substantial, the latter because substance is movement and change.[60]

---

58. Ibid., 71, 74.
59. Ibid., 77–78.
60. Ibid., 80. The source of the quotation can be found in Henri Bergson, *The Creative Mind: An Introduction to Metaphysics*, trans. Mabelle L. Andison (1946; Mineola, N.Y.: Dover, 2007), 130.

Although we tend to perceive the world as made up of solid objects which are occasionally subjected to change, Bergson wrote in this lecture, in fact reality is made up of continuous change—"reality is mobility itself."[61] If LSD made reality appear continuous, Stolaroff and his coauthors were suggesting, it was revealing its true Bergsonian nature, one more true than the discrete objects perceived by the sober intellect.

In addition to its therapeutic research, the Foundation also researched the effects of psychedelics on the creativity of engineers and other technical workers, including pioneering computing researcher Douglas Engelbart.[62] Creativity had become a major theme in psychological research after World War II, as the Atomic Energy Commission and National Science Foundation, as well as private foundations, funded research based on the premise that creativity was "a useful, productive, social trait." Creativity was seen as essential to the development of nuclear weapons and industry more generally, and also as a distinctly liberal trait that could resist the authoritarianisms of both right and left. American scientists published more research on creativity between 1950 and 1965 than in the previous 200 years.[63]

In a 1966 article, Harman, Fadiman, Stolaroff, and two other researchers placed this research in the context of humanistic psychologist Carl Rogers' theories of creativity. According to Rogers, creativity required a "low degree of psychological defensiveness; lack of rigidity and permeability of boundaries in concepts, beliefs, perceptions, and

---

61. Bergson, *Creative Mind*, 125.
62. Markoff, *What the Dormouse Said*, 65–67.
63. Jamie Cohen-Cole, *The Open Mind: Cold War Politics and the Sciences of Human Nature* (Chicago: University of Chicago Press, 2014), 35–62.

hypotheses;… evaluative judgment based primarily not on outside standards or prejudices, but on one's own feelings, intuition, aesthetic sensibility, sense of satisfaction in self-expression, etc.; [and] the ability to 'toy' with ideas, colors, shapes, hypotheses; to translate from one form to another; to think in terms of analogues and metaphors." Stolaroff and his colleagues found that, given an appropriate set and setting, mescaline use could strengthen these traits both during a session and in the weeks that followed.[64]

Subjects reported in particular a lack of anxiety about their work, and an ability to rapidly conceive new solutions to designs and concepts. Many also experienced their work more visually than usual. "I began to see an image of the circuit," reported one subject. "The gates themselves were little silver cones linked together by lines. I watched this circuit flipping through its paces.… The psychedelic state is, for me at least, an immensely powerful one for obtaining insight and understanding through visual symbolism." Projects designed during this research ranged from buildings for commercial and private clients to "a linear electron accelerator beam-steering device" and improvements to magnetic tape recorders.[65]

The Foundation's research also had a lasting influence on California's counterculture. Among their 350 subjects was Stewart Brand, who was given LSD for the first time by Fadiman in 1962—and both Brand and Fadiman soon became friends with author Ken Kesey, who was at the center of a new psychedelic subculture. It was on a later acid trip,

---

64. Willis W. Harman, Robert H. McKim, Robert E. Mogar, James Fadiman, and Myron J. Stolaroff, "Psychedelic Agents in Creative Problem-Solving: A Pilot Study," *Psychological Reports* 19 (August 1966): 211–212. A revision of the article was published as Willis Harman and James Fadiman, "Breakthrough Research: Selective Enhancement of Creative Capacities," in Fadiman, *Psychedelic Explorer's Guide*, 119–135.
65. Harman, et al., "Psychedelic Agents in Creative Problem-Solving," 219–226.

in 1966, that Brand climbed onto a roof and, "looking at San Francisco from 300 feet and 200 micrograms up," as he told Fred Turner, decided that "it will change everything if we have this photograph looking at the earth from space." Brand began his entrepreneurial ventures by selling buttons that said "Why haven't we seen a photograph of the whole Earth yet?"—some of which he also sent to "all the relevant NASA officials, the members of Congress and their secretaries, Soviet scientists and diplomats, UN officials, Marshall McLuhan and Buckminster Fuller." He went on to edit the *Whole Earth Catalog* in the late 1960s, providing a model of underground publishing and "access to tools" that would be taken up enthusiastically by experimental videographers.[66]

One day in 1966, Fadiman was conducting this research and, as John Markoff writes, "while he was at the office with a group of four scientists lying on the floor listening to music in preparation for work on their technical problems while under a low dose of LSD, he opened an official-looking letter from the Food and Drug Administration.… The letter was an order to immediately stop the foundation's research. Fadiman turned to his colleagues and said, 'I think we opened this letter tomorrow.'"[67] The institution soon closed its doors.

66. Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006), 60–61, 69; Stolaroff, "How Much Can People Change?" 57; Fadiman, *Psychedelic Explorer's Guide*, 188–190; Stewart Brand, "Why Haven't We Seen the Whole Earth?" in *The Sixties: The Decade Remembered Now, by the People Who Lived It Then*, ed. Lynda Rosen Obst (New York: Random House, 1977), 168–170.
67. Markoff, *What the Dormouse Said*, 68. See also James Fadiman, "Opening the Doors of Perception," in *Time It Was: American Stories from the Sixties*, ed. Karen Manners Smith and Tim Koster (Upper Saddle River, N.J.: Pearson Prentice Hall, 2008), 228–235.

Turn On, Tune In, Drop Out

As LSD escaped the clinic in the 1960s, its recreational use provoked a moral panic and

the Food and Drug Administration banned its utilization even for research. A few months

later the state of California criminalized its possession. These events marked not only the

end of Stolaroff's public experiments with LSD, but the moment at which an engagement

with technologies of consciousness made one part of a movement, a counterculture, or, as

Farber terms it, an "illegal nation." "Criminalization," he writes, "made LSD use both

more dangerous (impure 'street' acid/jail time) and more a clear sign of cultural

rebellion."[68]

The icon of this cultural rebellion was clinical psychologist Timothy Leary, but his

path to psychedelic celebrity had been a winding one. Raised Catholic in Massachusetts,

Leary was deafened in one ear by artillery fire during basic training in 1944. He entered a

training program in psychology, and was assigned to work as a psychometrician in a

program for the rehabilitation of other deafened soldiers. There Leary met audio

technician Marianne Busch, who he married the next year.[69]

After the war, Leary studied psychology at Washington State University and the

University of California, Berkeley, where his dissertation research involved recording

hundreds of hours of group therapy sessions with a wire recorder—perhaps as a

prosthesis to his own impaired hearing—then coding them to measure changes in

interpersonal behavior. In 1951, Leary cofounded the department of psychology at the

---

68. Dyck, *Psychedelic Psychiatry*, 101–104, 130–131; Farber, "Intoxicated State," 30–32, 34; Stevens, *Storming Heaven*, 320; Stolaroff, *Thanatos to Eros*, 29.
69. Robert Greenfield, *Timothy Leary: A Biography* (Orlando: Harcourt, 2006), 62–65.

Kaiser Foundation Hospital in Oakland, and in 1957 he published *Interpersonal Diagnosis of Personality*, a well received book that presented personality as a complex multilevel phenomenon expressed most fully in interpersonal relations.[70]

Behind this professional success was personal disaster. After a drunken fight about their marriage and Timothy's affairs, Marianne Leary killed herself in 1955. Three years later, as his funding from the National Institute of Mental Health dried up, Timothy Leary concluded that psychotherapy was ineffective, quit his job, moved to Europe with his two children, and began writing *The Existential Transaction*, an ultimately unpublished book on "new, humanist methods for behavior change" based on engaging with suffering people in their everyday environments. "I thought I knew," wrote Leary, "how humans could direct their personal evolution."[71]

Before he encountered psychedelic drugs, then, Leary was already redefining himself as an iconoclastic scientist. When Leary's friend and colleague Frank Barron visited Florence in 1959, he brought two pieces of news which would shape the rest of Leary's life. First, David McClelland, the director of Harvard University's Center for Personality Research, was interested in Leary's work and on sabbatical in Florence; after meeting him, Leary found himself with a job as a lecturer at Harvard. Second, as part of Barron's research on creativity he had recently tried "magic mushrooms" given to him by a psychiatrist in Mexico.[72]

---

70. Ibid., 66, 73–74, 90–91; Timothy Leary, *Interpersonal Diagnosis of Personality: A Functional Theory and Methodology for Personality Evaluation* (New York: Ronald, 1957).

71. Greenfield, *Timothy Leary*, 77, 80–81, 97, 103; Timothy Leary, *Flashbacks: A Personal and Cultural History of an Era; An Autobiography* (Los Angeles: Jeremy P. Tarcher, 1990), 16.

72. Greenfield, *Timothy Leary*, 103–104; Leary, *Flashbacks*, 16–18. On Barron's creativity research, see Cohen-Cole, *Open Mind*, 58; and Michael Bycroft, "Psychology, Psychologists, and the Creativity Movement: The Lives of Methods Inside and Outside the Cold War," in *Cold War Social Science:*

With this news, Leary began to enter the intellectual community developing around psychedelic drugs. In the 1930s, a number of American and European scientists—including physician Blas Pablo Reko, linguist Robert Weitlaner, ethnobotanist Richard Evans Schultes, and anthropologist Jean Bassett Johnson—had begun investigating indigenous Mexican healing practices that involved a hallucinogenic mushroom, *teonanacatl*. In the 1950s, American banker R. Gordon Wasson and Russian-American pediatrician Valentina Wasson—husband and wife, and both amateur mycologists—visited towns in Oaxaca in order to learn more. In 1955, in Huautla de Jimenez, healer María Sabina officiated at ceremonies in which Gordon Wasson and photographer Allan Richardson became "the first white men in recorded history to eat the divine mushrooms," identified by French mycologist Roger Heim as from the genus *Psilocybe*. Wasson attracted the attention of Osmond and Huxley, who visited him at his office in New York. Two years later he published an article on his experience, "Seeking the Magic Mushroom," in Henry Luce's magazine *Life*, and by 1958, Albert Hofmann had isolated and synthesized the psychoactive chemical psilocybin, adding another drug to the arsenal of psychedelia.[73]

Soon, other Americans were trying the mushrooms in southern Mexico. After a semester at Harvard, Leary, who was on vacation in Cuernavaca in 1960, found himself among them. "It was a classic visionary voyage," he wrote, "and I came back a changed man." When he returned to campus, Leary wrote Sandoz to request synthetic psilocybin

Knowledge Production, Liberal Democracy, and Human Nature, ed. Mark Solovey and Hamilton Cravens (New York: Palgrave Macmillan, 2012), 197–214.

73. Andy Letcher, *Shroom: A Cultural History of the Magic Mushroom* (New York: Ecco, 2007), 78–87; R. Gordon Wasson, "Seeking the Magic Mushroom," *Life*, May 13, 1957, 101.

pills, and with Barron began the Harvard Psychedelic Project. He also read Huxley's *The Doors of Perception* and persuaded the writer, who was a visiting professor at MIT, to began attending his research group's meetings.[74]

Humphry Osmond introduced Leary to poet Allen Ginsberg, who would become an even greater influence on him.[75] Ginsberg's drug experience already included participation in other formal psychedelic experiments; indeed, he had been introduced to LSD by none other than Gregory Bateson. In about 1957, allergist Harold Abramson, who was researching LSD for the CIA—which channeled its funding to him through the Macy Foundation—gave Bateson a small dose of LSD. Two years later, Bateson tried a larger dose as part of a study at the Palo Alto Mental Research Institute on "how LSD heightens, mobilizes, outlines, and liquidates [psychological] defenses," and attended a Macy Foundation conference on the drug with Abramson, Frank Fremont-Smith, Abram Hoffer, and 22 other researchers.[76]

Bateson saw LSD essentially as a psychotomimetic tool, but one which could also heighten and clarify the experience of schizophrenia for patients. Users of LSD, he suggested, had "a self-evaluating or a universe-evaluating experience, in which the universe is overtly structured in terms of an identification between the perceiver and the

---

74. Timothy Leary, *High Priest* (New York: New American Library, 1968), 34; Greenfield, *Timothy Leary*, 110–119. For a narrative account of the Harvard Psychedelic Project, see Don Lattin, *The Harvard Psychedelic Club: How Timothy Leary, Ram Dass, Huston Smith, and Andrew Weil Killed the Fifties and Ushered in a New Age for America* (New York: HarperOne, 2010).

75. Greenfield, *Timothy Leary*, 125–126.

76. Michael Schumacher, *Dharma Lion: A Critical Biography of Allen Ginsberg* (New York: St. Martin's, 1992), 311; John Marks, *The Search for the "Manchurian Candidate": The CIA and Mind Control* (New York: W. W. Norton, 1979), 63, 66, 129; Harold A. Abramson, ed., *The Use of LSD in Psychotherapy: Transactions of a Conference on d-Lysergic Acid Diethylamide (LSD-25)* (New York: Josiah Macy, Jr. Foundation, 1960), 3–4, 10. How Bateson and Ginsberg knew each other isn't clear, but John Marks described them as friends.

thing perceived.… If this sort of view of the world is an essential part of the schizophrenic communication… this provides a very important language, a base for mutual understanding of what goes on between therapist and patient."[77]

Bateson arranged for Ginsberg to participate in the Mental Research Institute's experiment as well. "I… saw a vision of that part of my consciousness which seemed to be permanent, transcendent, and identical with the origin of the universe—a sort of identity common to everything—but a clear & coherent sight of it," wrote Ginsberg to his father. "This drugs seems to automatically produce a mystical experience. Science is getting very hip."[78]

The science in which Ginsberg participated was hip partly because he requested it be so; at the suggestion of his friend William Burroughs, Ginsberg had a stroboscope hooked up to an electroencephalograph to strobe with his brain activity. "It was like watching my own inner organism," he later told interviewers. "There was no distinction between inner and outer. Suddenly I got this uncanny sense that I was really no different than all of this mechanical machinery around me. I began thinking that if I let this go on, something awful would happen. I would be absorbed into the electrical network of the entire nation. Then I began feeling a slight crackling along the hemispheres of my skull. I felt my soul being sucked out through the light into the wall socket and going out."[79] His poem on the

---

77. Abramson, *Use of LSD in Psychotherapy*, 188.

78. Allen Ginsberg to Louis Ginsberg, March [May] 20, 1959, in Allen Ginsberg and Louis Ginsberg, *Family Business: Selected Letters between a Father and Son*, ed. Michael Schumacher (New York: Bloomsbury, 2001),

79. Allen Gisnberg, interview by Martin A. Lee and Bruce Shlain, April 1980, in Lee and Shlain, *Acid Dreams*, 59. Such strobe effects had previously been the subject of research by neurophysiologist and cybernetician Grey Walter, as well as by John Smythies. See John Geiger, *Chapel of Extreme Experience: A Short History of Stroboscopic Light and the Dream Machine* (Brooklyn: Soft Skull, 2003); Andrew Pickering, *The Cybernetic Brain: Sketches of Another Future* (Chicago: University of

experience, "Lysergic Acid," began with this dark vision of consciousness stranded on an electrical network, a frustrated counterpoint to Teilhard's optimism about communal consciousness.

> It is a multiple million eyed monster
> it is hidden in all its elephants and selves
> it hummeth in the electric typewriter
> it is electricity connected to itself, if it hath wires
> it is a vast Spiderweb
> and I am on the last millionth infinite tentacle of the spiderweb, a worrier
> lost, separated, a worm, a thought, a self[80]

Leary had already been hosting psilocybin sessions that sometimes devolved into wild parties when he gave Ginsburg the drug in 1960. The two men began planning to share psilocybin widely and create a new form of mystical experience, and Leary became particularly interested in the drug experiences of poets and intellectuals. Through Huxley and Ginsberg, Leary met, and ran sessions with, Huston Smith, Charles Olson, Arthur Koestler, Jack Kerouac, and Robert Lowell. He also shared psilocybin with his colleague Richard Alpert, an assistant professor in the Center for Personality Research who became a collaborator on the Harvard Psychedelic Project and soon introduced his student James Fadiman to the drug.[81]

In March 1961, Leary began his last formal research project on behavioral change at Concord State Prison. Massachusetts prison system officials asked Harvard for interns

---

Chicago Press, 2010), 76–83; and Jimena Canales, "'A Number of Scenes in a Badly Cut Film': Observation in the Age of Strobe," in *Histories of Scientific Observation*, ed. Lorraine Daston and Elizabeth Lunbeck (Chicago: University of Chicago Press, 2011), 230–254.

80. Allen Ginsberg, "Lysergic Acid," in *Kaddish and Other Poems 1958–1960*, 50th anniversary ed. (San Francisco: City Lights Books, 2010), 86.

81. Greenfield, *Timothy Leary*, 107–108, 119–124, 127–139, 143–144. See also Peter Conners, *White Hand Society: The Psychedelic Partnership of Timothy Leary & Allen Ginsberg* (San Francisco: City Lights Books, 2010).

who could council their prisoners, and Leary agreed to do so if he could provide

psilocybin to both prisoners and therapists. The prison was an ideal environment for such

an experiment, Leary realized: "First, if we could change the behavior of violent

criminals with our drugs, we'd demonstrate that our methods and theories worked where

nothing else did. Second, prison rehabilitation would provide us with the behavioral

scientist's dream, an iron-clad objective index of improvement—the recidivism rate."[82]

Later, he would claim that the experiment was successful, reducing recidivism

dramatically, but a review decades later found that most of the Concord Prison Project's

clients—like other prisoners—found their way back to prison.[83]

Leary had come to believe, as he announced at the Fourteenth International Congress

of Applied Psychology in Copenhagen, that "the visionary experience is the key to

behavior change," and thus that in order to manipulate behavior, psychologists also had to

manipulate consciousness itself. "There are many methods of expanding consciousness,"

he told his audience, and each involved breaking the pattern of ordinary experience.

"Margaret Mead, the American anthropologist, has suggested several cross-cultural

methods," including having a psychotic episode, experiencing great trauma, or living in a

foreign culture. "The most efficient way to cut through the game structure of Western

life," Leary said, "is the use of drugs, consciousness-expanding drugs."[84]

---

82. Leary, *Flashbacks*, 79.

83. Greenfield, *Timothy Leary*, 151–153.

84. Timothy Leary, "How to Change Behavior," in *LSD: The Consciousness-Expanding Drug*, ed. David Solomon (New York: G. P. Putnam's Sons, 1964), 104–105. Mead herself "used to say to my classes that the ways to get insight are: to study infants; to study animals; to study primitive people; to be psychoanalyzed; to have a religious conversion and get over it; to have a psychotic episode and get over it; or to have a love affair with an Old Russian." Gregory Bateson and Margaret Mead, interview by Stewart Brand, March 1976, "For God's Sake, Margaret," *CoEvolution Quarterly*, June 1976, 39.

The Prison Project was an expression of Leary's radically democratic belief that researchers and subjects, therapists and clients, should encounter one another as equals engaged in the same enterprise. Following the existential transactional approach, writes Rebecca Lemov, "social scientists would *sit with* the prisoners, undergo the experiment with them, and take the same drug,… experimenting with, not experimenting on." Leary's research, argues Lemov, thus marked a break with human engineering, the technocratic trajectory that the behavioral sciences had taken over the previous decades. "If scientists heretofore had used imagination to strengthen their ability to exert a certain kind of control," she writes, "then the new breed of radical experimentalists—wall-breakers, paradigm-shifters, consciousness-explorers—wanted to use the laboratory to permit the breaking of control, the shifting of perspective, the altering of models, to undermine ingrained habits." In the hands of Leary and his colleagues, experiment became something more chaotic and open than it had been before. "This is one reason," Lemov concludes, "why 'the Sixties' is often seen as an experimental time."[85]

The question facing psychedelic researchers was the political one of who should be involved in these experiments. "Many of our advisors," wrote Leary, "urged that the drugs should remain exclusive. Gerald Heard, of blessed memory, was the most outspoken elitist: 'These sacraments are powerful tools for the guild of philosophers.' On the other side of the debate was Allen Ginsberg, the crusader for democratization, even

---

85. Rebecca Lemov, *World as Laboratory: Experiments with Mice, Mazes, and Men* (New York: Hill and Wang, 2005), 3, 228–229, 232, 239.

socialization, of the drugs. Ever the worrying, nagging revolutionary, Allen howled his 1950s anarchic chant—'Turn on the world!'"[86]

At Ginsberg's invitation Leary immersed himself in the drug-infused lifestyle of the Beats. When Sandoz stopped supplying psilocybin, the Harvard Psychedelic Project adopted LSD as their new drug of choice. Rumors spread that Leary and Alpert were pressuring graduate students to take these drugs, and their experiments became first increasingly controversial among Harvard psychologists and then a subject of wider debate on campus. As Stolaroff had, Leary responded to institutional rejection by starting a foundation, the International Foundation for Internal Freedom, in 1963—but given Leary's suggestions, following Ginsberg, that everyone should have access to LSD as a matter of human rights, Stolaroff objected. "The moves you were contemplating with IFIF are insane," he wrote, "and would wreak tremendous havoc on all of us doing LSD work all over the nation." Nonetheless, Leary left Harvard in the middle of the semester, began telling people he had been fired, and soon was—for absence rather than drug use, though when Alpert was also fired, it was for giving LSD to an undergraduate student.[87]

Along with colleagues, the two psychologists relocated to a mansion in Millbrook, New York owned by the family of Leary's girlfriend Peggy Hitchcock. There Leary's research group became more like a religious community, with *The Psychedelic Experience: A Manual Based on the Tibetan Book of the Dead* by Leary, Alpert, and

86. Timothy Leary, *Change Your Brain* (Berkeley: Ronin, 2000), 6.
87. Greenfield, *Timothy Leary*, 156, 168, 172–179, 193–197; Myron J. Stolaroff to Timothy Leary, February 28, 1963, Myron Stolaroff Vault, Erowid, last modified January 31, 2013, https://erowid.org /archive/stolaroff/stolaroff_collection__sc2-28-63-R.pdf. See also Stevens, *Storming Heaven*, 191; and Myron Stolaroff, interview by Robert Forte, "Stolaroff on Leary," in Robert Forte, *Timothy Leary: Outside Looking In* (Rochester, Vt.: Park Street, 1999), 279–296.

Ralph Metzner—dedicated to the recently deceased Aldous Huxley—as its holy book. Then, in 1965, while driving to Mexico, Leary and his teenage daughter Susan were arrested for possession of marijuana in Laredo, Texas. Leary fought the marijuana charges on the grounds that his use of the drug was both scientific research and religious expression, and in the process he became a national celebrity.[88]

At a friend's advice, Leary sought out the advice of Marshall McLuhan in generating good publicity. According to Leary's memoir, then, in 1966 he and McLuhan had lunch at the Plaza Hotel in New York. "You call yourself a philosopher, a reformer," Leary recalled McLuhan telling him. "Fine. But the key to your work is advertising. You're promoting a product. The new and improved accelerated brain. You must use the most current tactics for arousing consumer interest. Associate LSD with all the good things that the brain can produce—beauty, fun, philosophic wonder, religious revelation, increased intelligence, mystical romance." Music might help, McLuhan suggested, singing to a tune from a Pepsi commercial.

> Lysergic acid hits the spot.
> Forty billion neurons, that's a lot.

Inspired, Leary "devoted several days and one acid trip to anslysis of the packaging of previous American revolutions," both political and consumerist.[89] Apparently influenced by the title of an article in *The Nation* by Marvin Freedman and Harvey Powelson, with whom Leary had cofounded the psychology department of the Kaiser Foundation

88. Greenfield, *Timothy Leary*, 207–209, 219, 244–252; Timothy Leary, Ralph Metzner, and Richard Alpert, *The Psychedelic Experience: A Manual Based on the Tibetan Book of the Dead* (Secaucus, N.J.: Citadel, 1964).
89. Leary, *Flashbacks*, 251–253; Timothy Leary, interview by Neil Strauss, in Neil Strauss, *Everyone Loves You When You're Dead: Journeys into Fame and Madness* (New York: It, 2011), 337.

Hospital—"Drugs on Campus: Turned On & Tuned Out"—he coined the phrase "Turn On, Tune In, Drop Out" as his new slogan.[90]

Leary debuted the slogan at a conference on LSD in San Francisco. "The explosion of the psychedelic age is directly symmetrical with the multidimensional expansion of external science," he told an audience of 500, "about a third of whom were scholars, a third psychedelicists and a third police officers." Within the microcosm of human consciousness, drugs played the same role that instruments played in the macrocosm of the natural world: as the microscope and telescope each "required a new science, a new language to deal with the new level of reality," so "each class of drug focuses consciousness on a new level of energy" and "defines a new science." In this model, "LSD is the elecron [*sic*] microscope of psychology." To use this new psychological apparatus, Leary advised his audience to "*turn on, tune in and drop out*"—to "find the wisdom within, hook it up in a new way, but above all, detach yourself." To those concerned about the social effects of psychedelic drugs, Leary's advice implied a worldview of creative evolution. "Trust your young people," he told them. "Your divine body has been around a long, long time.… Trust the evolutionary process."[91]

Later, Leary would sometimes credit McLuhan not only with advice and inspiration, but with his slogan itself.[92] Leary also told a journalist that he never introduced McLuhan to LSD, though, because McLuhan was already high on his own verbal expression; "he

90. Greenfield, *Timothy Leary*, 74, 283; Marvin B. Freedman and Harvey Powelson, "Drugs on Campus: Turned On & Tuned Out," *Nation*, January 31, 1966, 125–127.
91. Greenfield, *Timothy Leary*, 281; Timothy Leary, "The Molecular Revolution" (1966), in *The Politics of Ecstasy* (1968; Berkeley: Ronin, 1990), 332, 343, 351, 355, 360–361.
92. Leary, interview by Strauss, 337.

talks," said Leary, "in circles, and spirals, and flower forms and mandala forms."[93] Upon

reading *Understanding Media* "as a student during the seventies," writes Lance Strate, "it

seemed only natural to ask if McLuhan himself was *on drugs*. McLuhan was an icon of

the sixties, after all, a time when *electric* and *psychedelic* were used almost

interchangeably."[94] And not only did McLuhan know Leary, he visited Millbrook and saw

the psychedelic community there in action.[95] When Leary's archivist Michael Horowitz

asked McLuhan to contribute to a festschrift—never completed—in 1974, McLuhan

wrote an abstract of an essay he might contribute. "Electric technology, by virtue of its

immediate relation to our nervous system," he wrote, "is itself a sort of inner trip, with

drugs playing the role of sub-plot or alternate mode."[96]

Although McLuhan was intellectually interested in the experience of LSD, his

interest—like his interest in media—seems to have been detached and metaphorical

rather than experiential. "The impulse to use hallucinogens is a kind of empathy with the

electric environment," he wrote, "but it is also a way of repudiating the old mechanical

world." Although he denied it, McLuhan was a dialectical thinker, and this sympathy

between the electric and the psychedelic—both forms of post-mechanical, organic,

"tribal" engagement—led him to see links between social worlds that otherwise seemed

at odds. "As a sort of capsule observation," wrote McLuhan, "it could be said that the

---

93. Leary, quoted in Philip Marchand, *Marshall McLuhan: The Medium and the Messenger* (1989; Cambridge, Mass.: MIT Press, 1998), 218.

94. Lance Strate, "Drugs: The Intensions of Humanity," in *Drugs & Media: New Perspectives on Communication, Consumption, and Consciousness*, ed. Robert C. MacDougall (New York: Continuum, 2012), 19.

95. Greenfield, *Timothy Leary*, 324.

96. Lisa Rein and Michael Horowitz, "Timothy Leary and Marshall McLuhan, Turned On and Tuned In," *Boing Boing*, June 3, 2014, http://boingboing.net/2014/06/03/timothy-leary-and-marshall-mcl.html.

computer is the LSD of the business world, transforming its outlooks and objectives."[97] Similarly, but perhaps more profoundly, McLuhan's anthropologist collaborator Edmund Carpenter wrote that "TV is the psychic leap of our time. It's a trip far more potent than LSD. It turns thoughts inward, revealing new, unsuspected realities."[98]

Philosopher and therapist Victor Gioscia argued more specifically that psychedelic drugs were a way of coping with new experiences of time brought about by the electronic age. Around 1965, he began participant observations of LSD users in New York, London, and San Francisco, researching in particular the relationships between the increasingly distinct subcultures of "trippers and therapists" (or "acidoxy versus orthodoxy").[99] Two years later, he was working at Jewish Family Services' Village Project, "a sort of anti-clinic in the East Village" of New York. There, Gioscia interviewed patients about the role of drugs in youth culture. "Rap session participants at the Village Project were uniformly agreed," he found, "that 'dope' is central but not causal i.e., a necessary but not sufficient explanation of their lifestyle." The "drop-out phenomenon," they suggested, was instead primarily a product of "automation" and "cybernation," forms of electrification which respectively made work obsolete (at least for some) and "created an era of global communication." Citing McLuhan, Gioscia argued that this new "electric environment" demanded cultural accommodation, and that "retribalization," communes,

---

97. Marshall McLuhan and Quentin Fiore, *War and Peace in the Global Village* (New York: Bantam Books, 1968), 77, 83; Paul Grosswiler, *The Method is the Message: Rethinking McLuhan through Critical Theory* (Montreal: Black Rose Books, 1998), 44–45.

98. Edmund Carpenter, *Oh, What a Blow That Phantom Gave Me!* (New York: Holt, Rinehart and Winston, 1973), 65.

99. Victor Gioscia, "LSD Subcultures: Acidoxy versus Orthodoxy," *American Journal of Orthopsychiatry* 39, no. 3 (April 1969): 428–429. Gioscia collected his essays, generally unrevised except for punctuation, in Victor Gioscia, *TimeForms beyond Yesterday and Tomorrow* (New York: Gordon and Breach, 1974).

and the counterculture more generally were one such human response. "The convergence, then, of automation and cybernation," he wrote, "was offered by east villagers as the explanation for the existence of psychedelic drugs. These drugs, they say, are simply the psychochemical equivalents of an electric society in which automated energy is cybernetically processed."[100]

Gioscia believed "we now invent culture faster than we can transmit it," because accelerating technological change was driving accelerating social change. "It seems," he wrote, "to paraphrase Shakespeare, that time itself is out of joint, a condition we have termed 'achrony.' Achrony describes the plight of those caught between discrepant rates of experience. It seems to me that the term fits the psychedelic generation, who have been forced to endure more rapid shifts in the rates of their experience than any before them, engendered by the most powerful and the most rapid world-changing technologies man has ever invented."[101]

Among LSD researchers, Gioscia was not alone in his interest in the experience of time; he published his most expansive and philosophical article on time, for example, in a book on *The Future of Time* coedited by Humphry Osmond.[102] According to Gioscia, LSD's capacity to alter one's experience of time was central to its widespread adoption.

---

100. Vic Gioscia, "Notes on Videotherapy," *Radical Software* 2, no. 4 (Fall 1973): 2; Victor Gioscia, "Groovin' on Time: Fragments of a Sociology of the Psychedelic Experience," in *Psychedelic Drugs: Proceedings of a Hahnemann Medical College and Hospital Symposium Sponsored by the Department of Psychiatry*, ed. Richard E. Hicks and Paul Jay Rink (New York: Grune & Stratton, 1969), 170–172.

101. Victor Gioscia, "Psychedelic Myths, Metaphors, and Fantasies," in *Origin and Mechanisms of Hallucinations: Proceedings of the 14th Annual Meeting of the Eastern Psychiatric Research Association held in New York City, November 14–15, 1969* (New York: Plenum, 1970), 444–445.

102. Victor Gioscia, "On Social Time," in *The Future of Time: Man's Temporal Environment*, ed. Henri Yaker, Humphry Osmond, and Frances Cheek (1971; Garden City, N.Y.: Anchor Books, 1972), 73–141.

"The world," he wrote, "had better invent a way of comprehending itself that changes as fast as experience does. And that, I would argue, is exactly what psychedelics are—a psychochemical technology" that made it possible "to pay full emotional attention to events which in 'real' clock time would have sped by too rapidly for your empathy to catch hold."[103] Elsewhere, Gioscia wrote—again citing McLuhan—that "heads are trying to do psychologically what computers have done sociologically, that is, exponentially expand the ability to process vast quantities of experience very rapidly."[104] Both were technological means of adapting to accelerating social change.

Participation TV

The influence on video of psychedelic drugs and the discourse surrounding them is perhaps most evident in the artistic field of video synthesis, where they had both intellectual and aesthetic effects. While many saw video as a tool for documenting and networking the world, others were more interested in the artificial electronic space inside their monitors. Some of these artists and engineers built video synthesizers, machines that electronically manipulated either a video signal or a cathode ray tube to produce abstract or distorted images. I've previously explored in an article how they modeled these synthesizers on audio synthesizers, conceptualized them as analog computers, and interfaced them with digital minicomputers.[105] Here, I borrow from that analysis to focus specifically on the psychedelic dimension of video synthesis.

---

103. Gioscia, "Groovin' on Time," 174–175.
104. Gioscia, "Psychedelic Myths, Metaphors, and Fantasies," 440.
105. Peter Sachs Collopy, "Video Synthesizers: From Analog Computing to Digital Art," *IEEE Annals of the History of Computing* 36, no. 4 (October–December 2014): 74–86.

Perhaps the most influential inventor of video synthesizers was Eric Siegel, a self-taught television technician and independent inventor in New York City. Like many videographers, in the late 1960s Siegel began experimenting with visual feedback, pointing a camera at its own monitor to produce kaleidoscopic effects.[106] He also built electronic devices to manipulate the video signal, including a Magic Box that "solarized" video, reversing light and dark, and also switched between two video sources using a push button, an oscillator, or an audio signal.[107]

Siegel had grand ambitions. "I see television as a psychic healing medium," he explained, "creating mass cosmic consciousness."[108] He also saw it as a way to share states of mind, to "actually take a dream you had and make it visible to other people" or induce psychedelic experiences like those he had while using marijuana and LSD.[109]

When Siegel showed art gallery owner Howard Wise his resulting "psychedelevision," Wise asked him to produce it in color, so Siegel designed his Process Chrominance Synthesizer, which sold about ten units for approximately $2,400 each.[110] It also contributed, along with Siegel's Magic Box and feedback technique, to his video *Einstine* [*sic*], which features the scientist's face distorted by feedback and pulsating color in order

---

106. Eric Siegel, "Eric Siegel's Statement" (2001), Electronic Arts Intermix, last modified June 12, 2008, http://eai.org/user_files/supporting_documents/statement.pdf, p. 1.

107. Eric Siegel, interview by Woody Vasulka, January 21, 1992, Vasulka Archive, last modified June 2, 2008, http://vasulka.org/archive/RightsIntrvwInstitMediaPolicies/IntrvwInstitKaldron/74/Siegel.pdf, pp. 1–2.

108. Gene Youngblood, *Expanded Cinema* (New York: Dutton, 1970), 314.

109. Eric Siegel, interview by Katharina Gsöllpointner, December 9, 1991, Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive/Artists6/Siegel,Eric/Interview.pdf, pp. 3, 5.

110. Lucinda Furlong, "Notes toward a History of Image-Processed Video: Eric Siegel, Stephen Beck, Dan Sandin, Steve Rutt, Bill and Louise Etra," *Afterimage*, Summer 1983, 36; Carolyn Kane, "The Electric 'Now Indigo Blue': Synthetic Color and Video Synthesis circa 1969," *Leonardo* 46, no. 4 (2013): 361–362; Eric J. Siegel, Video color synthesizer, US patent 3,647,942, filed April 23, 1970 and issued March 7, 1972.

to reproduce one of Siegel's dreams and "transport the mind of the viewer into Einstein's multi-dimensional world."[111] In May and June 1969, Wise exhibited *Einstine* at his gallery as part of a show, *TV as a Creative Medium*, that brought together many of the first artists working in video.[112] "Something extraordinary happened when we saw that flaming face of Einstein at the end of the corridor," wrote artist Woody Vasulka, "something finally free of film."[113]
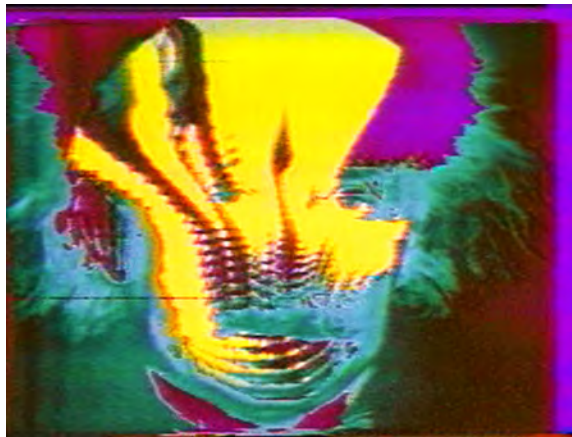
Eric Siegel, *Einstine*, 1968.[114]

Siegel's next step toward abstraction was the 1970 Electronic Video Synthesizer, "a video analog computer as far as electronic circuitry goes" that required no camera input but rather produced its own "synthetic" video signal, "like the video equivalent of a music synthesizer." The instrument featured a keyboard and an array of knobs and switches for generating, moving, and coloring geometric shapes. Electronically, it incorporated a Process Chrominance Synthesizer and additional oscillators that could

111. Siegel, interview by Gsöllpointner, 5; Siegel, "Eric Siegel's Statement," 1.

112. Marita Sturken, "TV as a Creative Medium: Howard Wise and Video Art," *Afterimage*, May 1984, 7.

113. Woody Vasulka, in *Eigenwelt der Apparate-Welt: Pioneers of Electronic Art*, ed. David Dunn (Linz: Oberösterreichisches Landesmuseum, 1992), 116.

114. Still frame from Eric Siegel, *Einstine*, 1968, video, 5:22, *Surveying the First Decade: Video Art and Alternative Media in the U.S. 1968–1980*, vol. 2 (Chicago: Video Data Bank, 1995), DVD. An excerpt may be viewed at http://vdb.org/titles/einstine.

cyclically change the positions and colors of the shapes.[115] It was also Siegel's last video

instrument. "The motivation behind the creation of the video synthesizer," he later

explained, "was to create mandalas to alter states of consciousness, and I couldn't do that

quite yet."[116]

Electrical engineer Stephen Beck was similarly inspired by the possibility of sharing

his personal visions of light and color. "For as long as I can remember," he told Glenn

Phillips, "whenever I close my eyes, I see colors, shapes, forms, and swirling movements

of textures, which I later learned are called *phosphenes*."[117] In the 1960s, he found that

these experiences had a new cultural resonance. "There was a lot of experimentation with

consciousness-altering substances such as cannabis, LSD-25, mescalin and shamanic

rituals," he recalls. "We'd get together to chant and induce visions and hallucinations."[118]

Bech was also interested in television, and as an opponent of the Vietnam War, "where

some of the same technology was being used in very destructive ways," he "wanted to

make something beautiful with the technology." In 1970, Beck became an artist-in-

residence at San Francisco public television station KQED's National Center for

115. [Eric Siegel], "The EVS Video Standard," Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive/Artists6/Siegel,Eric/ElectronicSynth.pdf, p. 1; Jud Yalkut, "Eric Siegel: The Electronic Video Synthesizer," in "Electronic Zen: The Alternate Video Generation" (unpublished typescript, 1984), Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive/Artists10/Yalkut,Jud/ElectronicZen.pdf, pp. 1–2, 6; Eric Siegel to Howard Wise, May 23, 1970, Electronic Arts Intermix, last modified June 12, 2008, http://eai.org/user_files/supporting_documents/sketch1.JPG; Eric J. Siegel, Color video abstract synthesizer, US patent 3,742,125, filed June 11, 1971, and issued June 26, 1973.

116. Siegel, interview by Gsöllpointner, 7.

117. Stephen Beck, interview by Glenn Phillips, March 23, 2007, in *California Video: Artists and Histories*, ed. Glenn Phillips (Los Angeles: Getty Research Institute, 2008), 42.

118. Stephen Beck, in Dunn, *Eigenwelt der Apparate-Welt*, 123.

Experiments in Television, where he used his synthesizers as performance instruments, playing with musicians and for live broadcast in 1972.[119]

Stephen Beck, *Illuminated Music*, 1972–1973.[120]

Beck's first synthesizer, Direct Video Zero, used oscillators and audio signals to produce red, green, and blue video signals, which it combined on a color television.[121] The next iteration of the Direct Video Synthesizer was modular, designed to separately manipulate the form, motion, texture, and color of an image. It was premised on an understanding of the video raster as "a series of vertically stacked horizontal lines which represent the locus of the electron beam as it scans the cathode ray tube." By turning electron beams on and off as they traced this pattern, Beck could produce areas of light and dark, and thus form. The core of his synthesizer was a set of eight "voltage to position converters," each of which compared a reference voltage representing the current position of the electron beams with a (possibly oscillating) control voltage representing

---

119. Beck, interview by Phillips, 42–43; Kris Paulsen, "Direct to Video: Stephen Beck's Cameraless Television," paper presented at the 17th International Symposium on Electronic Art, Istanbul, September 14, 2011, ISEA2011 Istanbul, http://isea2011.sabanciuniv.edu/paper /direct-video-stephen-becks-cameraless-television.

120. Still frame from Kris Paulsen, "In the Beginning, There Was the Electron," *X-TRA* 15, no. 2 (Winter 2013): http://x-traonline.org/article/in-the-beginning-there-was-the-electron/. Two performances of *Illuminated Music* may be viewed at http://ubu.com/film/beck_illuminated.html.

121. Jeffrey Schier, in Dunn, *Eigenwelt der Apparate-Welt*, 123–124.

the desired form, producing a pulse when they were identical. The instrument used digital logic chips to compare pulses from the eight converters, and the resulting digital signal in turn activated and deactivated an electron beam—although analog modules determined whether it activated a beam associated with red, green, or blue and at what intensity.[122]

Nam June Paik, though, was the artist most committed to articulating a vision of video synthesis as both an art form that was both psychedelic and cybernetic. Paik, who had begun electronically modifying television sets to produce distorted images in the early 1960s, started thinking about video synthesizers after seeing Siegel's *Einstine* in 1969.[123] He had already produced a series of installations in which he manipulated the image on a video monitor either magnetically or electronically, including *McLuhan Caged*, which featured distorted, twisted images of the media theorist.[124]

Paik saw video synthesis as a psychedelic phenomenon not merely because artists could use it to express or share psychedelic imagery, but because users of video could engage with the same "strange 'ontology'" of participation as users of drugs. He wasn't referring to the ontology of communal consciousness, though, but to a unitary ontology of undifferentiated participation.

> The "attraction" of drug experience to young people lies in the peculiar "ontology" of this unfortunate medium.

---

122. Schier, in Dunn, *Eigenwelt der Apparate-Welt*, 124–125; Stephen C. Beck, "A Description of the Voltage to Position Converter, a Portion of the Direct Video Synthesizer, a Real Time Electronic System for Generating Color Graphics in the Television Format" (May 29, 1971), Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive/Artists1/Beck,Stephen/VoltToPosition.pdf, pp. 1–3.

123. Nam June Paik, "Mr. Abe: The Greatest Doctor for Me," in *Paik-Abe Video Synthesizer: As Freely as Picasso, As Colorfully as Renoir*, ed. Manu Park, Sang Ae Park, and Ki Jun Lee (Yongin, South Korea: Nam June Paik Art Center, 2011), 18.

124. K. G. Pontus Hultén, *The Machine As Seen at the End of the Mechanical Age* (New York: Museum of Modern Art, 1968), 167.

> Generally speaking *art* consists of three different parties. (1) Creator (active transmitter); (2) Audience (passive receiver); (3) Critics (judge or carrier-band).…
>
> But in the drug experience, all three parties are united into one. A kid who smokes a joint or so is at the same time creator, audience and critic. There is no room for comparison and grading, such as "first class drug taker" or "second rate pot smoker" etc.… This ontological analysis demonstrates to us once again that drug is a short cut effort to recover the sense of participation… and basic cause lies in our passive state of mind, such as TV watching, etc.
>
> Can we transplant this strange "ontology" of drug experience to "safer" and more "authentic" art medium, without transplanting the inherent danger of drug overdose???[125]

Paik thus broke with McLuhan's analysis of television as itself as participatory, cool medium, suggesting instead that the experience of watching it was passive—but could be made active if the user engaged in "participation TV."[126] The model he adopted for avoiding the multirole communication of conventional broadcast television was "the drug experience."

Video, then, became not a tool for sharing psychedelic visions, as it was for Siegel and Beck, but a tool for replacing them with a potentially safer participatory experience. As Paik wrote elsewhere,

> Pot is a short cut reaction of people to regain the sense of participation, which was lost in the organized society and net-work TV programs. Therefore the rational solution does not lie in the no-knock law, but in the recovery of heightened participation… and here video synthesizer's role cannot be over-estimated, since it pierce the core of today's social problem (drug) and economical problem (sluggish consumer spending). Home-model video synthesizer in the post industrial society in the 1980's can become as big as today's camera industry, and network TV might shrink to today's museum size.[127]

---

125. Nam June Paik, "Video Synthesizer Plus," *Radical Software* 1, no. 2: 25.

126. Ibid.; Marshall McLuhan, *Understanding Media: The Extensions of Man* (1964; Cambridge, Mass.: MIT Press, 1994), 22.

127. Nam June Paik to Mr. Lloyd and Mr. Klein, February 10, 1971, in *Nam June Paik: Becoming Robot*,

Paik modeled his synthesizer on two of his earlier video installations. The first was his

1965 *Magnet TV*. The electromagnets built into a monitor varied in strength continuously,

causing its electron beam to scan across the monitor in a raster of hundreds of straight

lines. Paik's additional magnets deflected the beam from this programmed path,

manipulating the raster by curving its scan lines into surprisingly complex geometric

patterns.[128]

The second installation resulted from a collaboration Paik began with Japanese

television engineer Shuya Abe in 1963. One of their projects, which eventually became

Paik's 1969 *Participation TV II*, used three black-and-white video cameras to produce

offset red, green, and blue images of the viewer, the brightness of which was controlled

by audiotapes. Cameras could be pointed at the monitor itself to produce feedback.[129]

Working with a $10,000 budget from Boston public television station WGBH, Abe built

Paik's synthesizer using components scavenged from video cameras and other electronic

systems.[130]

---

ed. Melissa Chiu and Michelle Yun (New York: Asia Society, 2014), 149.

128. Edith Decker-Phillips, *Paik Video*, trans. Karin Koppensteiner, Marie-Genviève Iselin, and George Quasha (Barrytown, N.Y.: Barrytown, 1998), 32–39, 63–64, 153.

129. Ibid., 67, 74. Paik met Abe through Hideo Uchida, who, Paik wrote, "discovered the transistor much earlier than the Americans, but no one believed him when he said that certain crystals can amplify signals. He is now researching the electronic basis of telepathy. For example, when an elevated train passes under high-voltage wires, the people in the train change their subjects of conservation or the pitch of their voices unconsciously, and it is possible for people to pick up or tune in on the resonance of each others' brain waves." For Uchida and Paik, then, as for Teilhard and McLuhan, electricity facilitated the experience of communal consciousness. It also facilitated the visualization of consciousness—"Professor Kasamatsu of Tokyo University and others," said Paik, "have been charting the alpha waves of Zen monks to observe the physiological-electrical changes when Satori is reached or not, and also experimented with LSD and other psychedelics likewise." John G. Hanhardt, "Nam June Paik: An Illustrated Chronology," in *Nam June Paik*, ed. John G. Hanhardt (New York: Whitney Museum of American Art, 1982), 12; Nam June Paik, interview by Jud Yalkut, "Nam June Paik, Part Two: We Are in Open Circuits," in Yalkut, "Electronic Zen," 4–5.

130. Fred Barzyk, "Paik and the Video Synthesizer," in *Fred Barzyk: The Search for a Personal Vision in Broadcast Television*, ed. Fred Barzyk, Curtis L. Carter, George Fifield, and Mary Ide (Milwaukee:
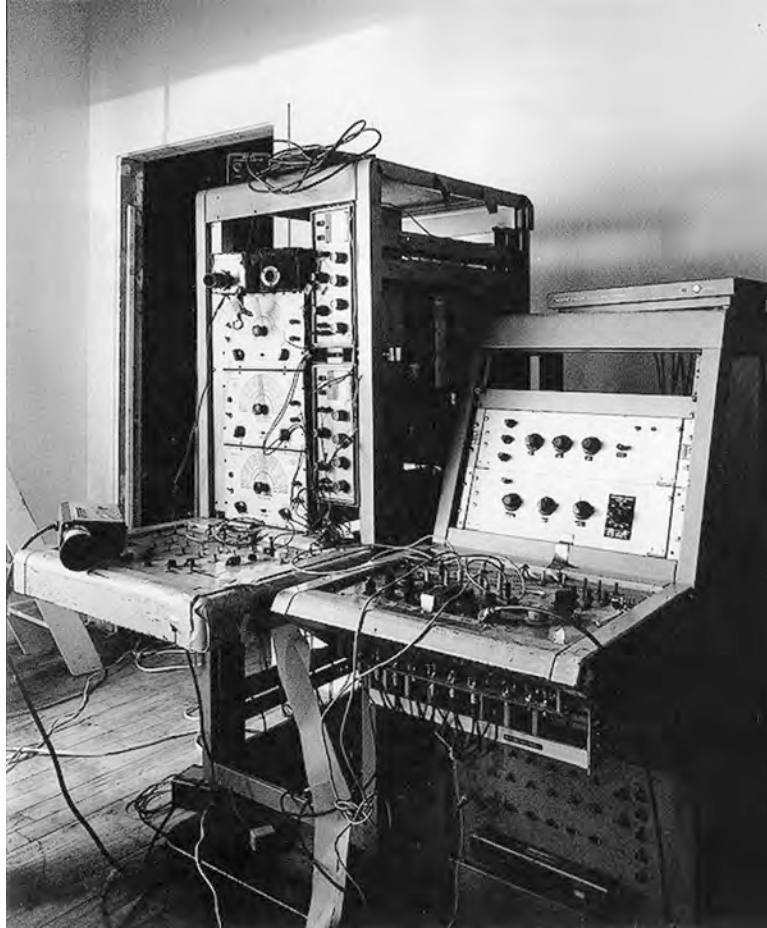
Paik-Abe Video Synthesizer built for WNET, 1972.[131]

The Paik-Abe Video Synthesizer did not typically produce an artificial signal like

Siegel's; rather, like *Participation TV II*, it combined signals from black-and-white

cameras into a single color image. "The seven cameras are keyed into seven different

colors themselves," explained Paik. "One camera makes only red, another only blue,

another so and so." Like *Magnet TV*, the synthesizer was also a raster manipulation

device, featuring a black-and-white video monitor with additional electromagnets, or

Marquette University Patrick & Beatrice Haggerty Museum of Art, 2001), 74; Jeffrey Schier, in Dunn, *Eigenwelt der Apparate-Welt*, 129.

131. Photograph from David Joselit, *Feedback: Television against Democracy* (Cambridge, Mass.: MIT Press, 2007), 47.

"deflection yokes," which could distort its image. Some of the cameras could be pointed at this "Wobbulator" to incorporate distortion into the resulting color image or at their own monitors to produce feedback. The Wobbulator and other electronic components could be controlled by audio signals or by using the synthesizer's sixty knobs.[132]

Nam June Paik, *Video Commune (The Beatles Beginning to End)*, 1970.[133]

Paik described this system, designed to produce unpredictable visual phenomena, as a "sloppy machine, like me."[134] In 1970, he debuted it in the WGBH broadcast *Video Commune*, accompanying the entire catalog of the Beatles. In order to maintain the ethos of participation that he intended for the synthesizer, Paik invited pedestrians to enter the television studio and operate the synthesizer.[135] Abe left his job in Tokyo to build additional synthesizers, "depending," wrote Paik, "on the empty promises of an artist

132. Douglas Davis, *Art and the Future: A History/Prophecy of the Collaboration between Science, Technology and Art* (New York: Praeger, 1973), 151; Furlong, "Notes toward a History," 36; Sang Ae Park and Ki Jun Lee, "Abe Video Synthesizer Restoration Project," in Park, Park, and Lee, *Paik-Abe Video Synthesizer*, 48.

133. Still frame from John G. Hanhardt, *The Worlds of Nam June Paik* (New York: Guggenheim Museum, 2000), 191.

134. George Fifield, "The WGBH New Television Workshop," in *Fred Barzyk*, 65.

135. Decker-Phillips, *Paik Video*, 154. An excerpt of *Video Commune* may be viewed at http://medienkunstnetz.de/works/video-commune/.

without [a] regular job and mixing with the hippy group in the California Institute of the Arts in full American cultural revolution."[136] With their student Sharon Grace, Paik and Abe produced instruments for Cal Arts, the Art Institute of Chicago, the Massachusetts Institute of Technology, the Experimental Television Center in Binghamton, and New York public television station WNET's Television Laboratory.[137]

In a variety of ways, then, for theorists like McLuhan and artists like Paik, video technology and psychedelic drugs became analogous technologies in the late 1960s. What tied together these two objects, one by now a paper tab, the other a complex optical and electronic system, was that their users understood both as technologies of consciousness. The ways psychedelic researchers thought about consciousness thus became resources for videographers seeking to understand their new medium.

---

136. Paik, "Mr. Abe," 20.

137. Kathy High, "Mods, Pods and Designs: Designing Tools and Systems," in *The Emergence of Video Processing Tools: Television Becoming Unglued*, ed. Kathy High, Sherry Miller Hocking, and Mona Jimenez (Bristol: Intellect, 2014), 2:380–381; Nam June Paik, "New Projects" (1973), in *Nam June Paik: Videa 'n' Videology 1959–1973*, ed. Judson Rosebush (Syracuse, N.Y.: Everson Museum of Art, 1974), 76.

Chapter 3

Infolding the Self: Feedback in Art and Psychiatry

In 1960, at the age of 17, Paul Ryan became a Roman Catholic monk, a member of the

Passionist order. Five years later, he decided the order hadn't changed as he hoped during

the era of the Second Vatican Council and left, writing to his superior that "I found the

intellectual life quite insufficient, community life and liturgical life similarly

insufficient."[1] Ryan enrolled as an undergraduate student at New York University, and

cited John Dewey and William James in his successful application for conscientious

objector status.[2] Then, wrote Ryan,

> In the spring of 1966, I took part in protest marches against the war. The
> experience was frustrating. Marches seemed to have so little effect.
> Vietnamese children were being killed. American soldiers were dying.
> Vietnamese monks and young men in the United States were burning
> themselves to death to protest the war. I locked myself up in a garret on
> the Lower East Side and pounded a typewriter. I thought that by writing
> fiction I could somehow make a difference. The war went on. Midway
> through the summer of 1966, I tuned in to WBIA's coverage of the
> International Writers' Conference. The speaker was saying, "Of course, in
> this electronic age of computers, satellites, radio, and television, the writer
> can no longer be someone who sits in his garret pounding a typewriter." It
> was Marshall McLuhan.[3]

---

1. Paul Ryan, interview by Willoughby Sharp, "Paul Ryan: Video Pioneer," *Video 81* 2, no. 1 (1981): 15–16; Paul S. Ryan to Father Provincial, February 9, 1965, Passionists file, Paul Ryan Papers, Archives of American Art, Smithsonian Institution. I examined the Paul Ryan Papers before they were fully processed, so my citations generally do not match the precise locations of documents in the collection as currently organized.

2. [Paul Ryan], introduction to "Video and Cybernetic Guerrilla Warfare" (c. 1971), Writings series, Ryan Papers, p. 2.

3. Paul Ryan, *Video Mind, Earth Mind: Art, Communications, and Ecology* (New York: Peter Lang, 1993), 11–12.

"His rap blew my mind," continued Ryan in another account. "I could hardly read a page or write a line for six months."[4]

When Ryan began reading McLuhan's work, he found a theory in which societies based on electronic media recapitulated the attitudes and social order of an earlier age of orality. "The electric implosion now brings oral and tribal ear-culture to the literate West," wrote McLuhan in his 1964 book *Understanding Media*.[5] The literary way of knowing and being which had dominated Europe and its colonies since the development of print was being eclipsed. "I developed a strategy," wrote Ryan. "I could go from the oral monastic culture to the electric. Skip the gutenburg [*sic*] galaxy. Forget the Peace Corps number, stay home, and get my hands on the new media."[6]

Ryan began seeking opportunities to learn about electronic technologies, offering to volunteer at educational television station WNDT.[7] After completing his undergraduate education in 1967, he enrolled in a graduate program in computer science at the University of Michigan. Ryan's time in Ann Arbor was brief, though, because his draft board refused to grant him a student deferment, directing him to immediately perform his alternate service as a medical orderly. Ryan found an unlikely way out of this obligation. "I went into the draft board with a copy of *Understanding Media* under my arm," he

4. Paul Ryan, *Birth and Death and Cybernation: Cybernetics of the Sacred* (New York: Gordon and Breach, 1973), xi.
5. Marshall McLuhan, *Understanding Media: The Extensions of Man* (1964; Cambridge, Mass.: MIT Press, 1994), 50.
6. Ryan, introduction to "Video and Cybernetic Guerrilla Warfare," 3.
7. Paul Ryan to Frank Leicht, November 22, 1966, Letters file, Ryan Papers.

wrote, "and convinced them it would be good for the country if I did my alternative service as a research assistant to McLuhan."[8]

Fordham University, a Jesuit institution in the Bronx, had received an Albert Schweitzer Chair in the Humanities funded by the New York Board of Regents and convinced McLuhan, himself a devout convert to Catholicism, to visit for a year away from his usual professorship at the University of Toronto. John Culkin, a Jesuit priest who directed Fordham's Center for Communications, agreed to hire Ryan as one of McLuhan's assistants. Unfortunately for Fordham, state attorney general Louis Lefkowitz decided that as a Catholic institution it was ineligible for state funding. A number of donors volunteered to make up for the state's contribution to McLuhan's salary, including stockbroker Walker Buckner, who was the son-in-law of IBM executive Thomas J. Watson, an investor in Sony, and a fan of McLuhan. Along with a check for $10,000, Buckner gave Fordham two Sony portapaks.[9]

In these machines Ryan perceived a new medium with which to test McLuhan's ideas about media.[10] He "made an arrangement with a Montessori School to use a ½ inch studio video system they had sitting in a closet," and began experimenting with video himself.[11] Since McLuhan was fond of quoting Ezra Pound to the effect that "artists are the antennae of the race," in the summer of 1968 Ryan loaned Fordham's equipment to

---

8. Ryan, *Birth and Death and Cybernation*, xi–xii.
9. John Culkin, "Marshall's New York Adventure," *Antigonish Review*, 74–75 (Summer–Fall 1988): 109–113; Ryan, *Birth and Death and Cybernation*, xi–xii; Paul Ryan, interview by Felicity D. Scott and Mark Wasiuta, "Cybernetic Guerrilla Warfare Revisited: From Klein Worms to Relational Circuits," *Grey Room*, no. 44 (Summer 2011), 117.
10. Ryan, *Birth and Death and Cybernation*, xii.
11. Ryan, introduction to "Video and Cybernetic Guerrilla Warfare," 4.

painter Frank Gillette, who he had met through Fordham colleague and encounter group leader Dennis Walsh.[12]

The previous summer and fall, Gillette had taught a course on "Communication and Environment" that emphasized McLuhan's work at the Free School of New York, an experimental and unaccredited institution of higher education founded "in response to the intellectual bankruptcy and spiritual emptiness of the American educational establishment."[13] Gillette has also served on the editorial board of the school's magazine, *Treason*, which his friend Marco Vassi would later claim—probably hyperbolically— "accepted any article on the single qualification that it would carry the death penalty if printed in time of war."[14]

Like other such institutions, the Free School—founded as the Free University of New York in 1965—fostered both left and hip culture. "Ideologically," wrote psychiatrist and FUNY cofounder Joseph Berke, "FUNY was split down the middle between the politicos and the culture wizards."[15] Theodore Roszak, reflecting on such dynamics, wrote that "the easy transition from the one wing to the other of the counter culture shows up in the pattern that has come to govern many of the free universities. These dissenting academies

---

12. Ryan, interview by Scott and Wasiuta, "Cybernetic Guerrilla Warfare Revisited," 117; Paul Ryan, "The Raw and the Overcooked: Cable Television and the Schools," *Media & Methods*, October 1969, 48.

13. Free School of New York, "Summer Catalog," *Treason* 1, no. 1 (Summer 1967): 62–63; *Free School Catalog Fall 1967*, Free School of New York file, Printed Ephemera Collection on Organizations (PE.036), Tamiment Library and Robert F. Wagner Labor Archives, New York University; Edward Grossman, "New York's Schoolhouse for the Left," *Harper's*, April 1966, 75–76. See also Roger Vaughan, "'It's a Groovy Thing to Do': The Anti-University Is the Newest Meeting Place for Young Radicals," *Life*, May 20, 1966, 119–120.

14. *Treason* 1, no. 1: 4; Marco Vassi, *The Stoned Apocalypse* (New York: Trident, 1972), 52.

15. Joseph Berke, "The Free University of New York," in *Counter Culture*, ed. Joseph Berke (London: Peter Owen, 1969), 222.

usually receive their send-off from campus New Leftists and initially emphasize heavy

politics. But gradually their curricula tend to get hip both in content and teaching

methods: psychedelics, light shows, multi-media, total theatre, people-heaping,

McLuhan, exotic religion, touch and tenderness, ecstatic laboratories.…"[16] At the Free

School this meant courses taught by satirist Paul Krassner, poets Tuli Kupferberg and Ed

Sanders, filmmakers Yves de Laurot and Hollis Frampton, visual artist Carolee

Schneemann, novelist Robert Anton Wilson, puppeteer Peter Schumann, and

"Dylanologist" A. J. Weberman, as well as by sociologist Stanley Aronowitz, historians

Staughton Lynd and Martin J. Sklar, political organizer Lyndon LaRouche, and scholar-

diplomat Conor Cruise O'Brien.[17]

   "I had this equipment for three months in which to do whatever I wanted," said

Gillette. "It was like using the artist-in-residence concept in reverse—in other words, you

take the residence out to the artist and give it to him to work with." Upon first acquiring a

camera, Gillette spent three weeks producing a documentary with Harvey Simmons by

"interviewing the locals," who "basically gave their raps on video," in front of Gem's

Spa, a corner store on St. Mark's Place in the East Village.[18] Like many videographers,

Gillette started by documenting the interactions of ordinary people and the everyday

---

16. Theodore Roszak, *The Making of a Counter Culture: Reflections on the Technocratic Society and Its Youthful Opposition* (Garden City, N.Y.: Doubleday, 1969), 63.

17. *Free University of New York Summer Catalogue 1965*; *Free University of New York Fall Catalog 1965*; and *Free School Winter Quarter 66–67*, pp. 5, 7, 8; all in Free University of New York file, Printed Ephemera Collection on Organizations; *Free ~~University~~ School of New York Summer Catalog 1966*, Free School of New York file, p. 9; Free School of New York, "Winter Catalog 1968," *Treason* 1, no. 2–3 (Winter 1968): 62.

18. Frank Gillette and Ira Schneider, interview by Jud Yalkut, "Frank Gillette and Ira Schneider: Parts I and II of an Interview," *Radical Software* 1, no. 1: 9, reprinted from *The East Village Other*, July 30, 1969; Judson Rosebush, ed., *Frank Gillette: Video; Process and Meta-Process* (Syracuse, N.Y.: Everson Museum of Art, 1973), 18.

extraordinary of the 1960s. "Tapes made by early portapakers frequently fell under the

heading of 'street tapes,'" writes Deirdre Boyle.[19]

While taping, Gillette met Victor Gioscia, who had become interested in video as well

as LSD and social change.[20] As Gioscia wrote,

> What I'm doing with my life is building a set of generalizations
> comprehending how time works. I call the comprehension of the time laws
> of any process "chronetics."
>
> I've been working at it a "long" time and have done it in some strange
> places. Like, a dissertation on Plato's theory of time, which started in '58
> but didn't come till '63. Like, in '65 getting a videotape system installed
> in a family therapy agency so families and therapists could play back their
> sessions during their sessions. Like getting headaches trying to transform
> the laws of general relativity into classroom sociology since 1953, though
> I hate the math. Like trying to figure out acid time expansion during acid
> time expansion.[21]

Gillette and Gioscia began working together at the Village Project, "us[ing] video

playback to help people on dope see how they related to each other while badly stoned."[22]

Their techniques varied, from taping groups of youth so they could see their interactions

from an alternative perspective to inviting individuals to express themselves through their

own tapes.[23] "I experimented through the Village Project," explained Gillette, "with the

effects of videotape on kids with bad trips—15 to 19 year olds—burnt-out acid cases—let

them use the cameras on me, themselves, as a means of expression as opposed to a means

---

19. Deirdre Boyle, *Subject to Change: Guerrilla Television Revisited* (New York: Oxford University Press, 1997), 8.

20. Davidson Gigliotti, "A Brief History of RainDance" (2003), Radical Software, last modified March 1, 2012, http://radicalsoftware.org/e/history.html.

21. Vic Gioscia, "Frequency and Form," *Radical Software* 1, no. 2 (1970): 7.

22. Vic Gioscia, "Notes on Videotherapy," *Radical Software* 2, no. 4 (1973): 2.

23. "List of community groups that have expressed the desire to work with the Global Village Resource Center," Global Village, Inc. 70–1 file, New York State Council on the Arts Grant Application Files (14064-84) [hereafter NYSCA Files], New York State Archives.

of recording their expression. They were alienated from their shrinks who came in periodically to extract information from them on the St. Marks' scene. Videotape was a new, favorable means of feedback for them, they dug it."[24] Similarly, according to video artist Lee Kaminski, at the Haight-Ashbury Free Clinic in San Francisco "freaks who needed help talked into a videotape recorder, in little rooms called carels [*sic*], and played them back for themselves and/or for a psychologist."[25]

Gioscia was sometimes frustrated by his colleagues, though, who "felt," he wrote, "that 'real therapy' would be better than 'making movies.' When people wanted to take the camera out on the street, to get the community aspects of 'the drug problem' on tape, the idea was strenuously resisted."[26]

For Gioscia, video offered another tool for manipulating users' experience of time, slowing it down by bending it back on itself as users watched a tape. "When things (societies, cultures, groups, etc.) change fast," he wrote, "faster than they can be generalized, people experience future shock—they need to experience and generalize faster than they can." It was in this context that Gioscia asked how one could "accelerate the formation of generalizations," as I quoted at the beginning of chapter 2. "Does acid do it? Will videotape?"[27] He thus brought together the two technologies to which Myron Stolaroff had devoted his life. Gioscia's use of video to counteract the harmful effects of drugs reflected an understanding of video and psychedelics as comparable technologies that pervaded the work of experimental videographers. What tied together these two

---

24. Gillette and Schneider, interview by Yalkut, 9.
25. Sami Klein, "Everybody Will Be on Television," *Rolling Stone*, March 18, 1971, 23.
26. Gioscia, "Notes on Videotherapy," 2.
27. Gioscia, "Frequency and Form," 7.

objects, one by now a paper tab, the other a complex optical and electronic system, was

that their users understood both as technologies of consciousness.

The Aesthetics of Narcissism

In May 1969, Paul Ryan presented a video installation entitled *Everyman's Moebius Strip*

at Howard Wise's show *TV as a Creative Medium* in New York. As critic Jud Yalkut

described it,

> You are sitting in a curtained booth on a stool, a TV aperture hangs before
> you like a surrealistic picture frame, beyond which the portable video
> camera sits and observes, as you are prodded ever so gently by
> calculatedly stimulating questions: "React to the following people: Nixon,
> your mother, Eldridge Cleaver, Teddy Kennedy, you… for the next ten
> seconds do what you want… Now, let your face be sad… let your face
> grow sad… turn away from the camera… now turn back… press the stop
> button… thank you." You watch yourself in full audio-picture recap of
> your "interview," erasing all but the fewest frames of the previous tape as
> your tape will be obliterated by the next.[28]

Seven years later, in her widely-cited essay "Video: The Aesthetics of Narcissism," art

historian and critic Rosalind Krauss argued that "video's real medium" was not its

material apparatus but rather such "a psychological situation" of displacing the self onto

an external object. "Unlike other visual arts," she wrote, "video is capable of recording

and transmitting at the same time—producing instant feedback. The body is therefore as

it were centered between two machines that are the opening and closing of a parenthesis.

The first of these is the camera; the second is the monitor, which reprojects the

performer's image with the immediacy of a mirror." To engage with one's own image,

then, was "a process of bracketing out the object" of video technology itself in order "to

withdraw attention from an external object—an Other—and invest it in the Self." Citing

---

28. Jud Yalkut, "TV as a Creative Medium," *Arts Magazine*, September/October 1969, 19.

Sigmund Freud and Jacques Lacan, Krauss noted that this "is the specific condition of narcissism."[29]

Freud had turned his attention to narcissism in order to understand schizophrenia, of which he believed it was a symptom: "A pressing motive for occupying ourselves with the conception of a primary and normal narcissism arose," he wrote, "when the attempt was made to bring out knowledge of dementia praecox (Kraepelin), or schizophrenia (Bleuler), into line with the hypothesis upon which the libido theory is based." Freud adopted a third term, paraphrenia, and wrote that "such patients… display two fundamental characteristics: they suffer from megalomania and they have withdrawn their interest from the external world." These characteristics were linked, he argued, for such a person "seems really to have withdrawn his libido from persons and things in the outer world" and "directed [it] on to the ego, giving rise to a state which we may call narcissism."[30]

In contrast to Krauss' Freudian analysis, to Ryan—and to psychologists, psychiatrists, and social workers who showed patients tapes of themselves—the experience of watching oneself seemed not pathological but therapeutic. *Everyman's Moebius Strip*, explained Ryan in an exhibit brochure, made it possible to understand oneself more fully by integrating self-perception and external presentation. "The Moebius tape strip snips the barrier between inside and outside," he wrote. "It offers you one continuous (sur)face

29. Rosalind Krauss, "Video: The Aesthetics of Narcissism," *October* 1 (Spring 1976): 52, 57. Krauss was one of many critics and commentators diagnosing Americans with narcissism in the 1970s. For this context, see Elizabeth Lunbeck, *The Americanization of Narcissism* (Cambridge, Mass.: Harvard University Press, 2014).

30. Sigmund Freud, "On Narcissism: An Introduction" (1914), in *Collected Papers*, vol. 4, trans. Joan Riviere (London: Hogarth, 1953), 31–32.

with nothing to hide."[31] Videotape, Ryan concluded, was not fundamentally a communication medium, but rather a tool for reflection and psychological exploration. "VT," wrote Ryan months earlier, "is not TV. If anything, it's TV flipped on itself. Television, as the root of the word implies, has to do with transmitting information over distance. Videotape has to do with infolding information. Instant replay offers a living feedback."[32] *Infolding* was a word borrowed from Pierre Teilhard de Chardin, who had written about the world itself infolding as it evolved towards communal consciousness.[33] "The feedback experience of video was thought of as cosmic," Ryan later said.[34]

Ryan read the Greek myth of Narcissus not through Freud but through McLuhan, who had transformed it into a cybernetic parable. When Narcissus mistook his reflection in water for another person, wrote McLuhan, "this extension of himself by mirror numbed his perceptions until he became the servomechanism of his own extended or repeated image. The nymph Echo tried to win his love with fragments of his own speech, but in vain. He was numb. He had adapted to his extension of himself and had become a closed system."[35]

McLuhan's conception of narcissism, like Krauss', drew on medical discourses, but not on psychiatric ones. "Physiologically," wrote McLuhan, "there are abundant reasons for

31. Howard Wise Gellery, *TV as a Creative Medium* (New York: Howard Wise Gallery, 1969), Electronic Arts Intermix, last modified November 9, 2013, http://eai.org/user_files/supporting_documents/tvasacreativemedium_exhibitionbrochure.pdf.
32. Paul Ryan, "Videotape: Thinking about a Medium," *Educators Guide to Media & Methods*, December 1968, 38.
33. Pierre Teilhard de Chardin, *The Phenomenon of Man*, trans. Bernard Wall (1959; New York: Harper Torchbooks, 1965), 267.
34. Ryan, interview by Scott and Wasiuta, "Cybernetic Guerrilla Warfare Revisited," 126.
35. McLuhan, *Understanding Media*, 41.

an extension of ourselves involving us in a state of numbness. Medical researchers like Hans Selye and Adolphe Jonas hold that all extensions of ourselves, in sickness or in health, are attempts to maintain equilibrium. Any extension of ourselves they regard as 'autoamputation,' and they find that the autoamputative power or strategy is resorted to by the body when the perceptual power cannot locate or avoid the cause of irritation."[36]

Selye, a prominent biochemist and endocrinologist influenced—like the cyberneticians—by Claude Bernard and Walter Cannon, was perhaps the most influential theorist of stress as a biological phenomenon.[37] According to Richard Cavell, Selye argued that as one mechanism of maintaining homeostasis and resisting stress, "the body will seek to protect the affected organ by isolating and numbing it."[38] Jonas, a researcher apparently unaffiliated with Selye except in McLuhan's analysis, termed a similar phenomenon—"which will be called into action any time any part of the organism becomes the source of supernormal irritation"—autoamputation. Although he didn't actually claim that "any extension of ourselves" constituted or caused autoamputation, Jonas did argue that "the very degree of [evolutionary] advancement has made [humans] excessively vulnerable to constant irritation," and that "hyperstimulation… could initiate the neoplastic process," or the growth of tumors, an organic, bodily extension of the self in response to irritation.[39]

---

36. Ibid., 42.

37. Mark Jackson, *The Age of Stress: Science and the Search for Stability* (Oxford: Oxford University Press, 2013), 78–84.

38. Richard Cavell, *McLuhan in Space: A Cultural Geography* (Toronto: University of Toronto Press, 2002), 87.

39. Adolphe D. Jonas, *Irritation and Counterirritation: A Hypothesis about the Autoamputative Property of the Nervous System; A Scientific Excursion into Theoretical Medicine* (New York: Vantage, 1962), 10, 12, 54, quoted in ibid.

According to McLuhan, then, numbness or narcosis—which he claimed, following Pliny and Plutarch, was the origin of Narcissus' name—always followed the extension of the self through technology as well.[40]

> The principle of numbness comes into play with electric technology, as with any other. We have to numb our central nervous system when it is extended and exposed, or we will die.… With our central nervous system strategically numbed, the tasks of conscious awareness and order are transferred to the physical life of man, so that for the first time he has become aware of technology as an extension of his physical body. Apparently this could not have happened before the electric age gave us the means of instant, total field-awareness. With such awareness, the subliminal life, private and social, has been hoicked up into full view.… In the electric age we wear all mankind as our skin.[41]

While earlier technologies extended one's ability to move or act, according to McLuhan electrification extended mind itself. "McLuhan's chapter on the Narcissus myth in *Understanding Media* is extremely important," wrote Ryan, "if we are to get beyond the gadget lover stage with videotape."[42] Where McLuhan saw narcosis as an inevitable consequence of technology, then, Ryan saw it as a phase to overcome.

What Krauss and Ryan shared was an understanding of video as a technology of the self, one of four categories of technologies—those of production, sign systems, power, and self—delineated by Michel Foucault in a 1982 essay.[43] Foucault took the words *technique* and *technologie* to apply to a broad realm of "practical rationality governed by a conscious goal," to practices and methods as well as material or "hard" technologies.[44]

---

40. McLuhan, *Understanding Media*, 41; *Oxford English Dictionary*, 3rd ed., s.v. "narcissus."
41. McLuhan, *Understanding Media*, 47.
42. Ryan, "Videotape," 40.
43. Michel Foucault, "Technologies of the Self," in *Technologies of the Self: A Seminar with Michel Foucault*, ed. Luther H. Martin, Hugh Gutman, and Patrick H. Hutton (Amherst: University of Massachusetts Press, 1988), 18.
44. Michel Foucault, interviewed by Paul Rabinow, "Space, Knowledge, and Power," in Michel Foucault,

As Michael Behrent writes, Foucault used the concept of *technology* not metaphorically but metonymically, suggesting that the material culture usually referred to by the word is only one variety of instrumentalized rationality.[45] In 1980, Ryan introduced himself to Foucault "as an ex monk concerned with the current aesthetic/ascetic difficulty" after a lecture on "Sexuality and Solitude" at New York University. Ryan was seeking to develop a topological model of the relations inherent in video, and wrote to Foucault that "perhaps such mapping relates to what you are calling the 'technology of self.'"[46]

The category of technologies of the self, then, overlaps with that of technologies of consciousness, but neither fits neatly within the other. The concept of consciousness is more recent, for one thing, and technologies of consciousness are often conceptualized through a specifically modern distinction between mind and body.[47] The classical and early Christian technologies of the self with which Foucault concerned himself in *The History of Sexuality* were often explicitly bodily practices in ways that technologies of consciousness usually are not.[48]

In Foucault's terminology, both video devices and the practice of watching oneself were technologies. Video was straightforwardly a technology of sign systems, and indeed Ryan and other experimental videographers theorized at length on its semiotics.[49] It was

---

Power, ed. James D. Faubion (New York: New Press, 2000), 364; Steven Dorrestijn, "Technical Mediation and Subjectivation: Tracing and Extending Foucault's Philosophy of Technology," *Philosophy of Technology* 25, no. 2 (June 2012): 222–223.

45. Michael C. Behrent, "Foucault and Technology," *History and Technoligy* 29, no. 1 (2013): 60.

46. Paul Ryan to Michel Foucault, November 25, 1980, in Michel Foucault file, Ryan Papers.

47. Robert Van Gulick, "Consciousness," *Stanford Encyclopedia of Philosophy*, revised January 14, 2014, http://plato.stanford.edu/entries/consciousness/.

48. See especially Michel Foucault, *The Care of the Self*, trans. Robert Hurley (New York: Vintage Books, 1988).

49. Ryan, *Video Mind, Earth Mind*.

also a technology of production, particularly in television broadcasting, and a technology of power through its use in surveillance, which Foucault himself helped explain through his analysis of the panopticon.[50] In addition, though, video—and particularly the formal practice of watching oneself—was a technology of the self, part of a category of methods which, Foucault wrote, "permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality."[51] For experimental videographers like Ryan, in other words, video became a tool for shaping and constituting the self.

In the late 1960s and early 1970s, this form of video feedback—watching oneself on television—became paradigmatic of a set of experimental and political practices. Artists began creating installations in which their subjects could watch themselves on video, finding feedback a potent tool for introspection and for producing a personal electronic experience which contrasted sharply with the mass medium of television. These techniques, and the concept of psychological feedback, had a genealogy which extended from photographic psychiatry and ethnographic filmmaking to video therapy.

The video recorder itself, the practice of feedback, and the shared discourse of cybernetics thus became boundary objects facilitating interaction between distinct professional communities of videographers, including artists, therapists, and social

---

50. Michel Foucault, *Discipline and Punish: The Birth of the Prison*, trans. Alan Sheridan (New York: Vintage Books, 1995), 195–228.
51. Foucault, "Technologies of the Self," 18.

scientists. As Susan Leigh Star and James Griesemer write, boundary objects are "plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites." We have already seen how LSD became a boundary object between psychiatrists, mystics, and hip youth, facilitating the development of a new countercultural identity with both scientific and metaphysical dimensions. "The creation and management of boundary objects," argue Star and Griesemer, "is a key process in developing and maintaining coherence across intersecting social worlds."[52] This chapter first explores how video came to be a critical tool for some in the social world of psychotherapy, and then how psychiatrists and psychologists encountered experimental videographers more oriented towards the counterculture and the art world across the shared boundary objects of video and cybernetics.

Photographic Psychiatry

Since the middle of the nineteenth century, both physicians generally and psychiatrists specifically were among the first professional adopters of new recording technologies. Photography, audio recording, and film were each incorporated into medicine first as pedagogical tools, and then as experimental apparatus and even metaphors for the functioning of the human mind and body. As Alison Winter writes, "throughout the

---

52. Susan Leigh Star and James R. Griesemer, "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39," *Social Studies of Science* 19, no. 3 (August 1989): 393.

 The development of the psychedelic counterculture was also facilitated by individuals like Timothy Leary, who converted cultural capital earned through scientific research into countercultural capital, fame, and infamy. As Star and Griesemer write, "people who inhabit more than one social world— marginal people—face an analogous situation." Ibid., 411.

twentieth century, memory researchers continued to look to the most recent, cutting-edge recording technologies," finding in them inspiration for the theory that memories, like tape or film, could be replayed.[53]

Only occasionally did practitioners also use these media therapeutically. The English psychiatrist, antiquarian collector, and amateur photographer Hugh Welch Diamond, for example, worked at Surrey County Lunatic Asylum in the 1850s.[54] He was among the first to adopt the new collodion photographic process, which may have facilitated his photography of disturbed subjects; one reviewer speculated that "the Doctor has been enabled to produce a group of portraits of insane and idiotic people who could probably not be induced to remain quiet long enough to be taken by the other processes."[55]

The benefits of photographs, wrote Diamond, included documenting "with unerring accuracy the external phenomena of each passion," but also "the effect which they produce upon the patients themselves." In one case, he wrote, "photography unquestionably led to the cure" of a woman, A.D., who believed she was a queen. Diamond had several such patients, and when he showed A.D. photographs of the others, including a woman "in a dominant attitude and with a band or 'diadem' round the head," A.D. expressed contempt. "I never imagine such foolish delusions," she said. "They are to be pitied, but *I* was born a Queen." Over the next year and a half, though, A.D.'s

53. Alison Winter, *Memory: Fragments of a Modern History* (Chicago: University of Chicago Press, 2012), 3–4.

54. Sander L. Gilman, "Hugh W. Diamond and Psychiatric Photography," in *The Face of Madness: Hugh W. Diamond and the Origin of Psychiatric Photography*, ed. Sander L. Gilman (New York: Brunner/ Mazel, 1976), 6–8; Adrienne Burrows and Iwan Schumacher, *Portraits of the Insane: The Case of Dr. Diamond* (London: Quartet, 1990), 9–10.

55. Carolyn Bloore, *Hugh Welch Diamond, 1888–1886: Doctor, Antiquarian, Photographer* (Twickenham, England: Orleans House Gallery, 1980), 5; "Exhibition of Photographic Pictures at the Society of Arts," *Athenaeum*, January 1, 1853, 23.

delusions grew weaker. "Her subsequent amusement in seeing the portraits and her frequent conversation about them," Diamond concluded, "was the first decided step in her gradual improvement, and about four months ago she was discharged perfectly cured, and laughed heartily at her former imaginations."[56]

Adrienne Burrows and Iwan Schumacher argue that "Diamond's portraits of his patients are very much the product of non-restraint psychiatry," a reform Diamond himself championed. Diamond took these photographs, they write, during "a period of scarcely thirty years" after the abolition of restraint in British asylums and before "the introduction of the equally coercive use of drugs working directly on a patient's nervous system," a period when it was "possible for an asylum to become literally a refuge for its inmates." They also saw Diamond's efforts as symptomatic of an experimental period in asylum treatment. "Scientific methods had not then become so formalized as to exclude apparently fanciful experiments," they wrote, "such scientifically questionable yet artistically entertaining projects as, for example, photographing 'all the Queens' in an asylum."[57]

In her reading of his essays and photographs, Sharrona Pearl agrees that Diamond's photography was a product of non-restraint psychiatry, but not with Burrows and Schumacher's conception of the asylum of the 1850s as a space of liberty. Pearl argues, rather, that for Diamond the camera was a technological replacement for the physical restraint of psychiatric patients. Citing Foucault's *Madness and Civilization*, she writes

---

56. Hugh W. Diamond, "On the Application of Photography to the Physiognomic and Mental Phenomena of Insanity" (May 22, 1856), in Gilman, *Face of Madness*, 20–21, 23.

57. Burrows and Schumacher, *Portraits of the Insane*, 35, 45.

that "the nineteenth century saw an internalization of these very restraints," and that

Diamond's photographic techniques were one mechanism of the internalization.

"Diamond insisted," writes Pearl, "that looking at photographic representations of

themselves provided patients with the accurate self-reflection required to force them to

recognize their illness.… For Diamond, cure emerged from acknowledgement of insanity,

and treatment consisted of matching internal understanding with external

representations." Rather than controlling patients' physical movement, Diamond sought

to control "the way they saw themselves."[58] For his patients, his photography perhaps

became a technology of the self, facilitating psychological transformations.

Diamond's therapeutic use of photography is notable, though, largely because it was so

rare. Although at least one other asylum superintendent found that "patients are very

much gratified at seeing their own portraits," most who used photography did so only for

documentation.[59] Other media, like audio recording, also came to be used in psychiatry

and clinical psychology primarily for documentation and supervision; humanistic

psychologist Carl Rogers, for example, recorded sessions on phonograph records in the

early 1940s as tools for teaching and research, but apparently did not play them for

patients.[60]

If the photographic psychiatry of the 1850s is evidence that psychiatry was in an

experimental stage, its reinvention a century later suggests that the clinical sciences of

---

58. Sharrona Pearl, *About Faces: Physiognomy in Nineteenth-Century Britain* (Cambridge, Mass.: Harvard University Press, 2010), 150, 173–175; Michel Foucault, *Madness and Civilization: A History of Insanity in the Age of Reason*, trans. Richard Howard (New York: Vintage Books, 1988).
59. T. N. Brushfield, "Application of Photography to Lunacy," *Journal of the Photographic Society*, no. 54 (May 21, 1857), 289.
60. Carl R. Rogers, "The Use of Electrically Recorded Interviews in Improving Psychotherapeutic Techniques," *American Journal of Orthopsychiatry* 12, no. 3 (1942): 429–434.

mind had entered another experimental period. When psychiatrist Floyd Cornelison and

psychologist Jean Arsenian began showing patients photographs of themselves in the late

1950s, then, it appeared to psychiatrist Milton Berger "an historical break-through and

stimulus to other workers to use photographs, motion pictures or videotape for self-image

confrontation with patients."[61]

   "Since ancient times," Cornelison and Arsenian began their paper announcing their

research, "self-knowledge has been considered worthwhile." Psychotic patients generally

weren't introspective, though, so the researchers used photographs to encourage attention

to the self; "this study," they wrote, "evolved from an interest in psychotherapeutic

techniques which would afford psychotic patients an opportunity for acquiring self-

knowledge." Informally, they found that these patients "seemed to pay greater attention to

the self-image photographs than they ordinarily gave to objects outside themselves," in

some cases becoming distraught upon seeing photographs of themselves and in other

cases mellowing.[62]

   Cornelison and Arsenian conducted their formal study with nine men and seven

women at Boston State Hospital, most of whom had been diagnosed with schizophrenia.

They scheduled ten short sessions with each patient. In each session, a researcher

photographed the subject using a Polaroid Land Camera—a relatively novel technology

first marketed ten years earlier, which, they wrote, "provides for development of the final

picture, ready for viewing, in approximately one minute." They then showed the

---

61. Milton M. Berger, "Confrontation through Videotape," in *Videotape Techniques in Psychiatric Training and Treatment*, ed. Milton M. Berger (New York: Brunner/Mazel, 1970), 19.
62. Floyd S. Cornelison, Jr. and Jean Arsenian, "A Study of the Response of Psychotic Patients to Photographic Self-Image Experience," *Psychiatric Quarterly* 34, no. 1 (1960): 1.

photograph to the subject, and discussed the experience, asking "Who is the person in the picture? What do you like about the picture? What do you dislike? What would you like to change? Does the picture remind you of anyone else?" Cornelison and Arsenian also conducted Rorschach, sentence completion, and Draw-a-Person tests before and after the entire period of treatment. In addition, they filmed the women—but not the men—and screened these films, which included sound, in the subsequent sessions.[63]

The researchers described the experience of seeing an image of oneself as one of "confrontation." Each patient's reaction to their first confrontation "conveyed an impression of sudden psychic shock," they wrote. "Facial expression and posture, if not words, reflected an onrush of thought and feeling." There was little difference in the reactions to still photographs and motion pictures.[64]

Although only half their subjects "showed discernible change during the self-confrontation sessions," Cornelison and Arsenian developed a theoretical explanation for the effect of "self-photographs" on their patients.[65]

> Since self-confrontation focuses perception upon an external image of self, this may bring a psychotic individual into better contact with the realistic self. In psychoanalytic formulation, psychosis is a withdrawal of libido from the world of external objects. The photograph of self may be a means of redirecting libido outward. Whether it is surprising, reassuring, or shocking, the image does present a familiar object. It is almost a part of self upon which cathexes have reverted, yet the image is external to the person, and thus is a part of reality to which others can respond, as well as the patient. It is an object that potentially has safe investment value, and

63. Ibid., 2–3; Christopher Bonanos, *Instant: The Story of Polaroid* (New York: Princeton Architectural Press, 2012), 42.

64. Cornelison and Arsenian, "Study of the Response of Psychotic Patients," 4.

65. Ibid., 5, 7.

the experience it generates may initiate further libidinal investments toward the outside world.[66]

This psychoanalytic understanding of mediated self-recognition was antithetical to Krauss'. Where Krauss saw the experience as a form of libidinal investment in the self, Cornelison and Arsenian believed that it offered an opportunity for those who were already experiencing narcissism to safely extend their libidos out into the external world. Where Krauss thought of video artists as "bracketing out the object," these earlier researchers thought that the self-image instead drew the attention of patients to the object, and then into conversation with others about that object. In the 1960s this research, using the instant medium of Polaroid photography, became foundational in the development of video therapy as a distinctive psychotherapeutic practice.

Video Therapy

Closed-circuit television entered medicine in 1947 as a tool for educating physicians about surgical procedures, and psychiatrists similarly starting using the medium in 1956 to show psychotherapy to students without their disruptive presence during a session.[67] Educational videotapes of surgery were first demonstrated in a 1958 meeting of the American Medical Association as one of the first applications of the medium outside of broadcasting.[68] Five years later, Ampex advertised medicine as a major application of

---

66. Ibid., 7.

67. Joy V. Fuqua, *Prescription TV: Therapeutic Discourse in the Hospital and at Home* (Durham, N.C. Duke University Press, 2012), 49–50; M. M. Berger, introduction, in Berger, *Videotape Techniques*, xi.

68. Ampex, *1958 Annual Report*, box 16, series 2, Ampex Corporation Records, Special Collections, Stanford University Libraries, p. 26.

video recording, announcing in its annual report that "videotape television recorders provide immediate playback of televised surgery and fluoroscope pictures."[69]

These applications took little advantage, though, of the distinctive features of electronic media; instead, television was analogous to a one-way mirror, turning greater numbers of medical students, psychiatrists, and nurses into witnesses of the therapeutic process, while videotape was typically a lower cost substitute for film. It thus built on the popularity of motion pictures in medical education which dated back to the 1920s.[70]

In the early 1960s, psychiatrists and other mental health professionals began using video differently, recognizing that, unlike film, it could be played back immediately. Psychology, psychiatrists, and social workers developed new video practices. Practitioners sometimes collaborated in their research but tended to cite prior studies in their own disciplines, making the use of video in psychotherapy less the subject of a single literature than the focus of multiple loosely related research programs.

In most early research, only the therapist or counselor watched the tape of a session, aiming to improve their technique by observing it, rather than to apply video directly to therapy. In one early study, for example, counselors expressed greater confidence after watching a tape and also agreed more with their supervisors in numerical ratings of their performance.[71] In a later case at the University of California, Berkeley, residents and patients watched a tape together "on the premise that the patient often has much to

---

69. Ampex, *1963 Annual Report*, box 16, series 2, Ampex Corporation Records, p. 14.

70. Kirsten Ostherr, *Medical Visions: Producing the Patient through Film, Television, and Imaging Technologies* (Oxford: Oxford University Press, 2013), 48–80.

71. Garry R. Walz and Joseph A. Johnston, "Counselors Look at Themselves on Video Tape," *Journal of Counseling Psychology* 10, no. 3 (1963): 232–236.

contribute to the understanding of what happened," but that process was understood more

as an educational experience for the resident than a therapeutic one of the patient.[72]

**"Psychiatry television studio where portable videotape equipment
is used for studying interviews and groups. Open camera and
cameraman are used. Often the teacher acts as cameraman." 1967.[73]**

The first published experiment in showing tapes to patients themselves took place at

Michigan State University's College of Education, where psychologists Norman Kagan,

David Krathwohl, and Ralph Miller developed a technique called Interpersonal Process

Recall in the early 1960s. IPR, which became a widespread practice for training

counselors, initially involved a symmetrical arrangement in which counselor and client

---

72. Harry A. Wilmer, "Television: Technical and Artistic Aspects of Videotape in Psychiatric Teaching," *Journal of Nervous and Mental Disease* 114, no. 3 (March 1967): 209.

73. Photograph from Harry A. Wilmer, "Television: Technical and Artistic Aspects of Videotape in Psychiatric Teaching," in Berger, *Videotape Techniques*, 213. This article was first published as Wilmer, "Television," *Journal of Nervous and Mental Disease*, immediately above. It begins by noting that "the psychiatric literature about television is practically devoid of illustrations," and includes several photographs to remedy this gap. I've cited text from the article as originally published, but images from the reproduction in *Videotape Techniques*, because the images are reproduced there at higher resolution than they are in the database that includes the original article.

separately watched a tape after their session. "Immediately after the interview is concluded," wrote the researchers, "the counselor and client proceed to separate, darkened viewing rooms to witness a playback of their interview, each in the presence of another trained counselor (referred to as interrogator).… The interrogators encourage the subjects to describe their feelings, interpret statements, and translate body movements at various times during the replayed interview."[74] Both participants in the initial session followed it with a sort of shadow session, in which they used their videotaped behavior as a stimulus for further introspection. For research purposes, these shadow sessions were audiotaped.

In a case study, the researchers described the experiences of Mrs. Jay, "a stylishly dressed woman of 38 [who] complained of suffering from periods of depression and had previously entered therapy on two occasions." Mrs. Jay "was particularly immature and seductive in her relationships with men," they wrote, engaging in an affair with a colleague of her husband, with whom she had not had sexual intercourse in over a year. "Mrs. Jay's previous failures in therapy and her slow rate of progress," wrote the researchers, "defined a rather poor prognosis. At this point she was exposed to an IPR session."[75]

The opportunity to examine her own gestures and rationalizations helped Mrs. Jay understand her own behavior. Participants could pause the videotape and discuss—which, since both monitors displayed a signal from a single VTR, would also provide the other

74. Norman Kagan, David R. Krathwohl, and Ralph Miller, "Stimulated Recall in Therapy Using Video Tape: A Case Study," *Journal of Counseling Psychology* 10, no. 3 (1963): 237.
75. Ibid., 239–240.

pair a symmetrical break for discussion—and the researcher's concluded that in this discussion "affect is verbalized, revealed, and brought to the surface in a way that it was not in the original scene." The IPR technique produced "acceleration of psychotherapy," they wrote, helping Mrs. Jay to repair her marriage, end her affair, and recover from depression. Kagan, Krathwohl, and Miller did not see video or even IPR as essentially a therapeutic technology, though, listing therapy as one of many uses to which it could be put in counseling, along with "(a) validation of theory, (b) gaining new insights about the nature of various supervisory relationships, (c) examination of group processes, (d) eduction of counselors." It was this last use to which IPR was most often put.[76]

The first uses of IPR demonstrate, though, how video was one of several innovations mental health professionals tried as they sought tools, both conceptual and material, to treat a greater variety of patients and conditions. Another example occurs in a frequently cited 1965 article in which psychologist Robert Geertsma and psychiatrist Ronald Reivich presented a somewhat exploratory case study of "a 27-year-old, white, unmarried mother of two illegitimate children who presented herself to [Kansas University Medical Center's psychiatric outpatient clinic] because of financial difficulties, inability to hold a job and trouble with men." They diagnosed her with "a moderately severe personality pattern disturbance with mixed psychoneurotic features," and considered her "a poor candidate for conventional psychotherapy." Instead, one of the researchers videotaped his weekly psychotherapy sessions with her, and she watched the previous week's tape with him before each session.[77]

---

76. Ibid., 237, 241–242.
77. Robert H. Geertsma and Ronald S. Reivich, "Repetitive Self-Observation by Videotape Playback,"

Before watching each tape, the subject evaluated herself psychologically by filling out a questionnaire designed to measure traits such as ego strength, excitability, and dominance. After watching, she evaluated the self she saw on television using the same form. This process continued for seven sessions, then the patient rewatched the tapes over another seven weeks without recording new ones. For comparison, eight student nurses also watched the tapes and evaluated the subject after each one. Geertsma and Reivich observed that after watching the tapes a second time the patient rated herself "less intelligent, less cheerful, less conscientious, less bold and venturesome and more tender-minded," and that her ratings more closely approached those given by the nurses, suggesting "that the subject came to assess herself more realistically during the course of the playback performances." Whether this supposed self-understanding would ultimately lead to greater mental health was not an aspect of the study.[78]

Another 1965 article reported, though, that video could also be a technology of treatment. In 1963, psychiatrists Floy Jack Moore and Eugene Chernell videotaped their conversations with eighty patients admitted to the University of Mississippi Medical Center's neuropsychiatric unit. As far as the researchers knew, this was the first controlled experiment "attempting to evaluate the benefit of visual confrontation as a therapeutic experience for the psychiatrically-ill patient." Moore and Chernell interviewed the patients—most of whom were diagnosed with depression or schizophrenia—within 24 hours of admission, four days later, and at weekly intervals until discharge. Half the patients were taken to a viewing room after each interview to

Journal of Nervous and Mental Disease 141, no. 1 (January 1965): 30–31, 40.

78. Ibid., 31–32, 36, 40.

watch the tapes made so far, while the control group never saw their tapes. The

researchers concluded that the mental health of viewing patients improved more

substantially and that they were discharged more rapidly. When they reported their

results, Moore, Chernell, and coauthor Maxwell West quoted the same passage of Robert

Burns that Aldous Huxley had paraphrased in *The Doors of Perception*: "O wad some

Power the giftie gie us, To see oursels as ithers see us!" "Giving patients a chance to see

themselves as others see them," the researchers concluded, "will have a marked and

beneficial effect on their degree of improvement."[79]

These researchers described their therapy as one of self-confrontation, citing

Cornelison and Arsenian's research as a precedent.[80] In the 1970 handbook *Videotape

Techniques in Psychiatric Training and Treatment*, editor Milton Berger followed this

interpretation, but provided confrontation therapy with a more substantial pedigree. "A

confrontation approach to the patient has been characteristic of almost every type of

psychotherapy endeavor," argued Harry Garner in the book's first chapter, which

reviewed this "overlooked" history of therapies that demand change on the part of the

patient. Even psychoanalysis was confrontational, Garner argued, because "the patient

responds as if there were some element of criticism in every interpretation offered."[81]

Berger was a Columbia University psychiatrist who also ran a private practice. He

became a psychiatrist in 1942, and began incorporating video into his work in 1965.[82]

---

79. Floy Jack Moore, Eugene Chernell, and Maxwell J. West, "Television as a Therapeutic Tool," *Archives of General Psychiatry* 12, no. 2 (February 1965): 217–218, 220.

80. Ibid., 217.

81. Harry H. Garner, "A Review of Confrontation in Psychotherapy from Hypnosis to the Problem-Solving Technique," in Berger, *Videotape Techniques*, 6.

82. Frederick H. Stoller and Milton M. Berger, "Discussants: Video-Tape Papers," *Comparative Group*

"The use of video self-confrontations in psychoanalytic therapy," according to Berger, "serves not only to expose the structural components of a person's bio-psycho-socio-sexual self but also provides a unique opportunity for working through alienation from self by repeated replay of recorded data."[83] In his own chapters, Berger loosely identified video therapy with psychoanalysis. It could be used, he wrote, "by a therapist with any theoretical view of personality dynamics which acknowledges: subconscious or hidden motivation for one's behavior or attitudes; the significance of signs and symbols which regulate and arrange relationships; resistance; [and] transference."[84] Berger's writing about video therapy also drew from the field of cybernetics, though, borrowing in particular the concept of feedback.

This synthesis of Freudianism and cybernetics itself had a lineage extending back to the Macy Conferences. Among the participants in these meetings was Lawrence Kubie, a psychoanalyst and director of the New York Psychoanalytic Institute. Kubie had initially trained in neurophysiology and published a paper in 1930 arguing that epileptic fits and other involuntary movements could be caused by circular patterns of impulses in the brain. It was this work that excited cyberneticians like Warren McCulloch, who were interested in circular, recursive neural behavior. Although Kubie was often antagonistic to the reductive approach other cyberneticians took towards the human mind, he incorporated some of their ideas into his own work.[85]

      Studies 1, no. 2 (May 1970): 183.

83.   Milton Berger, "Multiple Image Self Confrontation," *Radical Software* 2, no. 4 (Fall 1973): 8.

84.   Milton M. Berger, "The Use of Videotape in the Integrated Treatment of Individuals, Couples, Families and Groups in Private Practice," in Berger, *Videotape Techniques*, 119.

85.   Steve Joshua Heims, *The Cybernetics Group* (Cambridge, Mass: MIT Press, 1991), 120–123.

In 1952, Kubie suggested the importance of investigating "the effects of facing an auditory and visual image of one's own psychological activities," which "would put certain psychoanalytic assumptions to searching tests."[86] Seventeen years later, he published a case study that appears to recount his own experiences conversing with a video camera and monitor; Kubie wrote in the third person, but described his subject as "an experienced psychoanalyst" who had first been analyzed forty years earlier, matching his biography. In this study, the subject simply conversed with his own live video image, free associating about recent experiences and his life as a whole. Kubie described this experience in intimate detail, writing that his subject "felt rather than saw faces behind his own face... as a dreamer sees himself in a dream," developing "a vivid sense of the close presence of these predecessors," family members who had made him who he was. This experience intensified as he rewatched tapes of his sessions.[87]

Kubie concluded that such an experience could help patients reconcile their self-image with their bodies and behaviors, "mak[ing] the controlling identification so vivid and so haunting that it would... become impossible to bury or deny or distort them. Yet it is impossible for anyone to process so many layers of identification in a single moment of exposure, [so] exposure to one's own TV image must be provided in a form which can be repeated for restudy."[88] Videotape provided such a capability.

---

86. Lawrence S. Kubie, "Problems and Techniques of Psychoanalytic Validation and Progress," in *Psychoanalysis as Science: The Hixon Lectures on the Scientific Status of Psychoanalysis*, ed. E. Pumpian-Mindlin (Stanford: Stanford University Press, 1952), 62.

87. Lawrence S. Kubie, "Some Aspects of the Significance to Psychoanalysis of the Exposure of a Patient to the Televised Audiovisual Reproduction of His Activities," *Journal of Nervous and Mental Disease* 148, no. 4 (April 1969): 302–303.

88. Ibid., 306.

In the late 1960s, psychiatrists began to see the use of video as a distinct subject within the field, and even perhaps a professional specialty. Berger suggested that portapaks made it possible to affordably introduce video into private practice, providing an opportunity for psychiatrists to follow other medical professionals in demonstrating their expertise and legitimacy through possession and mastery of technical equipment.

> When one considers that general practitioners as well as other medical specialists and dentists spend many thousands of dollars for technical equipment in their professional offices, whereas psychiatrists have to spend little or nothing for their professional equipment, it becomes then a matter of simple education and alteration of habit pattern for psychiatrists to realize that it is in their interest to add special equipment not only for the welfare of their patients but also for their own heightened satisfaction and fulfillment in the practice of psychiatry. It is also important to remember that the cost of special equipment is tax deductible.[89]

In 1969, the *Journal of Nervous and Mental Disease* devoted an issue to "Studies of Self-Cognition," most of which involved videotape, rapidly expanding the number of articles available on the subject.[90] In 1970, Berger published his reader, and a new (and rather short-lived) journal, *Comparative Group Studies*, devoted much of its first two issues to articles on video in group therapy. In 1971, the American Psychiatric Association formed a Video Task Force to develop video-based sessions for its annual conference, appointing Berger, Floy Jack Moore, and four other psychiatrists to it.[91]

Moore obtained a grant from the National Institute of Mental Health to "explore and evaluate the means by which television and videotape can be used to benefit training

---

89. Berger, "Use of Videotape," 120.
90. Robert H. Geertsma, "Studies in Self-Cognition: An Introduction," *Journal of Nervous and Mental Disease* 148, no. 3 (March 1969): 193.
91. Milton M. Berger, letter, *TV in Psychiatry Newsletter* 3, no. 1 (February 1971): 9.

programs in the Mental Health disciplines."[92] In 1969 his TV Project at the University of Mississippi Medical Center began indexing videotapes, compiling bibliographies, and publishing a newsletter, all of which supported the development of a professional community of psychiatrists interested in video. Following the priorities of their grant, most articles in the *TV in Psychiatry Newsletter and Progress Report* concerned the use of video in psychiatric education. The research abstracted at the end of each issue, though, was often concerned with using video with patients.

The TV Project also conducted surveys and maintained "an up-to-date computerized listing of all videotape recorders in use by Departments of Psychiatry [of medical schools] and Mental Hospitals throughout the United States and Canada." In 1969, they reported that they were aware of 143 such recorders, of which 75 were Ampex one-inch VTRs; only ten Sony half-inch recorders had found their way into psychiatry.[93] Less than a year later—presumably with a broader sample—they found a total of 575 recorders of all makes and models, including 262 Ampex one-inch and 91 Sony half-inch recorders.[94]

The Cybernetics of Self

Some therapists argued that conceptual developments, particularly in family therapy, necessitated the use of recording technology. "The systems revolution has required more extensive observation and analysis," wrote Albert Scheflen, Adam Kendon, and Joseph Schaeffer of Bronx State Hospital. "We had previously studied the patient alone, but now

---

92. Naomi Ready and Lyman L. Samo, foreword to Floy Jack Moore, *Television and Videotape in Psychiatry: An Annotated Bibliography and Other Data* (Decatur, Ill.: Learning Media Institute, 1970).
93. "The Tape Jungle," *TV in Psychiatry Newsletter and Progress Report* 1, no. 2 (April 1969): 2.
94. "Survey! Survey! Survey!" *TV in Psychiatry Newsletter and Progress Report* 2 no. 1 (February 1970): 2–4.

we undertook to examine *all* of the participants and understand their relationships [in contexts like] family therapy, group therapy, and therapeutic communities.… *We can well assume that the technology has both resulted from and allowed these developments.*"[95]

"A large group psychotherapy session of 30 prisoners at San Quentin Prison. (Only 11 of the men are visible on this shot.) A portable videotape recorder was brought to the prison and the group photographed with a single camera which moved about the entire circle outside of the men, and obtained a record which was immediately replayed to them after the group." 1967.[96]

New York psychiatrists Ian Alger and Peter Hogan used video extensively in family therapy and conjoint marital therapy. "It may be no exaggeration," they wrote, echoing Timothy Leary's claims about LSD, "to say that videotape recording represents a technological breakthrough with the kind of significance for psychiatry that the microscope has had for biology. For the first time, a hitherto undreamed of quantity of objective data from a therapy session can be obtained and viewed immediately." This data was particularly valuable, they wrote, because "the nature of the therapeutic interactions and transactions and the study of the communication patterns and levels

---

95. Albert E. Scheflen, Adam Kendon, and Joseph Schaeffer, "On the Choices of Audiovisual Media," in Berger, *Videotape Techniques*, 233–235.

96. Photograph from Wilmer, "Television," in Berger, *Videotape Techniques*, 223.

involved have become the increasing focus of attention in the filed of psychotherapy,"

and because "the importance of accurate feedback for the maintenance of biological and

psychophysiological function adaptiveness has received much attention in the

literature."[97] More specifically, they wrote later, video was valuable for therapists who

wanted to understand their patients through theories of communication developed by

anthropologists who themselves relied on film in order to understand interactions

between people. These anthropologists included Gregory Bateson, but also Ray

Birdwhistell, a pioneer of the field of kinesics, or movement analysis, who had also

considered schizophrenia as "a particular class of communicational disturbance."[98]

As Deborah Weinstein writes, "during the 1950s and 1960s, a group of clinicians in the

United States developed a psychotherapeutic approach in treating mental illness"—

family therapy—"that located the source of pathology and the potential for cure in the

cyclical patterns of family interactions rather than in the biological or psychological

characteristics of an individual." Gregory Bateson was an influential contributor to this

new understanding of mental illness. With colleagues including anthropologist and

chemical engineer John Weakland, communications analyst Jay Haley, and psychiatrist

William Fry, in 1952 Bateson began a research project at the Veterans Administration

Hospital in Palo Alto on "The Role of Paradoxes of Abstraction in Communication." This

---

97. Ian Alger and Peter Hogan, "The Use of Videotape Recordings in Conjoint Marital Therapy," *American Journal of Psychiatry* 123, no. 11 (May 1967): 1425–1426; Ray L. Birdwhistell, "Contribution of Linguistic-Kinesic Studies to the Understanding of Schizophrenia," in *Schizophrenia: An Integrated Approach*, ed. Alfred Auerback (New York: Ronald Press, 1959), 101.

98. Ian Alger and Peter Hogan, "Enduring Effects of Videotape Playback Experience on Family and Marital Relationships," *American Journal of Orthopsychiatry* 39, no. 1 (January 1969): 87.

project came to focus specifically on the etiology of schizophrenia, a subject in which

Bateson had been interested since writing *Naven* and traveling to Bali in the 1930s.[99]

The Palo Alto group's research also involved extensive use of visual and auditory

media. They were joined in 1954 by psychiatrist Jon D. Jackson, who had studied with

Frieda Fromm-Reichmann, another psychiatrist who became influential in family therapy

through her attribution of the development of schizophrenia to a "schizophrenogenic

mother" who was both aggressive toward and rejecting of her children. The group filmed

Fromm-Reichmann's therapy sessions "in the spirit of observing another culture's rituals"

of visual anthropology, writes Weinstein, rather than for teaching other therapists. They

also filmed and audiotaped family interviews, and recorded their weekly meetings, in

which they discussed specific cases of schizophrenia they were each following, on

audiotape.[100]

In their influential 1956 article "Toward a Theory of Schizophrenia," Bateson, Jackson,

Haley, and Weakland presented a theory of the social formation of schizophrenia through

what they termed "double binds." Invoking Alfred North Whitehead and Bertrand

Russell's Theory of Logical Types, they described schizophrenia as an adaptation to a

pattern of interactions in which one family member was told by others both that they

must behave in a certain way or face punishment and, through a more abstract form of

communication (often nonverbal), some contradictory message. In the example they

provided, a mother instructed her son to express his feelings of love towards her but also

---

99. Deborah Weinstein, *The Pathological Family: Postwar America and the Rise of Family Therapy* (Ithaca, N.Y.: Cornell University Press, 2013), 2, 48–49, 54, 59.
100. Ibid., 30, 59, 62, 67.

stiffened when he embraced her, suggesting a threat of rejection regardless of how he behaved. Such repeated interactions, argued the Palo Alto group, would render the subject unable to distinguish between such levels of communications, confusing the literal and the metaphorical, the concrete and the abstract.[101] Bateson thought of schizophrenia, as Andrew Pickering writes, "as an instance of the whole system reaching a state of equilibrium having bizarre properties."[102]

As Weinstein writes, "family therapists' early commitment to visual technologies such as film and closed-circuit television materialized key aspects of their shift from individual, one-on-one psychotherapy to family therapy. The shift among a few psychiatrists in the 1950s from treating individual patients to treating whole families entailed new attention to observable interactions among family members."[103] In the 1960s, many of the psychiatrists who adopted video were strongly influenced by Bateson's psychiatric research in particular, including Milton Berger, who in 1977 organized a conference entitled "Beyond the Double Bind" that featured Bateson, Haley, Weakland, and Scheflen and was attended by nearly a thousand people.[104]

Victor Gioscia was also a Batesonian. "Bateson wrote about double binds in *1956*," he wrote, "long, long before anything like portable video was around. So, another paradox: the theory of videotherapy was around long before portapaks were." Embracing family

---

101. Gregory Bateson, Don D. Jackson, Jay Haley, and John Weakland, "Toward a Theory of Schizophrenia," *Behavioral Science* 1 (1956): 251, 259.

102. Andrew Pickering, *The Cybernetic Brain: Sketches of Another Future* (Chicago: University of Chicago Press, 2010), 175.

103. Weinstein, *Pathological Family*, 146.

104. Milton M. Berger, introduction to *Beyond the Double Bind: Communication and Family Systems, Theories, and Techniques with Schizophrenics*, ed. Milton M. Berger (New York: Brunner/Mazel, 1978), xi.

therapy's premise that schizophrenia in particular was the product of disordered communication rather than individual disease, Gioscia wrote that "if you wanna fix it (do therapy on it) you gotta fix the network, which means locate its channels of communication, find out where and when simultaneous contradictory messages occur, and communicate differently."[105] In a review of Bateson's 1972 collection of essays *Steps to an Ecology of Mind*, Gioscia described its author as someone who wrote about knowledge, adaptation, and evolution "more profoundly, more extensively, and more wisely than any other human I know of."[106]

Despite these anthropological influences on video therapy, the use of video in anthropology itself was very limited in the 1960s. Bateson had started using video, particularly to watch behavior in slow motion, but—in collaboration with neurophysiologist and psychedelic researcher John Lilly—he had also shifted his subject of study from humans to dolphins.[107] "To our knowledge," wrote visual anthropologist Jay Ruby in 1970, "portable videotape recorders (VTR) have been employed by only a few social scientists in the field."[108]

The only anthropologist to write about his use of video at the time was Joseph Schaeffer, who, supervised by Lambros Comitas, Marvin Harris, and Margaret Mead, completed a dissertation at Columbia University on "Videotape Techniques in

---

105. Gioscia, "Notes on Videotherapy," 3.

106. Victor Gioscia, review of *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*, by Gregory Bateson, and *Our Own Metaphor: A Personal Account of a Conference on the Effects of Conscious Purpose on Human Adaptation*, by Mary Catherine Bateson, *American Journal of Orthopsychiatry* 43, no. 1 (January 1973): 169.

107. Gregory Bateson to Mr. Hartman, September 30, 1966, in Video Hawaii file, box 35, Correspondence series, Gregory Bateson Papers, University of California, Santa Cruz; David Lipset, *Gregory Bateson: The Legacy of a Scientist* (Boston: Beacon, 1982), 235.

108. Jay Ruby, "Feedback," *Radical Software* 1, no. 2: 23.

Anthropology" in 1970. Schaeffer's research involved recording "extended coverage of daily activities in two Afro-American and two Puerto Rican households" in New York, research he conducted as part of the Bronx State Hospital's Project in Human Communication with the goal of "understanding of problems related to activity in architecturally confining space among members of various cultures in an urban setting." The Project's director, psychiatrist Albert Scheflen, was himself a collaborator of Birdwhistell who had published an extensive kinesic study of a single filmed psychotherapy session and introduced video in several psychiatric institutions. (Schaeffer also thanked New York video equipment dealer and technician Chi Tien Lui, an active member of the experimental video community, for his technical support.)[109] The first intentional, analyzed use of video in anthropology occurred—as Mead and Bateson's use of film in Bali had—at the discipline's intersection with psychiatry.

In 1969, Gioscia, Scheflen, and other therapists founded the Center for the Study of Social Change, an organization affiliated with Roosevelt Hospital in New York.[110] "The members of the Center," they wrote, "regard the contemporary political revolution as only one of the manifestations of an era of rapid social change in which our styles of life

109. Joseph Herbert Schaeffer, "Videotape Techniques in Anthropology: The Collection and Analysis of Data" (PhD diss., Columbia University, 1970), i, 2; Joseph H. Schaeffer, "Videotape: New Techniques of Observation and Analysis in Anthropology," in *Principles of Visual Anthropology*, ed. Paul Hockings (The Hague: Mouton, 1975), 258; Albert E. Scheflen, *Stream and Structure of Communicational Behavior: Context Analysis of a Psychotherapy Session* (Philadelphia: Eastern Pennsylvania Psychiatric Institute, 1965), republished as Albert E. Scheflen, *Communicational Structure: Analysis of a Psychotherapy Transaction* (Bloomington: Indiana University Press, 1973); Human Distress and Rapid Social Change conference transcript, December 15, 1969, Princeton Conf. II, 12-15-69 file, box 80, Related Materials series, Bateson Papers, p. A-120; Chi Tien Lui, interview by Emanuel Lorrain, May 30, 2011, PACKED, http://packed.be/en/resources/detail/interview_met_chi_tien_lui_ctl_electronics.
110. Center for the Study of Social Change, Request for Assistance to Cultural Organizations, Center for the Study of Social Change 70-0972-F file, box 104, NYSCA Files, pp. 1, 3.

are increasingly altered. The professions who bear the responsibility of relieving human distress in this era are no less challenged than those who seek their help, and yet they find their present theories and techniques insufficient."[111]

That December, the Center hosted a conference on "Human Distress and Rapid Social Change" in Princeton. Among the twenty attendees were several men who had contributed to family therapy and the application of video to it, including Gioscia, Sheflen, and Bateson. Other attendees included Edgar Auerswald, who advocated a widely-adopted "ecological" approach to family therapy, and Warren Brodey, who had turned from clinical psychiatry to "studying psychiatric relations at the man-machine interface," including video. Gioscia also asked Paul Ryan and Frank Gillette to attend as videographers.[112]

Once the conference began, attention quickly turned to its form. "Just the first fucking thing we do is get rid of the table," suggested Gillette, sparking a debate about the effects of tables on social inhibition that pitted Scheflen and Gioscia against Gillette and Brodey. Such questions mattered, argued Brodey, because he wanted conference participants to

---

111. "Research Center for the Study of Social Change," Princeton Conference file, box 27, Correspondence series, Bateson Papers.

112. "Conference Participants," Princeton Conference file; Weinstein, *Pathological Family*, 73–75; Human Distress and Rapid Social Change conference transcript, December 15, 1969, p. A-212.

Brodey published extensively as his interests shifted from psychoanalysis to family therapy to "evolutionary technology," user interfaces, artificial intelligence, ecology, and the counterculture. See, for example, Warren M. Broday and Nilo Lindgren, "Human Enhancement through Evolutionary Technology," *IEEE Spectrum*, September 1967, 87–97.

He had also recently shot a film which can perhaps best be described as a deliberately silly explanation of his professional evolution. Brodey stands with his head inside the frame of a television set, appearing on TV by stepping inside one rather than electronically. "I was a psychiatrist," he explains, but then he realized that "the earth is sick" and that the environmental crisis demands that people live more playfully, a lesson he attributes to Warren McCulloch. "Television is for all of you," Brodey tells his audience. "It's a means of having fun." Warren Brodey, "Warren Brodey M.D.," YouTube video, 3:34, 1969, posted February 5, 2008, https://www.youtube.com/watch?v=xA0nJHSLyEA.

engage with a "language of change" concerned with tools, with technologies of consciousness. "I helped bring the television in here," he explained, "because I care that we bring into this room some of the elements that outside there—and here, because here is outside as well—actually make a difference." He also suggested that video could help the participants understand their differences and "see the kinds of different worlds we create, as each of us holds that camera and tries to pick out what's important."[113]

Much of the conversation focused, then, on the merits of the counterculture and whether a hip approach to video and social change could be more productive than a psychiatric one. As the young videographers attempted to engage the group in video feedback, Scheflen objected that the assembled social and behavioral scientists had more experience with such media. He noted Bateson's pioneering role in ethnographic film, and that those present included "the first person to put video cameras in the home… and the second person to ever film psychotherapy sessions," apparently Scheflen himself. "So you have got a funny carrying of coals to Newcastle."[114] The engagement between experimental videographers and scientists that began at that contentious conference did bear fruit, though, particularly through Bateson's later influence on the work of Gillette and Ryan.

Ryan rejected psychotherapy in a 2009 interview, describing himself as "one of those people Julia Kristeva describes who has been raised Catholic and doesn't like the whole notion of therapy."[115] His own space for video confession was more literal; his 1970

113. Human Distress and Rapid Social Change conference transcript, December 14, 1969, Princeton Conf. I, 12-14-69 file, box 80, Related Materials series, Bateson Papers, pp. 14–26, 47–49.
114. Human Distress and Rapid Social Change conference transcript, December 15, 1969, p. A-141.
115. Ryan, interview by Scott and Wasiuta, "Cybernetic Guerrilla Warfare Revisited," 126.

installation *Ego Me Absolvo,* Ryan wrote, was an "ordinary single penitent confessional set up against the wall of the gallery. Penitent (gallery goer) goes into the confessional and kneels. He flips on an audiotrack which guides him through an appropriate confession. While he confesses, his face is videotaped. When finished making his confession, he goes round where the priest sits and watches the replay of his own confession."[116] While Ryan shared with video therapy a belief that the incitement to mediated discourse with the self could bring about self-understanding, he adopted not the modern mode of psychiatric examination but rather the more venerable mode of Catholic confession and penance.[117]

Upon reading Bateson's essay "The Cybernetics of 'Self': A Theory of Alcoholism," though, Ryan experienced a conversion.[118] Bateson argued that mind is not bounded by our individual bodies or selves, but rather "is immanent in the larger system—man *plus* environment." This is what Andrew Pickering might term a non-modern ontology; Bateson depicted mind as not merely a component of a cybernetic system but itself a cybernetic system. "When we seek to explain the behavior of a man or any other organism, this 'system' will usually not have the same limits as the 'self,'" wrote Bateson. This was a critique of the concept of self, which Bateson like Foucault recognized was socially constructed. In contrast to Foucault's technologies of the self, though, Bateson focused optimistically on technologies of selflessness—like Alcoholics

116. Rose Art Museum, *Vision & Television: An Exhibition of the Poses Institute of Fine Arts* (Waltham, Mass.: Rose Art Museum, 1970).
117. Michel Foucault, *The History of Sexuality: An Introduction*, trans. Robert Hurley (New York: Vintage Books, 1990), 18, 30.
118. Ryan, *Video Mind, Earth Mind*, 174–175.

Anonymous' recognition of powerlessness in "Cybernetics of 'Self'"—in order to find a way out of modern self-absorption. "Foucault's concern was with the histories of specific techniques of *self-control*, aimed at forming specific variants of the autonomous freestanding individual, of the modern self," writes Pickering. "The technologies that we need to explore, in contrast, undermine the modern duality of people and things by foregrounding couplings of self and others."[119]

Reading Bateson prompted Ryan to reconceptualize his experiments with video in more explicitly cybernetic terms and extend his notion of infolding beyond the individual. "The cybernetic extension of ourselves possible with videotape does not mean a reinforcement of the ordinarily understood 'self,'" wrote Ryan. Instead of "zooming in on 'self' to the exclusion of environmental or social systems," people could use video to become more aware of their unity with their environments.[120] Such explorations of ecology and community represented an escape from the aesthetics of narcissism that Rosalind Krauss described as the "video's real medium," and formed much of experimental video in the 1970s—about which more in the next chapter.

When Berger published a revised edition of his book in 1978, a preface suggested that "although still colored by the ambiguous appeal of novelty, the field of videotape techniques in psychiatric treatment and training is about ready to take stock of what has been accomplished and of what the future holds in store."[121] Five years later, Berger

---

119. Gregory Bateson, "The Cybernetics of 'Self': A Theory of Alcoholism," in *Steps to an Ecology of Mind* (1972; Chicago: University of Chicago Press, 2000), 317; Pickering, *Cybernetic Brain*, 18–19, 74–75.
120. Paul Ryan, "Self-Processing," *Radical Software* 1, no. 2: 15.
121. John P. Spiegel, preface to *Videotape Techniques in Psychiatric Training and Treatment*, rev. ed., ed. Milton M. Berger (New York: Brunner/Mazel, 1978), vii.

wrote a foreword to a handbook of video activities, *Video in Mental Health Practice*, by psychologist Ira Heilveil, and similarly suggested that the pioneering era of video therapy had ended.[122] Video did not, though, come to play the central role in psychiatry that microscopy did in microbiology.

As a conscious set of techniques and concerns, video therapy did not survive its pioneering days. Gioscia attributed the "resistances" of psychiatrists, as he termed them, to not wanting to confront their own video images.[123] I can suggest a few other reasons why video therapy did not remain a field. First, video equipment lost its "ambiguous appeal of novelty" and became increasingly mundane, associated with domestic entertainment rather than expert care. Second, advocates of video therapy like Berger insisted their techniques were supplemental to existing modalities and refused to construct a new psychotherapeutic tradition. Most critically, though, these advocates associated themselves with intensively conversational therapeutic modalities like psychoanalysis and family therapy.

Video was a psychiatric technology in the same sense as electroshock or Thorazine, but embedded in psychotherapy rather than parallel to or in competition with it. As biological models of mental illness and psychopharmaceutical treatments became more prominent and promising, psychiatrists adopted them as sources of technical authority rather than video recorders. If the origins and treatment of disease were to be found in chemistry or genetics, then a tool for processing memories and examining communications patterns no

---

122. Milton M. Berger, foreword to *Video in Mental Health Practice: An Activities Handbook*, by Ira Heilveil (New York: Springer, 1983), xi.
123. Gioscia, "Notes on Videotherapy," 2.

longer fit the task of therapy. Psychiatrists were not faced with a simple choice between social and technological approaches to mental illness, but rather with many sociotechnical systems to choose from, among them the couch and monologue of psychoanalysis, the drugs and dialogue most commonly available from psychiatrists today, or the video recorder and trilogue—of patient, psychiatrist, and monitor—of video therapy. ("Freud's greatest contribution was horizontal," wrote Gillette's friend Marco Vassi, "but it was never accorded its proper weight, either by himself or anyone who came after. This was his asking the patient to lie down, an innovation that was given second-class status as one of the aspects of technique, which itself has been considered not nearly as important as theory."[124]) Video thus represents just one alternative path along which psychiatry could have developed, one alternative synthesis of the social and technological.

The development of this possibility in psychiatry drew on precedents in the use of visual media in anthropology, and particularly on Bateson's mediating role as a practitioner of both anthropology and psychotherapy. And beyond the sciences, both Bateson and Gioscia had a crucial influence in the development of video art, persuading artists Frank Gillette and Paul Ryan to turn their cameras on ecological phenomena in order to produce a systemic understanding of human interactions with nature. The development of a shared discourse surrounding video, then, depended on intellectual and material continuities between the human sciences of anthropology and psychiatry, as well

---

124. Marco Vassi, *Lying Down: The Horizontal Worldview* (Santa Barbara: Capra/Catalyst, 1984), 74.

as on the role of prominent human scientists in the development of the cybernetic theories

that proved such a rich resource for experimental videographers across the disciplines.

Chapter 4
The Videosphere:
Media, Ecology, Community

In December 1968, Frank Gillette began a collaboration with Ira Schneider, a filmmaker who had earned a master's degree in psychology from the University of Wisconsin. Together, they produced the installation *Wipe Cycle*, an array of nine television monitors exhibited in Howard Wise's 1969 show *TV as a Creative Medium*. *Wipe Cycle* played what Gillette referred to as "live and delayed feedback," cutting between live images of the viewers, images from several seconds before, broadcast television, and pre-taped footage of cows, the earth from space, and the exhibit itself being constructed. "It was an attempt to demonstrate that you're as much a piece of information as tomorrow morning's headlines," said Gillette. "Somehow," added Schneider, "there's a juxtaposition between the now of the person, the individual, with other elements of information about the Universe and America, and so the general reaction seems to have been a somewhat objectifying experience, and also a somewhat integrating experience in terms of one's place in the Universe."[1]

The goal of *Wipe Cycle* was to integrate the individual into society and the cosmos as *Everyman's Moebius Strip* brought together two aspects of the self. Such attempts to make systems apparent, and to make viewers feel part of them, became major themes of

---

1. Frank Gillette and Ira Schneider, interview by Jud Yalkut, "Frank Gillette and Ira Schneider: Parts I and II of an Interview," *Radical Software* 1, no. 1 (Summer 1970): 9–10, reprinted from *The East Village Other*, July 30, 1969; Ira Schneider, résumé, last modified March 16, 2015, http://ira-schneider.com/artist/Resume.pdf; Howard Wise Gallery, *TV as a Creative Medium* (New York: Howard Wise Gallery, 1969).

experimental video, as well as of the theories videographers constructed to make sense of their new medium. So did the collective form of social organization, which attempted to integrate the individual into a cohesive group with a shared aesthetic or political vision. In the 1970s, such projects often went beyond visualizing social systems and interpreted natural ecology as well, in efforts to help viewers understand their relationships with the natural world.

Frank Gillette and Ira Schneider, *Wipe Cycle*, 1969.[2]

TV as a Creative Medium catalyzed this activity. Michael Shamberg, a journalist who met Frank Gillette through a college friend, covered the show for *Time*. "The younger generation has rebelled against its elders in the home," he wrote. "It has stormed the campuses. About the only target remaining *in loco parentis* is that preoccupier of youth, television. Last week the television generation struck there too.… The ten artists, all in their 20s or 30s, are sculptors from the Kinetic School, research protégés of Marshall

---

2. Photograph from openmedi, last modified April 10, 2015, http://wiki.openmedi.de/assets/004_Wipe-Cycle-1969.jpg. A brief film of *Wipe Cycle* may be viewed at http://www.eai.org/supportingDocumentView.htm?id=691.

McLuhan or electronics experimenters, united by disgust with usual TV fare."[3] Shamberg

wanted to join the revolution, and began talking with Gillette about starting a business.[4]

Art and Access

"Raindance," wrote Shamberg, "in Frank's elegant vision, would function as the counter-

culture's analogue to the Rand Corporation—a think tank that would use videotape

instead of print. In those days everyone was very taken by the fact that for a few hundred

dollars you could form your own corporation and be an officer." Shamberg and Gillette

were joined in the venture by Fred Vassi, Louis Jaffé, "and an erstwhile business manager

who shall remain nameless because of his ineptitude."[5] Vassi was a longtime friend of

Gillette and a spiritual seeker who would soon change his first name to Marco after

Marco Polo. Though he had once been a magazine editor and psychology graduate

student, he spent the late 1960s teaching relaxation and sampling communities including

the Communist Party, the mystical Gurdjieff Foundation, Scientology, San Francisco

communes, and eventually Raindance.[6] Jaffé was a musician who had inherited enough

money ("and felt guilty about it," according to Shamberg) to put $70,000 into the

organization over the next year and a half.[7] A few months later Schneider joined as well,

---

3.   Deirdre Boyle, *Subject to Change: Guerrilla Television Revisited* (New York: Oxford University Press, 1997), 10; [Michael Shamberg], "The Medium: Taking Waste out of the Wasteland," *Time*, May 30, 1969.

4.   Michael Shamberg and Raindance Corporation, *Guerrilla Television* (New York: Holt, Rinehard and Winston, 1971), section II, p. 11.

5.   Ibid., section II, pp. 11–12

6.   Marco Vassi, *Lying Down: The Horizontal Worldview* (Santa Barbara: Capra, 1984), p. 103; Marco Vassi, *The Stoned Apocalypse* (New York: Trident, 1972).

7.   Shamberg and Raindance, *Guerrilla Television*, section I, p. 37, section II, p. 12; Davidson Gigliotti, "A Brief History of RainDance," 2003, Radical Software, last modified March 1, 2012, http://radicalsoftware.org/e/history.html.

and in 1970 Shamberg quit a job at *Life* magazine to do video fulltime.[8] Paul Ryan also participated in Raindance as a consultant, and was sometimes described as a member.[9]

Raindance was not the first video organization Gillette had cofounded. In fall 1968, while he was taping in the East Village, Gillette met printmaker and painter Howard Gutstadt. Through Gutstadt he then met David Cort and Ken Marsh, who had developed "a kind of community cultural enrichment program" at the Brooklyn Children's Museum and recently been introduced to video by Eric Siegel. The four of them and Gillette's collaborator Harvey Simmons formed perhaps the first video collective, Commediation. They produced a documentary on the Ocean Hill-Brownsville Crisis, in which a local school board in a majority black neighborhood fired 18 white teachers and administrators, sparking citywide teachers' strikes; Commediation and other artists also taught classes as substitutes for striking teachers. Commediation had only lasted about two months as a group, though, before its members turned to other interests.[10] Cort would go on to cofound the Videofreex, about which more in the following chapter. Gutstadt

---

8. Shamberg and Raindance, *Guerrilla Television*, section II, p. 12; David Cort, Phyllis Gershuny, Curtis Ratcliff, and Michael Shamberg, interview by G. Roy Levin, July 15, 1970, "Raindance (Michael Shamberg) and Videofreex (David Cort)," in G. Roy Levin, *Documentary Explorations: 15 Interviews with Film-Makers* (Garden City, N.Y.: Doubleday, 1971), 384.

9. Raindance, "Progress Report—NYSCA Grant to Raindance Corp.," May 24, 1971, The Raindance Foundation 71-048 F file, box 488, New York State Council on the Arts Grant Application Files (14064-84) [hereafter NYSCA Files], New York State Archives, p. 3.

10. Ken Marsh, interview by Jud Yalkut, "People's Video Theater and Woodstock Community Video," in Jud Yalkut, "Electronic Zen: The Alternate Video Generation" (unpublished typescript, 1984), Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive/Artists10/Yalkut,Jud /ElectronicZen.pdf, pp. 1–3; Shamberg and Raindance, *Guerrilla Television*, section II, p. 11; Jerald E. Podair, *The Strike that Changed New York: Blacks, Whites, and the Ocean Hill-Brownsville Crisis* (New Haven: Yale University Press, 2002), 101, 115–141.

and Marsh founded People's Video Theater along with Elliot Glass, a Spanish instructor at Queensboro College who had been using video in his teaching.[11]

Meanwhile, in September 1969 John Reilly, a filmmaker with a master's degree in communications from New York University who taught at the New York Institute of Technology and Rutgers University, and Rudi Stern, an artist who had been producing light shows for several years, started another organization, Global Village. They were initially joined by Ira Schneider, who had worked with Reilly before, but who left the group for Raindance after only a few months. Stern had collaborated with Timothy Leary, producing an elaborate performance, *Death of the Mind*, that combined music, projected images, and dramatic performance to simulate an LSD experience—and had sued Leary, for incorporating his art into the 1967 film *Turn On, Tune In, Drop Out* (released for only a week in Los Angeles and then suppressed) without compensating him. At Millbrook, Stern recalled, "I'd come down and Marshall McLuhan would be sitting at the table. We'd have some eggs together." Global Village assembled a multiscreen video environment, "a 360 degree experience involving three channels in which one could orchestrate the audio independently with the video, so that we had six elements on the palette."[12]

These groups sought funding from private foundations and attempted to sell their services commercially, but they generally failed at both. Instead, experimental video

11. Marsh, interview by Yalkut, "People's Video Theater and Woodstock Community Video," 5.
12. John Reilly, interview by David Gigliotti, December 14, 1999, Early Video Project, last modified May 24, 2001, http://davidsonsfiles.org/johnreillyinterview.html; Rudi Stern, interview by David Gigliotti, December, 1999, Early Video Project, last modified May 24, 2001, http://davidsonsfiles.org/rudisterninterview.html; professional biographies of John Reilly and Rudi Stern (1970), Global Village, Inc. ACI70–71 70-0720FV file, box 242, NYSCA Files; Robert Greenfield, *Timothy Leary: A Biography* (Orlando: Harcourt, 2006), 284–286, 305.

depended for its development on generous state funding, particularly in New York. In 1969 the New York State Council on the Arts was searching for projects to fund with its ballooning budget. Many of New York's most prominent cultural institutions, including the New York Public Library, were facing bankruptcy, so Governor Nelson Rockefeller persuaded the state legislature to increase the funding granted to NYSCA, then a small agency, from $2.5 million to $20.2 million so that it could in turn grant money to beleaguered institutions. NYSCA then also granted money to new organizations, though, including $1.5 million to film, television, and literature in its first year with an increased budget.[13]

NYSCA hired Paul Ryan as a consultant to help them distribute this money, and the video collectives began soliciting state funding.[14] The bureaucrats who managed that money broadly shared the goals of experimental videographers. They "made substantial efforts," as Program Director Peter Bradley wrote in an annual report, "to insure that the tools contemporary television technology can offer for individual creative expression— specifically the portable systems which can be operated by a single person—will be liberated from the control of the existing TV establishment." NYSCA also specifically directed funding to artists who established what came to be called "access centers," at which both video equipment and training on how to use it were available to anyone, "to

13. New York State Council on the Arts, *New York State Council on the Arts Annual Report, 1969–70* (New York: New York State Council on the Arts, 1970), 18; New York State Council on the Arts, *New York State Council on the Arts Annual Report, 1970–71* (New York: New York State Council on the Arts, 1971), 7, 11, 15. See also Gerd Stern, "Support of Television Arts by Public Funding: The New York State Council on the Arts," in *The New Television: A Public/Private Art*, ed. Douglas Davis and Allison Simmons (Cambridge, Mass.: MIT Press, 1977), 140–156.
14. Peter Bradley, interview by Davidson Gigliotti, December 17, 1999, Early Video Project, last modified May 13, 2000, http://davidsonsfiles.org/PeterBradleyPart1.html.

make portable video available," as Bradley wrote, "as a medium through which people throughout the State could express their personal concerns and aspirations—to put them, as it were, *behind* the TV screen rather than in front of it."[15]

Raindance presented NYSCA with an ambitious proposal to establish a Center for Decentralized Television at the Jewish Museum, where Raindance would operate a media center, loan portapaks to artists and community organizations, provide consulting on the use of video, and re-grant money to other videographers on a total budget of $262,680. Bradley supported the proposal; "I became convinced," he recalls, "that it made a lot of sense in terms of instead of parceling out relatively small sums to a whole bunch of people, that maybe a better way to advance the medium was a pool of funds which would have a kind of critical mass and therefore a coherence that could advance the medium faster in terms of societal impact." NYSCA's Film and Other Media Committee recommended that the Center be fully funded, and Shamberg was apparently told it would be, or so he told artist G. Roy Levin.[16]

John Reilly and Rudi Stern objected strongly to this arrangement and to Ryan's role as a consultant to both Raindance and NYSCA.[17] "Its structure does not reflect a broad decentralization or democratization of the actual functioning of the center," they wrote to NYSCA administrator Arthur Kerr, "bur rather concentrates most of the power and

15. New York State Council on the Arts, *New York State Council on the Arts Annual Report, 1970–71*, 15.

16. Minutes of a meeting of the New York State Council on the Arts, July 9, 1970, NYS Council on the Arts file, box 12, Commission on Cultural Resources Administrative and Project Files (A0736-79), New York State Archives; Bradley, interview by Gigliotti; Cort, Gershuny, Ratcliff, and Shamberg, interview by Levin, "Raindance (Michael Shamberg) and Videofreex (David Cort)," 389.

17. John Reilly and Rudi Stern to Karl Katz, August 26, 1970, Global Village, Inc. ACI70–71 70-0720FV file, p. 1.

money into the hands of the few."[18] The underground newspaper the *East Village Other*, for which they both wrote, published an article characterizing Raindance's proposal as a power grab under the headline "Tape Rape."[19] Ultimately, NYSCA made smaller grants to each of New York's video groups—$35,000 to Raindance through John Culkin's Center for Understanding Media, $73,500 to the Videofreex through the Rochester Museum and Science Center, $36,380 to People's Video Theater through the American Crafts Council, and $35,000 to Global Village—and continued to do so in future years.[20] (Incorporated as a nonprofit, Global Village could receive grants directly; the other collectives soon reincorporated so they could as well.)

NYSCA also granted $50,000 to Victor Gioscia's Center for the Study of Social Change. Gioscia had initially sought a grant "to record a spontaneous history of artists confronting social change," but through conversations with administrator Eric Larrabee agreed more specifically to conduct a study of the four New York video groups as a participant-observer and produce a video documentary about them.[21] "The video underground situation damn near blew up," wrote Larrabee in a memo. "After two long talks with him, I came to the conclusion that Vic Giosca was the man to ride herd on it. That bunch of paranoids trusts him, to the extent that they trust anybody, and in a strange

18. John Reilly and Rudi Stern to Arthur Kerr, October 26, 1970, Global Village, Inc. ACI70–71 70-0720FV file, p. 2.
19. Alex Gross, "Tape Rape," *East Village Other*, September 22, 1970.
20. New York State Council on the Arts, *New York State Council on the Arts Annual Report, 1970–71*, 23–24.
21. New York State Council on the Arts, Cultural Services Agreement (April 1, 1971); Center for the Study of Social Change, Request for Assistance to Cultural Organizations (July 9, 1970), p. 3; Victor Gioscia to Eric Larrabee; all in Center for the Study of Social Change 70-0972-F file, box 104, NYSCA Files.

way he almost wants what may well be an impossible job."[22] NYSCA officials were

ultimately frustrated with the results, though; "the videotape submitted," wrote TV/Media

Program Associate Russell Connor, "is a fascinating artistic statement but cannot

remotely be considered a report."[23]

Much of Raindance's funding went towards publishing *Radical Software*, a magazine

started by two women from outside the original group. Phyllis Gershuny (now Phyllis

Segura) was a filmmaker thinking about the future of communication, inspired by

William Burroughs among others. When she met Burroughs in March 1970, she writes, "I

remember discussing his idea of a 'band' of people spread across a road, all with video

cameras recording the same thing from a variety of perspectives." She began working on

a questionnaire of those using new media, and on a newsletter, in collaboration with

Beryl Korot, who worked at the *New York Review of Books* and lived with Ira

Schneider.[24]

Gershuny was primarily responsible for the vision of *Radical Software*. "Only Beryl

and I compiled and edited the material" for the first issue, she writes in a recent essay

intended to correct a historical record in which credit is granted to Raindance. "It is

important to stress the fact that *Radical Software* was a *fait accompli* BEFORE it was a

journal published by Raindance, a 'think tank' with no visible agenda." Michael

Shamberg and Raindance, writes Segura, were listed as publisher on the masthead of

22. Eric Larrabee to Arthur Rashap, March 3, 1971, Center for the Study of Social Change 70-0972-F file.
23. New York State Council on the Arts "All Purpose Form," August 1972, Center for the Study of Social Change 72-391/F file, box 104, NYSCA Files.
24. Phyllis (Gershuny) Segura, "Creating *Radical Software*: A Personal Account," *Rhizome*, April 28, 2015, http://rhizome.org/editorial/2015/apr/28/creating-radical-software-personal-account/; Gigliotti, "Brief History of RainDance."

Radical Software because they funded it, but "they were not the ones with the vision for this publication."[25]

Nonetheless, Shamberg did have some role in producing that first issue. In the video I referred to at the beginning of chapter 2, he and Korot are pasting it up together. Shamberg describes an editorial meeting he attended, and he and Korot suggest they both worked on the issue's editorial statement, which boldly set out the technological determinism, survivalism, and concern for appropriate technology that became defining characteristics of Raindance's public image and Shamberg's writing in particular.

> Power is no longer measured in land, labor, or capital, but by access to information and the means to disseminate it…. Unless we design and implement alternate information systems which transcend and reconfigure the existing ones, other alternate systems and life styles will be no more than products of the existing process….
>
> Our species will survive neither by totally rejecting nor unconditionally embracing technology—but by humanizing it; by allowing people access to the informational tools they need to shape and reassert control over their lives.[26]

"Some of us were insensitive to literary style," Shamberg accuses in the video. "And some of us were insensitive to humanity," responds Korot.[27]

These insensitivities on the part of Raindance members increased as *Radical Software* became a successful publication with wide distribution. By issue three, writes Segura,

---

25. Segura, "Creating *Radical Software*."
26. Editorial, *Radical Software* 1, no. 1.
27. Raindance, video of *Radical Software* production (1970), in Elizabeth Coffman, "Raindance Reunion," video, 2:04:16, from an event on November 30, 2010, Vimeo, posted June 11, 2011, https://vimeo.com/24978087; Segura, "Creating *Radical Software*."

"my ideas were being censored," and she decided to leave the project she had started and move to California. "I could have used the advice of a lawyer," she notes now.[28]

Korot and Gershuny were not fully accepted into Raindance; as the latter writes, "1970 was still a time when the integration of women into counterculture organizations was not fully accomplished."[29] As Vassi wrote, "the v.t. gang is a gaggle of white and jewish, middleclass, twenty to thirty-five, longhaired hippy businessmen into dope.… Women are conspicuous by their absence or relegation to minor tasks. One sees no black faces; the gay have not been involved."[30] Women played critical roles in experimental video, but roles often subordinate in prestige to the male-dominated activities of creating video and theorizing about it. In a letter criticizing Shamberg's account of the video movement for omitting her work with Gershuny, Korot described her role, and those of the men in Raindance, as strongly gendered: "Parallel to many of these make a fast buck profit 'male' orgs which you describe," she wrote, "*no* mention was made of 2 women who were putting together a paper in order to get these disparate factions intercommunicating to form a network."[31]

Radical Software was successful at fostering this communication, though, both under its initial editors and under later editors including Shamberg, Schneider, Megan Williams, and Dudley Evenson. The first 22-page issue included news and analysis on cable television and videocassettes, thoughts on education by Nam June Paik, schemes for new

28. Segura, "Creating *Radical Software*."
29. Phyllis Segura to Davidson Gigliotti, September 11, 2002, Early Video Project, last modified September 12, 2002, http://davidsonsfiles.org/letters.html.
30. Marco Vassi, "Rappo: Why Aren't You Fucking?" *Radical Software* 1, no. 2 (Fall 1970): 26.
31. Beryl Korot to Michael Shamberg, in Shamberg, *Guerrilla Television*, section II, p. 13.

video art installations, and essays on a variety of video-related topics. Both the ethic and the aesthetic of *Radical Software* drew on the cut-and-paste style of the *Whole Earth Catalog*, a directory of tools and resources for commune dwellers and other New Communalists. In an essay on the two publications, Fred Turner writes that "like the *Whole Earth Catalog*, *Radical Software* offered access to tools, and at the same time, a map of an emerging social world and instructions for establishing citizenship in it."[32]

Turner notes that contributors to the *Whole Earth Catalog* came from "the world of university-, government-, and industry-based science and technology; the New York and San Francisco art scenes; the Bay area psychedelic community; and the communes that sprang up across America in the late 1960s." The social world of *Radical Software* included many of the same constituencies; contributors varied from artists building video installations to cable policy makers to Gregory Bateson. When Richard Kletter of the Portola Media Access Center consulted for RAND on public access cable, he recommended *Radical Software* as background reading. The Access Center was a project of the Portola Institute, which, not coincidentally, was the San Francisco educational foundation that published the *Whole Earth Catalog*.[33]

Some contributors to *Radical Software* regarded the *Catalog* as itself a revolutionary technology. Ryan contrasted it with television advertising and concluded that "the great virtue of the *Whole Earth Catalog* has been no bullshit information based on use and

---

32. Fred Turner, "Bohemian Technocracy & the Countercultural Press," in *Power to the People: The Graphic Design of the Radical Press and the Rise of the Counter-Culture, 1964–1974*, ed. Geoff Kaplan (Chicago: University of Chicago Press, 2013), 156.
33. Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006), 70, 79; Jennifer S. Light, *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America* (Baltimore: Johns Hopkins University Press, 2003), 189.

consequence of use."[34] To Shamberg, it was a book that used the format of a directory

rather than that of a treatise, and thus escaped the pedagogic constraints of print. "The

success of the *Whole Earth Catalog*," he wrote, "is that it uses print but nonetheless

embodies an electronic morphology: random access. Moreover, it is exclusively process

information because people write about and recommend books and methods they've used

themselves."[35]

The subject matter of *Radical Software* also went beyond video to include other

communications technologies. "We eagerly solicit information and information about

information which readers feel we should include," read the second issue. "Anything

from practical and experimental video to comments on the current pollution of the

information environment to current data on cable television legislation and use and

beyond to designs for alternate computer networks and other software systems."[36] The

title *Radical Software* borrowed the word *software* from computing and used it to refer to

both the content of videotape and the expression of culture through technology more

generally. Computers were a frequent if not ubiquitous topic in *Radical Software*, and a

1971 directory of tapes in the Raindance archive even listed one entitled "Computer:

document on the home computer."[37]

As Adrian Johns writes, *Radical Software* was also innovative in its avoidance of

copyright.[38] "To encourage dissemination of the information in *Radical Software* we have

---

34. Paul Ryan, "Toward an Information Economy," *Radical Software* 1, no. 3 (Spring 1971): 14.
35. Shamberg, *Guerrilla Television*, section I, p. 24.
36. Editorial note, *Radical Software* 1, no. 2.
37. Raindance Corp., "Cultural Data Bank," *Radical Software* 1, no. 2: 19.
38. Adrian Johns, *Piracy: The Intellectual Property Wars from Gutenberg to Gates* (Chicago: University of Chicago Press, 2009), 468.

created our own symbol of an *x* within a circle: Ⓧ," noted the first editorial. "This is a Xerox mark, the antithesis of copyright, which means *DO* copy."[39]

Raindance printed 5000 copies of that first issue and 10,000 copies each of the following three before outsourcing printing and distribution for publisher Gordon and Breach.[40] Some issues of the magazine focused on specific themes—production and distribution technologies, "the TV environment," the use of video for "mental health, institutional analysis, and community organizing," "video and environment," and "video and kids"—each a subject on which many contributors focused their work. Several were edited by other video groups in Canada, California, Ohio, and New York. The eleventh and final issue was published in 1974.

Cybernetic Guerrilla Warfare

Radical Software published many rather esoteric and opaque philosophical essays in addition to practical and technical ones, but perhaps the most influential was Paul Ryan's "Cybernetic Guerrilla Warfare." Ryan had been trying to think of ways to use media to oppose the Vietnam War with McLuhan, writing a brief essay arguing that both the American military and antiwar activists had adopted obsolete strategies according to McLuhan's analyses of media. "An electronic wall in Vietnam is an attempt to make new technology do the job of the old," he wrote of Robert McNamara's strategy, but "peace marching is as contradictory a strategy as the electronic wall. To march is to match the

---

39. Editorial, *Radical Software* 1, no. 1. Incidentally, this symbol is available on modern computers as Unicode character 24E7, CIRCLED LATIN SMALL LETTER X.

40. Editorial note, *Radical Software* 1, no. 2; "Process," *Radical Software* 1, no. 3; editorial note, *Radical Software* 1, no. 4 (Summer 1971): 1; "The Future of *Radical Software*," *Radical Software* 1, no. 5 (1972).

movements of the military, to become what you behold…. Violence is an all out attempt at instant orchestration of the sense life, just as LSD is an all in attempt."[41]

Ryan then began experimenting with video and studying cybernetics, two practices that went hand-in-hand for him. "As a metatool," he wrote, "videotape gradually takes you into cybernetics," by which he meant primarily a study of human-machine interactions with particular attention to feedback. "The sense of cybernetics one develops using videotape," Ryan continued, "is radically different than when using computers and punch cards. With video, people, both live and 'live on tape,' are always part of the looping and balancing process. This compels one to stay close to human concerns."[42]

In "Cybernetic Guerrilla Warfare," Ryan attempted to bring this sense of cybernetics he had developed to bear on the problem of stopping the war in Vietnam without relying on either violence or mass demonstrations.

> Traditional guerrilla activity such as bombings, snipings, and kidnappings complete with printed manifestos seems like so many ecologically risky short change feedback devices, compared with the real possibilities of portable video, maverick data banks, acid metaprogramming, Cable TV, satellites, cybernetic craft industries, and alternate life styles. Yet the guerilla tradition is highly relevant in the current information environment. Guerrilla warfare is by nature irregular and non-repetitive. Like information theory it recognized that redundancy can easily become reactionary and result in entropy and defeat. The juxtaposition of cybernetic and guerrilla strategy suggests a way of moving.[43]

---

41. Paul Ryan, interview by Felicity D. Scott and Mark Wasiuta, "Cybernetic Guerrilla Warfare Revisited: From Klein Worms to Relational Circuits," *Grey Room*, no. 44 (Summer 2011), 116; Paul Ryan, "Probing War with McLuhan," c. 1968, Writings series, Paul Ryan Papers, Archives of American Art, Smithsonian Institution, p. 3.
42. Paul Ryan, *Birth and Death and Cybernation: Cybernetics of the Sacred* (New York: Gordon and Breach, 1973), xii.
43. Paul Ryan, "Cybernetic Guerrilla Warfare," *Radical Software* 1, no. 3: 1.

Although he criticized literal guerrilla warfare for its violence, which he saw as both dangerous and unfocused, Ryan also saw it as a model for the application of new communications technologies. Video was a new tool with which to apply the guerrilla logic of awareness of environment, small-scale engagement, and surprise. According to Ryan, guerrilla warfare and information theory shared the fundamental insight that repetition and regularity are detrimental.

Much of Ryan's terminology seems archaic now, not because it was formal but because it intentionally mixed hip and technical vocabularies in an idiosyncratic dialect of what David Antin termed *cyberscat*, "a kind of enthusiastic welcoming prose peppered with fragments of communication theory and McLuhanesque media talk."[44] The "real possibilities" Ryan listed, though, actually existed.

Maverick data bank was a phrase of Frank Gillette's. "One of the things we're trying to do is design maverick data banks," he told the Princeton conference on social change. "We are going to get a terminal in our studio, and then we will be plugged in, and then the next level as that you design a data bank that other people can stick their terminals into. And that's a maverick data back, only it's structured such that it has nothing in common with any other data bank."[45] As Ted Nelson wrote in 1974, "the term 'data bank' doesn't have any particular technical meaning. It just refers to any large store of information, especially something connected to a computer."[46] Gillette and his colleagues

---

44. David Antin, "Video: The Distinctive Features of the Medium," in Institute of Contemporary Art, *Video Art* (Philadelphia: Institute of Contemporary Art, University of Pennsylvania, 1975), 57.
45. Human Distress and Rapid Social Change conference transcript, December 16, 1969, Princeton Conf. III, 12-16-69 file, box 80, Related Materials series, Gregory Bateson Papers, University of California, Santa Cruz, p. B-283–B-284.
46. Theodor H. Nelson, *Computer Lib* (Chicago: 1974), 59.

used it specifically to refer to networked computers, though, so that when Victor Gioscia wrote that "there's a awful lot of good information around that we could share better if only those maverick data banks were set up," he followed it with the observation that "it's chronetically silly to shoot tape at light speed then airmail" rather than transmitting it electronically, perhaps through satellites.[47]

In 1973, former Ampex engineer Lee Felsenstein and others in the San Francisco Bay Area engineers built Community Memory, a network of terminals for the counterculture—the first located outside a Berkeley record store—that approximated the one Gillette had imagined.[48] Community Memory's server, a $300,000 timesharing Xerox Data Systems XDS 940 which a group called Resource One had persuaded the Transamerica Corporation to loan them, was located with several other community-based art and technology organizations in a five-story warehouse in the South Market area of San Francisco called Project One.[49]

Downstairs was a video group, Optic Nerve, which produced videos on social and political issues like *Dead Action*, which "raised issues regarding the problems of the jail system as explained through conversations taped with inmates," and *Fifty Wonderful Years*, a documentary on the 1973 Miss California Pagaent which "lets the pageant people speak for themselves about love, marriage, women's liberation and the relevance

47. Vic Gioscia, "Frequency and Form," *Radical Software* 1, no. 2: 7.
48. Steven Levy, *Hackers: Heroes of the Personal Computer Revolution* (New York: Doubleday, 1984), 155–157; John Markoff, *What the Dormouse Said: How the Sixties Counterculture Shaped the Personal Computer Industry* (New York: Penguin, 2005), 268. See also Turner, *From Counterculture to Cyberculture*, 114–115; Johns, *Piracy*, 475–478.
49. Optic Nerve, "Optic Nerve," *Radical Software* 2, no. 3 (Summer 1973): 11; Stewart Brand, "Spacewar: Fanatic Life and Symbolic Death Among the Computer Bums," *Rolling Stone*, December 7, 1972.

of the Miss California Pageant," but which also represented a subtle critique of the objectification of women.[50] Among videographers, though, the term *data bank* came more often to refer simply to large collections of videotapes, most prominently in the name of the organization Video Data Bank, still an important archive for video art, which was founded in 1976 at the School of the Art Institute of Chicago.[51]

Ryan's phrase *acid metaprogramming* was a reference to John Lilly's 1967 book *Programming and Metaprogramming in the Human Biocomputer*. In addition to working on dolphin neurophysiology, isolation tanks, and interspecies communication—including in collaboration with Bateson—in the early 1960s Lilly, who already "knew many people who were doing LSD therapy," had become an LSD researcher, experimenting on both dolphins and himself. *Programming and Metaprogramming* was originally a report to the National Institute of Mental Health, which funded Lilly's research, and it reads like a technical manual for using LSD to modify one's consciousness. After Steward Brand read a copy belonging to Willis Harman and listed it in the *Whole Earth Catalog*, Lilly published a second edition with a more accessible preface.[52]

---

50. Fern Tiger, "Video on the Left: A Discussion," *Left Curve*, no. 7 (1978), 59; Optic Nerve, press release on *Fifty Wonderful Years*, September 3, 1973, Miss California/Miss Amerika file, Optic Nerve Project Files box, Optic Nerve Archive, Pacific Film Archive Library, University of California, Berkeley.

51. Video Data Bank, "About VDB," http://www.vdb.org/content/about-vdb.

52. John C. Lilly, *Programming and Metaprogramming in the Human Biocomputer: Theory and Experiments*, 2nd ed. (New York: Julian, 1972), v–vi; John C. Lilly, *The Center of the Cyclone: An Autobiography of Inner Space* (New York: Julian, 1972), 7; John C. Lilly, *The Scientist: A Novel Autobiography* (Philadlephia: J. B. Lippincott, 1978), 123–124.

   In addition to Lilly's many memoirs, the historical literature on him has expanded rapidly over the last few years; for a bibliography, see Bruce Clarke, "John Lilly, *The Mind of the Dolphin*, and Communication Out of Bounds," *communication +1* 3 (2014): article 8, p. 1n, doi:10.7275 /R5RB72JG.

The book begins with the premise that "the human brain is assumed to be an immense biocomputer." It's sufficiently complex, though, to be capable of metaprogramming, or controlling its programs by learning to learn, making models, and drawing analogies. "The mind," wrote Lilly, "is the sum of the programs and metaprograms, i.e. the software of the human computer." Humans can also develop an awareness of our computational capabilities and program ourselves. "This kind of manipulation and control of one's programs," wrote Lilly, "is apparently not achievable outside of the use of LSD-25."[53]

In "Cybernetic Guerrilla Warfare," Ryan suggested that video and LSD shared a logic of relations, which he developed in response to a problem posed by Warren McCulloch. In order to understand intention at the level of neurons, and thus to understand the mind, wrote McCulloch, and thus in order to understand each other and engage in productive dialogue, "the relations we need are triadic, not diadic. Once you give me triadic relations, I can make N-adic relations; but out of diadic relations I can't go anywhere. I can build strings and I can build circles, and there it ends." For Ryan, this meant that diadic logic could include only an object and a statement about it, not the conception of the object which relates the two. More generally, triadics would allow for a logic not only of cause and effects, but of relations between two elements and the sources of that relatedness.[54] Ryan was drawn to addressing such questions through topology, he later

---

53. Lilly, *Programming and Metaprogramming*, 3–8, 19–20.
54. Ryan, "Cybernetic Guerrilla Warfare," 1; Warren S. McCulloch, "Commentary," in *Communication Theory and Research: Proceedings of the First International Symposium*, ed. Lee Thayer (Springfield, Ill.: Charles C. Thomas, 1967), 417. On McCulloch's search for such a logical understanding of the human, see Michael A. Arbib, "Warren McCulloch's Search for the Logic of the Nervous System," *Perspectives in Biology and Medicine* 43, no. 4 (Winter 2000): 193–216; and Lily E. Kay, "From Logical Neurons to Poetic Embodiments of Mind: Warren S. McCulloch's Project in Neuroscience," *Science in Context* 14, no. 4 (Dec. 2001): 591–614.

said, because he took a course on the history of mathematics at NYU in which he learned that "the way culture changes is that you have mathematicians out here, they come up with something, then the scientists figure out something to do with it, and a hundred years later it becomes culture."[55]
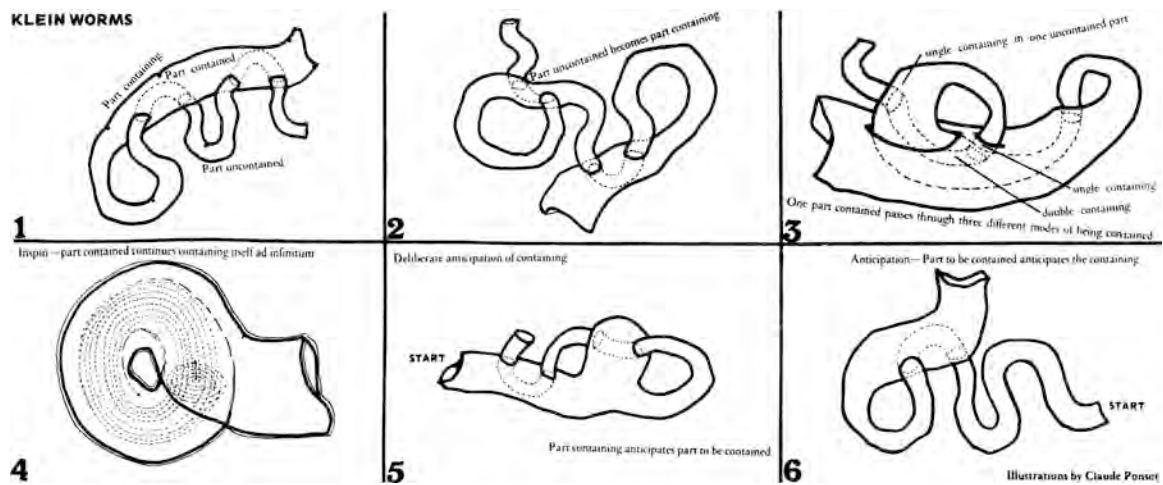
Claude Ponsot, *Klein Worms*, 1970.[56]

Ryan began producing a "calculus of intention" using topology, and suggested that these forms illustrated the dynamics of "video infolding and perceptual sharing," or learning about someone else's perception through their videotape; "soft control structure using plastic membranes," a form of architecture and furniture design that Warren Brodey was involved in; and "acid metaprogramming," particularly exploration of the self with the use of LSD. "I am not recommending LSD-25 to anyone," he wrote, "nor am I endorsing Leary's approach. I am simply looking at some of the work John Lily [*sic*] has done and suggesting this calculus might be useful in the context."[57] Specific video practices could be modeled topologically by Klein worms, suggested Ryan, such as

55. Ryan, interview by Scott and Wasiuta, "Cybernetic Guerrilla Warfare Revisited," 119.
56. Claude Ponsot, "Klein Worms," *Radical Software* 1, no. 3: 2.
57. Ryan, "Cybernetic Guerrilla Warfare," 1–2.

> Taping something new with yourself is a part uncontained
> To replay the tape for yourself is to contain it in your perceptual system
> Taping yourself playing with the replay is to contain both on a new tape[58]

"Cybernetic guerrilla warfare" also took a more tactical form for Ryan. In 1969, on a visit to Los Angeles, Ryan and Michael Shamberg recorded *Supermarket* in a Safeway grocery store. "Bringing a camera into a supermarket to record the surveillance system," Ryan later wrote, "sets off a comic confrontation with the store manager" by challenging the store's monopoly on surveillance in their space. "The confrontation codes some of the attitudes articulated later in the article… 'Cybernetic Guerrilla Warfare.'"[59]

Raindance, *Supermarket*, 1969.[60]

In the video, the camera observes a monitor hanging from the ceiling with a sign above it: "SMILE," it says "YOU ARE ON PHOTO-SCAN T.V." "This is a surveillance system there," says Ryan. "This is so you don't steal. It's the best use of television, bar none. I mean, if we can keep people from stealing, if we can watch them every moment they

---

58. Ibid., 2.
59. Paul Ryan to Brenda Miller, "Supermarket," Writings series, Ryan Papers, p. 1.
60. Still frame from Paul Ryan and Raindance Corporation, *Proto Media Primer*, 1970, video, 14:42, *Surveying the First Decade: Video Art and Alternative Media in the U.S. 1968–1980*, vol. 2 (Chicago: Video Data Bank, 1995), DVD.

214

won't be able to do anything wrong. And if they don't do anything wrong, then the society will be alright." The camera pans to a more verbose sign—"SPACE AGE ANTI-SHOPLIFTING EQUIPMENT HAS BEEN INSTALLED TO HELP REDUCE PRICES TO YOU."—and then to the surveillance camera itself, an ominous black half-sphere with a lens peering out.[61]

   "So basically what we're seeing here is an indigenous data bank," suggests Shamberg. "It's not indigenous," replies the first voice. "No, man, it's not an indigenous data bank. It's a control system. This is Big Brother, right? This is Big Brother's eyes. This is Big Brother's teeth, man. This is Big Brother's brain." The camera zooms in on the surveillance monitor, so we're just seeing the surveillance footage itself rescanned. "See, cause they got cats coming in here to buy this shit, man. They work their ass off so they can buy this shit, man. They sell it to them over television, right? And they not only sell it to them over television, they got this thing set up so it can watch you to make sure you don't steal what they make you want to buy, because they hype you up as a consumer, man. It's very sick." The camera pans to the products themselves—bread, magazines, greeting cards—and then to another surveillance monitor.[62]

   The video signal drops out and back in, as the operator has stopped recording and then started again. The store's manager, briefly places his hand in front of our lens, then we're close up on his head. "Why can't people come in and take pictures, man?" asks Ryan. "You're always taking pictures of them." The manager explains that they're not allowed to shoot without a permit from their division office, and walks outside with them, where,

---

61. Ryan and Raindance, *Proto Media Primer*.
62. Ibid.

after he insisted he doesn't care if they tape him personally, they interview him briefly about his job.[63] "It was a devastating portrait of this guy," Shamberg later said.[64]

Shamberg appropriated Ryan's appropriation of the term *guerrilla* for his 1971 book *Guerrilla Television*, itself in part a repackaging of Gillette and Ryan's ideas about media for a wider audience. He redefined cybernetic guerrilla warfare as something less improvisational and more infrastructural than Ryan had suggested, though. "Most radicals misunderstand the bias of information systems," he wrote. "They think all you have to do is substitute your message for the ones going across. But the actual result would be that instead of being frustrated by a one-way system which hypes a plastic product-America, as people now are, they'd be equally frustrated by a radical political message which also gives them no way to feed back. True cybernetic guerrilla warfare means re-structuring communications channels, not capturing existing ones." Shamberg suggested some specific strategies for developing such "an indigenous support center as in classic guerrilla warfare." "It might include tactics like going out to the suburbs with video cameras and taping commuters," he wrote, so that "businessmen would see how wasted they look from buying the suburban myth," or using video to "sensitize the police" and prevent brutality.[65]

Guerrilla Television included a photograph of "the Raindance video data bank" nicely arranged on shelves, an image which deserves a bit more attention than simply serving as

---

63. Ibid.
64. Cort, Gershuny, Ratcliff, and Shamberg, interview by Levin, "Raindance (Michael Shamberg) and Videofreex (David Cort)," 397.
65. Shamberg and Raindance, *Guerrilla Television*, section I, p. 29. On *Guerrilla Television*, see also William Merrin, "Still Fighting 'the Beast': Guerrilla Television and the Limits of YouTube," *Cultural Politics* 8, no. 1 (March 2012): 97–119.

an image of a data bank. In this picture, Beryl Korot is standing in front of the shelves of boxed tapes, wearing a feathered headdress.[66] It is an instance of the white counterculture's widespread appropriation of Native American symbols. "Hippies 'discovered' Indians and found them attractive," writes Sherry Smith, "*because* they presumably offered an actual, living base for an alternative American identity.… They were genuine holdouts against American conformity; the original American 'long hairs.' Counterculture iconography, consequently, became drenched in images of Indianness, reflecting, of course, a superficial perspective on Indian peoples' lives and contemporary problems; and yet one that carried cultural and political potency."[67]

Beryl Korot and the Raindance video data bank, c. 1971.[68]

The appropriation also found its way into experimental videographers' understanding of their place in the media economy, which some described in terms of guerrilla warfare.

---

66. Shamberg and Raindance, *Guerrilla Television*, section II, p. 30.
67. Sherry L. Smith, *Hippies, Indiana, and the Fight for Red Power* (Oxford: Oxford University Press, 2012), 7.
68. Photograph by Dudley Evenson, from Shamberg and Raindance, *Guerrilla Television*, section II, p. 30.

"There's another kind of freak running around with a quiver full of information arrows, shooting them off wildly in every direction," wrote Victor Gioscia in a reflection on a video wake that Paul Ryan held for his father. "That's a Western, man. We're Indians coming in with those little half-inch packs, and the U.S. Cavalry is in charge of cable. And they're saying, 'Let's get 'em. Let's get those Indians the fuck out of here so we can get a railroad in here, put a space station in here, get some IBM's in here.'"[69]

Like Ryan, Shamberg rejected conventional modes of revolutionary politics. The word *guerrilla* in his title thus served, he wrote, as "a sort of bridge between an old and a new consciousness." The old consciousness was explicitly political; the new sought to revolutionize media rather than government. The word *radical* in *Radical Television* was a similar bridge: "Most people think of something 'radical' as being political," wrote Shamberg, "but we are not. We do, however, believe in post-political solutions to cultural problems which are *radical* in their discontinuity with the past." Politics, Shamberg claimed, had become outdated along with other institutions based on the logic of print media. "In a cybernetic culture," he wrote, "power grows from computer print-outs, not the barrel of a gun."[70]

Raindance's cooption of political rhetoric drew on their own radical backgrounds, though. When Frank Gillette was working at the Free University of New York in 1967, he had published a supportive article—almost a manifesto—on the militantly anti-imperialist Revolutionary Contingent in their magazine *Treason*. In his article, Gillette

---

69. Vic Gioscia, "Practice Dying and Dance As Often As You Can," in Ryan, *Birth and Death and Cybernation*, 120–121
70. Shamberg and Raindance, *Guerrilla Television*, ix, and section I, p. 30.

criticized "the Peace Movement" for limiting its critique of American imperialism to the Vietnam War. The Revolutionary Contingent, in contrast, planned "to send revolutionaries with useful skills to fight with guerrilla movements in Latin America, Africa, and possibly Asia." Even in the United States, where Gillette recognized that "revolution—in the usual meaning of the word—is not about to fracture and destroy the present social structure from within," the Contingent sought "to emulate, to the degree feasable [*sic*], the tactics of a guerrilla movement."[71]

Before founding Raindance, then, Gillette had been a voice for an organization that sought both to engage in literal guerrilla warfare abroad and to incorporate tactics inspired by guerrilla war into its American operations. "I went through a whole New Left experience where I butted my head against the American system," he told the other participants in the Princeton conference on social change, "and I realized I was butting my head against the American system. The only way they pay attention to you here is if you make money, so we went out and incorporated as a profit-making corporation."[72]

Even if Raindance was not anticapitalist, it was still an idealistic organization. It's ideals—and those of most white American experimental videographers—stemmed not from the left but from new forms of technological utopianism.

---

71. Frank Gillette, "On the Revolutionary Contingent," *Treason* 1, no. 1 (Summer 1967): 15–17. The short-lived Revolutionary Contingent was founded in New York "to collect radical independents into an assembly" for a large antiwar demonstration on April 15, 1967 (ibid., p. 15). According to novelist Norman Mailer, by the time they joined in a demonstration at the Pentagon on October 21 the Revolutionary Contingent had found themselves "unable to function together because of many arguments on the proper style of militancy" and stopped using the name. Norman Mailer, *The Armies of the Night: History as a Novel, The Novel as History* (New York: Signet, 1968), 275.
72. Human Distress and Rapid Social Change conference transcript, December 16, 1969, p. B-279.

Media Ecologies and Cybernetic Utopianism

When experimental filmmaker Jud Yalkut interviewed Gillette and Schneider in 1969, Gillette told him that in their future work "we'll be dealing with media ecology."[73] This was a new phrase in 1969, and one that Gillette used again at the conference on social change in Princeton that December; Gregory Bateson even wrote the phrase down next to Gillette's name on his list of attendees. "Media ecology is our specific bag," said Gillette. "I'm not involved in the social ecology or the natural ecology, or agrarian ecology, but, rather, media ecology specifically.… which is a conception that most biologists wince at, because they sense you have merely raided their vocabulary and their lexicon for rhetorical reasons. It's not that at all. I believe that the phenomena of technology have an ecolog[y] that can be understood as such, so it can be used as such."[74]

Education scholar Neil Postman had used the phrase *media ecology* for the first time in 1968, in suggesting a subject that could replace literature in high school curricula.[75] "Media ecology," he said, "looks into the matter of how media of communication affect human perception, understanding, feeling, and value; and how our interaction with media facilitates or impedes our chances of survival.… Media ecology is the study of media as

---

73. Gillette and Schneider, interview by Yalkut, "Frank Gillette and Ira Schneider," 10. Other accounts of video and ecology have been strongly shaped (or distorted, as Paul Ryan and Roy Skodnick have both argued) by a focus on Dan Graham, an artist who read Bateson and *Radical Software* and engaged in similar video experiments but was not personally acquainted with Bateson, Ryan, or the other actors I follow. See Eric de Bruyn, "Topological Pathways of Post-Minimalism," *Grey Room*, no. 25 (Fall 2006), 32–63; William Kaizen, "Steps to an Ecology of Communication: *Radical Software*, Dan Graham, and the Legacy of Gregory Bateson," *Art Journal* 67, no. 3 (Fall 2008): 86–107; and Paul Ryan and Roy Skodnick, letters to the editor, *Art Journal* 68, no. 1 (Spring 2009): 111–113.

74. "Conference Participants," Princeton Conference file, box 27, Correspondence series, Bateson Papers; Human Distress and Rapid Social Change conference transcript, December 16, 1969, p. B-281.

75. Lance Strate, *Echoes and Reflections: On Media Ecology as a Field of Study* (Creskill, N.J.: Hampton, 2006), 17.

environments." Postman also pointed out, though, that this was not actually a new discipline. "I am only naming it," he said, listing practitioners including Aldous Huxley, Norbert Wiener, Alfred North Whitehead, Buckminster Fuller, Marshall McLuhan, and Edmund Carpenter.[76]

Media ecology was in a sense a closed metaphor. Ecologists like G. Evelyn Hutchinson, a participant in the Macy Conferences and friend of Bateson since childhood, had rebuilt their discipline as a cybernetic science in which, as Peter Taylor writes, "groups of organisms are systems having feedback loops that ensure self-regulation and persistence."[77] To the extent that cybernetics itself was founded on theories of communications like those of Claude Shannon, then, media ecology was a theory of communications that had been applied to nature and then back to communications. As Deanna Day has observed with regard to cybernetics discourses about thermometers and women's bodies, such closed metaphors often serve to naturalize technologies, making them seem like inevitable extensions of biological phenomena rather than the artifacts of human social choices.[78]

While Postman used the metaphor to gain scientific legitimacy for his new field of study, starting a doctoral program in media ecology at NYU in the 1970s, experimental videographers instead insisted that media ecology be continuous with natural ecology, a mode of practice for thinking about and intervening in interactions between humans and

---

76. Neil Postman, "The Reformed English Curriculum," in *High School 1980: The Shape of the Future in American Secondary Education*, ed. Alvin C. Eurich (New York: Pitman, 1970), 161.

77. Peter J. Taylor, "Technocratic Optimism, H. T. Odum, and the Partial Transformation of Ecological Metaphor after World War II," *Journal of the History of Biology* 21, no. 2 (Summer 1988): 214–217; David Lipset, *Gregory Bateson: The Legacy of a Scientist* (Boston: Beacon, 1982), 48.

78. Deanna Day, "98.6: Fevers, Fertility, and the Patient Labor of American Medicine" (PhD diss., University of Pennsylvania, 2014), 141–145.

nature rather than simply a naturalistic way of analyzing human communication.[79] "I'm not so convinced by ecologies of media, or media ecology," said Ryan in 2011. "It's like they took the metaphor, stripped it, took no responsibility for the natural world, and they're off there thinking they're doing ecology."[80]

Indeed, this exclusion of the nonhuman took place even in the pages of *Radical Software*, when one contributor defined media ecology as "the study of a medium of communication and its affect upon other media/society."[81] The alternative approach to media ecology reflected a sense of urgency in addressing environmental crises. "Man is an endangered species," Gioscia began the preface the appeared at the beginning of each book in the Social Change series he edited—including those by himself, Albert Scheflen, Warren Brodey, Gillette, and Ryan. "We are not optimists," he wrote. "We don't think the chances for human survival are very good.… We intend this to be a sort of whole earth catalogue for people who think that thinking about the human predicament *might* help us to live, as one self-aware species, deliberately guiding its own evolution, for the first time."[82] The name Raindance, wrote Marco Vassi, "implied that the electronic exoskeleton had to be understood as a real part of the earth's ecology before it could be intelligently used."[83]

---

79. Casey Man Kong Lum, "Notes toward an Intellectual History of Media Ecology," in *Perspectives on Culture, Technology and Communication: The Media Ecology Tradition*, ed. Casey Man Kong Lum (Creskill, N.J.: Hampton, 2006), 19–24.

80. Ryan, interview by Scott and Wasiuta, "Cybernetic Guerrilla Warfare Revisited," 131.

81. Raymond Arlo, "Media Ecology," *Radical Software* 1, no. 3: 19.

82. Victor Gioscia, editor's preface to Ryan, *Birth and Death and Cybernation*, v.

83. Vassi, *Stoned Apocalypse*, 238.

Vassi's understanding of electronic communications as a biological phenomenon was a Teilhardian one, something Los Angeles art critic Gene Youngblood made explicit in his 1970 book *Expanded Cinema*. "The videosphere," wrote Youngblood, "is the noosphere transformed into a perceivable state.… Television expands global man throughout the ecological biosphere twenty-four hours a day." This remote viewing had immediate political consequences. It produced a global consciousness which "makes it impossible," wrote Youngblood, "for governments to maintain the illusion of sovereignty and separatism which is essential for their existence. Television is one of the most revolutionary tools in the entire spectrum of technoanarchy."[84]

The next year, Shamberg used such an analysis of technological system as consciousness as evolutionary process to argue that broadcast television needed to be replaced by more participatory video media, not in order to achieve revolution but in order to maintain stability. "We must perceive media structures biologically [as] media-ecology," he wrote. "If the character of our culture is defined by its dominant communications medium, and that medium is an overly-centralized, low-variety system, then we will succumb to those biologically unviable characteristics. Fortunately techno-evolution has spawned new video modes like portable videotape, cable television, and videocassettes which promise to restore a media-ecological balance to TV."[85] Shamberg and his colleagues thus translated evolution—understood as natural selection but also as creative potential, following Pierre Teilhard de Chardin and Henri Bergson—into an agenda for media activism.

---

84. Gene Youngblood, *Expanded Cinema* (New York: Dutton, 1970), 78–79.
85. Shamberg and Raindance, *Guerrilla Television*, section I, pp. 2, 9.

Shamberg's political stance was one I term *cybernetic utopianism*, a new form of

technological utopianism which incorporated the rhetoric of cybernetics and the ideals of

participatory democracy. Like many technological utopians, he was a technological

determinist who believed that a society was structured by its media; politics was mere

superstructure which would follow automatically.

> In Media-America, our information systems are so designed as to
> minimize feedback. There is no feeding back to broadcast television.…
> Such a lack of feedback is exactly the opposite of democracy in America
> as de Tocqueville saw it: decentralized, self-governing units of people who
> could see that their decisions were being carried out.
> It's nostalgia to think that that type of balance can be restored politically
> when politics are a function of Media-America, not vice-versa. Only
> through a radical re-design of its information structures to incorporate
> two-way, decentralized inputs can Media America optimize the feedback it
> needs to come back to its senses.[86]

Shamberg's technological optimism focused specifically on communication technology;

he saw new forms of television and other media as both the sources of social change and

the proper replacements for an obsolete political sphere.

In *Technological Utopianism in American Culture*, Howard Segal analyzes

technological utopian writings published between 1883 and 1933. The utopian authors he

describes were technological determinists who believed that technological progress was

inevitable and that it would necessarily bring about the ideal society they described in

their many articles and novels. This society would be one organized by the principles of

order, efficiency, and comfort. Politics would be obsolete: "Since the basic laws and

institutions of society have been fixed," Segal summarizes, "no legal, political, or

---

86. Shamberg and Raindance, *Guerrilla Television*, section I, p. 12.

ideological tasks remain" and "technicians rather than politicians run the utopian government."[87]

Segal follows technological utopianism up to the organized Technocracy movement of the 1930s and '40s, which sought to replace politicians and capitalists with experts and engineers. In a review of *Technological Utopianism in American Culture*, Thomas Hughes extends the story, arguing that technological utopianism collapsed under attack from the counterculture in the 1960s.

> This is the attitudinal watershed that divides us from the technological utopians. The generation of the sixties looked back on more than the Great Depression. The fascistic new order in Germany, centralized collectivism in the Soviet Union, the scientifically managed Manhattan Project in the United States, the obscene rationality of the Final Solution in the Third Reich, and the technical gadgetry that blasted and burned Vietnam cast dark and lengthening shadows over the 1960s. Alarmed and fearful, the spokespersons for the Counterculture unerringly directed their attack against subjecting people to order, efficiency, centralization, and system.[88]

In this analysis, Hughes suggests that the thesis of technocracy met the antithesis of the counterculture, and particularly its intellectual influences like Paul Goodman and Herbert Marcuse.

In their response to the rationalized horror of the mid twentieth century, though, some counterculturalists embraced its products, forming a new synthesis. "Many historians today," writes Fred Turner, "still read the youth movements of the 1960s as a generational rejection of the cold war world into which they were born. Among New Communalists, though, this was simply not the case: even as they set out for the rural frontier, the

---

87. Howard P. Segal, *Technological Utopianism in American Culture* (Chicago: University of Chicago Press, 1985), 30.

88. Thomas P. Hughes, "Lusting for the Gratifications of Technology," review of Howard P. Segal, *Technological Utopianism in American Culture*, *Reviews in American History* 14, no. 2 (June 1986): 269.

communards of the back-to-the-land movement often embraced the collaborative social practices, the celebration of technology, and the cybernetic rhetoric of mainstream military-industrial-academic research."[89] In these communities, including that of experimental videographers, a new technological utopianism was born from the ashes of the old.

Architect Buckminster Fuller was perhaps most responsible for bringing technological utopianism to the counterculture. "Contrary to the widely held belief that this social movement represented a historical break with the past," argues Peder Anker, "followers of Fuller represented more of a continuation with previous high modernism." Born in 1895, Fuller was a participant in the older tradition of technological utopianism who saw the solutions to population growth and environmental disaster in a technocratic "design-science revolution" of artist/engineer "comprehensive designers" who would manage the world with the aid of computers. Fuller also advocated the elimination of politics, which he saw as inevitably leading to conflict and war rather than cooperation and prosperity.[90] His innovation as a utopian was in suggesting that this transformation could happen right away—and indeed must, as he wrote in his 1969 *Utopia or Oblivion*—rather than in the distant future.[91]

---

89. Turner, *From Counterculture to Cyberculture*, 33.

90. Peder Anker, *From Bauhaus to Ecohouse: A History of Ecological Design* (Baton Rouge: Louisiana State University Press, 2010), 42, 69, 73–75, 80–81; Fred Turner, "R. Buckminster Fuller: A Technocrat for the Counterculture," in *New Views on R. Buckminster Fuller*, ed. Hsiao-Yun Chu and Roberto G. Trujillo (Stanford: Stanford University Press, 2009), 150.

91. Howard P. Segal, "R. Buckminster Fuller: America's Last Genuine Utopian?" in Chu and Trujillo, *New Views*, 41; R. Buckminster Fuller, *Utopia or Oblivion: The Prospects for Humanity* (New York: Overlook, 1969).

In part because of his self-fashioning as an idiosyncratic visionary, Fuller's survivalist environmentalism, geodesic dome architecture, and technological utopianism all found eager audiences in the counterculture; Raindance, for example, interviewed him on videotape in 1970.[92] "As he moved from university to university, collaborating with college students, giving speeches, and designing new technologies," writes Turner, "Fuller exemplified a way of making a living alongside the academy and industry without becoming in any way a bureaucrat."[93] According to Felicity Scott, "Fuller also attributed his popularization in the 1960s to Marshall McLuhan."[94]

In the introduction he contributed to Youngblood's *Expanded Cinema*, Fuller's enthusiasm for progress and community brought his rhetoric close to Teilhard's. "Each child emerging from its mother's womb," wrote Fuller, "is entering a larger womb of total human consciousness which is continually modified and expanded by subjective experiences and objective experiments. As each successive child is born, it comes into a cosmic consciousness in which it is confronted with less misinformation than yesterday and with more reliable information." An important characteristic of this larger womb was the increasing proliferation of radio waves, which Fuller described as "the almost totally invisible, nonsensorial, electro-magnetic womb-sheath of environmental evolution's reality phase into which humanity is now being born." Humans could soon become sensitive to this environment, he suggested, as "for humans to have within their cerebral

92. Raindance, *Interview with Buckminster Fuller*, video, 33:49, 1970, Electronic Arts Intermix; R. Buckminster Fuller, "Pirated Transcription of Interview Videotaped by Raindance Corporation," *Radical Software* 1, no. 1: 5.
93. Turner, "R. Buckminster Fuller," 149.
94. Felicity D. Scott, "Fluid Geographies: Politics and the Revolution by Design," in Chu and Trujillo, *New Views*, 213n8.

mechanism the proper atomic radio transceivers to carry on telepathetic communication is no more incredible than the transistors which were invented only two decades ago." Fuller endorsed Youngblood's book as a guide to using new media to achieve the new levels of human unity and knowledge necessary for survival. "Tomorrow's Expanded Cinema University," he wrote, "as the word uni-verse—towards one—implies, will weld metaphysically together the world community of man by the flux of understanding and the spontaneously truthful integrity of the child."[95]

The strongest difference between the old and new technological utopianism was the place of formal politics. The professional political sphere was still displaced in the new ideology, but it was replaced by participatory democracy facilitated by new communications technologies rather than by expertise. Machines became tools not for centralization of control, but for decentralization of communication and thus of political power. When Sherry Turkle wrote about the politics of computer hobbyists in 1982, she was describing cybernetic utopianism. "Hobbyists associate images of computational transparency and of 'knowing how the machine works,'" she wrote, "with a kind of politics where relations of power will be transparent, where people will control their destinies, where work will facilitate a rich and balanced cognitive life, and where decentralized power will follow from decentralized information resources."[96] This was a democratic utopia with a libertarian bent, quite different from the technocratic and

95. R. Buckminster Fuller, introduction to Youngblood, *Expanded Cinema*, 25, 27, 31, 35.
96. Sherry Turkle, "The Subjective Computer: A Study in the Psychology of Personal Computation," *Social Studies of Science* 12, no. 2 (May 1982): 193.

orderly future Segal describes. Computing and video became both the tools for achieving such a society and the metaphors for describing it.

Experimental videographers were among the first to adopt the stance of cybernetic utopianism. "What we have come to know as 'video art,'" wrote Martha Rosler, "experienced a 'utopian moment' in its early period of development, encouraged by the events of the 1960s."[97] As later utopians would look to computers and the internet as literally revolutionary communications technologies, members of the video culture looked to video and cable television. "Calendar reform as such would not qualify as utopian," wrote historian Frank Manuel, "but calendar reform that pretended to effect a basic transformation in the human condition might be."[98] The pioneers of video believed that their technology could effect such a transformation, revolutionizing social relations from education and psychiatry to policing, government, race relations, and even the relationship between humans and their natural environment.

In the pages of *Radical Software*, Marco Vassi both articulated and critiqued this utopian stance. He shared his fellow Raindance members' sense of ecological urgency, and of the consciousness-expanding capabilities of video, and allowed himself to hope that "perhaps, if the species can be made to see, really *see*, itself as a sleepwalking evolutionary freak, perhaps in that very seeing may be intelligent action." Vassi was also confident, though, that video would be coopted by exactly the kind of institutionalized consumerism he despised.[99]

97. Martha Rosler, "Video: Shedding the Utopian Moment," *Block*, no. 11 (1985/1986), 27.
98. Frank E. Manuel, "Toward a Psychological History of Utopias," in *Utopias and Utopian Thought: A Timely Appraisal*, ed. Frank E. Manuel (Boston: Beacon, 1967), 70.
99. Marco Vassi, "Zen Tubes," *Radical Software*, 1, no. 1: 18.

Tape will soon be everywhere. CATV will bloom, and electronic neighborhoods will be the rage. Special-interest networks will spring up. Home cassettes will rival the hi-fi markets in sound recording. There will be a computer in every pot and playback equipment for the sophisticates to add dash to their orgies. Videotape encounter groups will stick up their hybrid heads and bray like donkeys. Tape as an art form will develop its modes, its classicism, its surrealism, its abstractions. The boobs who have been starting hypnotically at the tube for thirty years will come to with a start, rub their eyes, and discover that they have a radically new medium on their hands. Finally, it will become good business. And the race for exploitation rights will be on.

But by then there may be no air left to breathe.

There is some talk, and there will be more, in so-called underground tape circles about the revolutionary impact of tape. I think it's too late for that. Every innovation in technology brought about by heads will be used by the power-trip neanderthals to furnish a more sophisticated 1984. But that's the way it goes.[100]

Vassi was particularly critical of Fuller. "He has a glittering array of mediocre metaphors," wrote Vassi, "which attempt to mask the fact that he is basically an elitist engineer. His utopia is the humming anthill and the happy beehive."[101] He left, angry that "Raindance had stopped being an activity of friends and revolutionaries, and attempted to become a business," but continued working with video.[102] Vassi's main occupation after Raindance was as an erotic novelist, and his novels sometimes incorporated into their plots both video and experiences of collective consciousness.[103]

---

100. Ibid.

101. Vassi, "Rappo," 26.

102. Vassi, *Stoned Apocalypse*, 238; Marco Vassi, résumé, Woodstock Community Video 73-459F file, box 624, NYSCA Files.

103. See, for example, Vassi's first novel, Marco Vassi, *Mind Blower* (New York: Olympia, 1972). On Vassi, see Michael Perkins, *The Secret Record: Modern Erotic Literature* (New York: William Morrow, 1976), 187–205; several passages of John Heidenry, *What Wild Ecstasy: The Rise and Fall of the Sexual Revolution* (New York: Simon & Schuster, 1997); and David Guy, *The Red Thread of Passion: Spirituality and the Paradox of Sex* (Boston: Shambhala, 1999), 139–165.

Shamberg and many of those who believed in video as a revolutionary technology never actually employed it politically. This absence of activism followed from a McLuhanite faith that technology itself would determine the order of life, and thus a commitment—as Shamberg wrote—to "post-political solutions to cultural problems."[104] Videographer Joan Braderman critiqued this tradition in a 1991 essay, while simultaneously arguing that video still had promise as a tool for participatory democracy if videographers strived to develop a medium accessible to all.

> I do not mean to suggest that the deconstructed utopian moment of the white-English-speaking-blue-jeans-wearing-Global-Village be revived. *The technological means alone guarantee nothing democratic*. Once and for all, folks, let's face it, the medium is neither the message nor the massage.…
>
> What needs to be staked out and reclaimed is a different utopian moment, the larger one, the one we're not supposed to even dream about anymore.
>
> For those of us videomakers who are still moved to toil with these stubborn and delicate electronic signals, there are still things to say, some absolutely banal and obvious, yet utterly unspoken in the noisy pageant of broadcast TV.
>
> The video utopia we need to keep focused on has to emerge from a context of radical democracy, where everyone is thrust into consciousness, community, speech and action.[105]

Ryan and Shamberg took guerrilla warfare primarily as a metaphor, never engaging in political action—with the minor exception of *Supermarket*—that actually embodied it. For Ryan and Gillette, media ecology was another matter. "Following Bateson's idea of an ecology of mind," Ryan said decades later, "I thought that with topology we could

---

104. Shamberg and Raindance, *Guerrilla Television*, ix.
105. Joan Braderman, "TV/Video: Reclaiming the Utopian Moment," in *Roar! The Paper Tiger Television Guide to Media Activism*, ed. Daniel Marcus (New York: Paper Tiger Television Collective, 1991), 20.

form at least one of many new ecologies of human beings on Earth, that it could work collaboratively with other ecologies."[106]

In 1967, Bateson had become interested in the interconnectedness of individual, societal, and ecological wellbeing, "the ways in which human planning and applied science tend to generate pathology in the society or in the ecology or in the individual."[107] In 1970 architect Jaquelin Robertson, director of the Mayor's Office of Mid-Town Planning and Development in New York, asked Bateson to organize a conference at which New York city planners and ecologists would think together about how ecology could be applyed to city planning, particularly in the design of Midtown Manhattan.[108] Bateson persuaded Lita Osmundsen, director of research of the anthropological Wenner-Gren Foundation, to sponsor the conference on "Restructuring the Ecology of a Great City."[109] "The members of the conference have been concerned with these problems in many different ways," wrote Bateson, "as field naturalists, as geneticists, as politicians, as cybernetic engineers, as members of the 'counter culture,' and as anthropologists."[110] They included Scheflen, Brodey, Gillette, and anthropologists Roy Rappaport and Mary Catherine Bateson, daughter of Bateson and Margaret Mead.[111] *Radical Software*

---

106. Ryan, interview by Scott and Wasiuta, "Cybernetic Guerrilla Warfare Revisited," 130–131.

107. Mary Catherine Bateson, *Our Own Metaphor: A Personal Account of a Conference on the Effects of Conscious Purpose on Human Adaptation*, expanded ed. (1972; Washington, D.C.: Smithsonian Institution Press, 1991), 31.

108. Gregory Bateson to Lita Osmundsen, January 21, 1970, Wenner-Gren Conference—Midtown Manhattan Conference file, box 39, Correspondence series, Bateson Papers.

109. Lita Osmundsen to Gregory Bateson, July 8, 1970, Wenner-Gren Conference—Midtown Manhattan Conference file.

110. Gregory Bateson, "The Ecology of a Great City" (1970), Wenner-Gren Conference—Midtown Manhattan Conference file, p. 2.

111. "Restructuring the Ecology of a Great City" attendance list (1970), Wenner-Gren Conference—Midtown Manhattan Conference file.

published the position statement Bateson drafted for the conference, setting it immediately after "Cybernetic Guerrilla Warfare."[112]

Ryan left New York City in 1971, then, to found Earthscore, an "intentional community of videomakers" near New Paltz, New York, along the Hudson River. Drawing on his Catholic monastic experience, Ryan sought "to start a non-celibate, aesthetic order capable of interpreting ecological systems with video" which would "decode the ecology and feed it back to the local community over cable TV." In its ideal form, Earthscore would have brought together Ryan's interests in ecology and triadics, with 36 members working and living in "self balancing groups of three" with no hierarchy. Although it ended in 1976 after operating for several years with only one triad, Earthscore "produced an enormous volume of videotape of ecological systems as well as forty-five hours of triadic tape, tape of people interacting in threesomes."[113]

Frank Gillette, who also quickly left Raindance, and Ira Schneider, who officially remained a member until he moved to Berlin in 1993, also began producing ecological video in the 1970s.[114] Gillette suggested one of the motivations for some of this work in *Between Paradigms*, his 1973 book of what might be called very short essays, most only

112. Gregory Bateson, "Restructuring the Ecology of a Great City," *Radical Software* 1, no. 3: 2–3. Bateson also published this paper in *Steps to an Ecology of Mind*, 502–513.

113. Paul Ryan, *Video Mind, Earth Mind: Art, Communications and Ecology* (New York: Peter Lang, 1993), 54–55; Paul Ryan, "Video Journey through Utopia," *Afterimage* 27, no. 3 (November/ December 1999): 10; Paul Ryan, interview by Willoughby Sharp, "Paul Ryan: Video Pioneer," *Video 81* 2, no. 1 (1981): 14.

Earthscore was also the name of Ryan's triadic "formal framework for evolving a shared perception of the natural world" based on topology and the philosophy of Charles Sanders Pierce. Paul Ryan, "The Earthscore Notational System for Orchestrating Perceptual Consensus about the Natural World," *Leonardo* 24, no. 4 (1991): 457.

114. Gigliotti, "Brief History of RainDance."

one paragraph long, each accompanied by a epigraph.[115] It was full of translations

between media and ecology. "Environment and organism," wrote Gillette, "as a matrix of

signal and noise, are of the same circuit. The resulting channel of influence, connecting

self and environment, subjects the total circuit to stresses peculiar to homo sapiens.

Feedback from environment to organism now functions only to the degree that self is

capable of sensing threat."[116] Video became a new means for making people aware of the

state of the natural environment and of their mutually influencing position with it in a

feedback loop.

In 1973, Gillette was the subject of a solo exhibition at the Everson Museum of Art in

Syracuse, New York. His "multi-monitor matrices, ecological models and especially his

now almost 'classic' videotapes," wrote a curator, "communicate the possibility of

synergizing man's relation with nature and with himself in the context of a new

cybernetic orientation towards the creative process."[117] Among his installations was

Tetragramaton, a set of three stacks of ten monitors each arranged around the outside of a

circle, with each stack displaying two different channels of recorded video that Gillette

had shot outdoors. "The piece is designed," read the exhibition catalog, "to immerse the

---

115. This genre deserves a (perhaps appropriately brief) essay of its own. John Brockman—who Gillette thanked in his acknowledgements and who became John Lilly and Gregory Bateson's literary agent before playing the same role for dozens of other prominent scientists and founding organizations like the Reality Club and Edge—also wrote two books, *By the Late John Brockman* and *37*, in which a single paragraph incorporating a quotation appeared at the top of each page. Frank Gillette, *Between Paradigms: The Mood and Its Purposes* (New York: Gordon and Breach, 1973), acknowledgements; John Brockman, *Afterwords* (Garden City, N.Y.: Anchor Books, 1973); John Brockman to Gregory Bateson, September 18, 1973; Gregory Bateson to John Brockman, October 5, 1973; John Brockman to Gregory Bateson, October 11, 1973; all in Brockman, John file, box 5, Correspondence series, Bateson Papers.

116. Gillette, *Between Paradigms*, 30.

117. James Harithas, "Blueprint for a Creative Reorientation," in *Frank Gillette: Video; Process and Meta-Process*, ed. Judson Rosebush (Syracuse, N.Y.: Everson Museum of Art, 1973), 6.

234

audience in the processes of nature and thus surrounds the viewer with a video ecology of oceans, forests, ponds, insect life, birds, clouds, and lakes." Gillette's other installations, *Subterranean Field*, *Terraquae*, and *Gestation/Growth*, featured enclosures of live termites, agar, snails, crabs, crickets, tortoises, tarantulas, iguanas, geraniums, and chickens, each surveilled by cameras and displayed live on matrices of monitors in order to portray ecology as a heterogenous set of continual processes.[118]
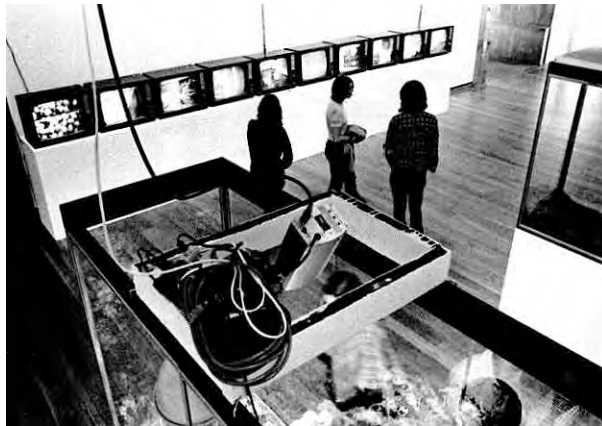
Frank Gillette, *Terraquae*, 1973.[119]

Many of Gillette's works later in the 1970s were landscapes, videos intended to both capture the experience of being in a particular place and to serve as experiments in perception.[120] Similarly, in 1974 Schneider produced the installation *Manhattan Is an Island*, "a video space/time condensation of Manhattan," in which six or seven channels of video of Manhattan—shot while walking; on cars, busses and subways; and from a

118. Rosebush, *Frank Gillette*, 8–9. A single channel edit of *Tetragramaton* is extant as Frank Gillette, *Tetragramaton*, video, 23:00, 1972, Video Data Bank.

119. Photograph from Frank Gillette, "Six Matrices (1971–1973)," *Radical Software* 2, no. 5 (Winter 1973): 26.

120. James Harithas, foreword, in Frank Gillette, *Aransas: Axis of Observation* (Houston: Points of View, 1978), 2; David A. Ross, "Ocham's Electric Razor," in Gillette, *Aransas*, 42–43. See also Frank Gillette, "Quidditas," in *Video Art: An Anthology*, ed. Ira Schneider and Beryl Korot (New York: Harcourt Brace Jovanovich, 1976), 56–57; and *Artists' Video: An International Guide*, ed. Lori Zippay (New York: Cross River, 1991), 90–91.

tour boat and helicopter—were displayed on up to 23 monitors laid out in the shape of the

island itself, providing an immersive experience of an urban environment as nonetheless

shaped—literally—by nature.[121]
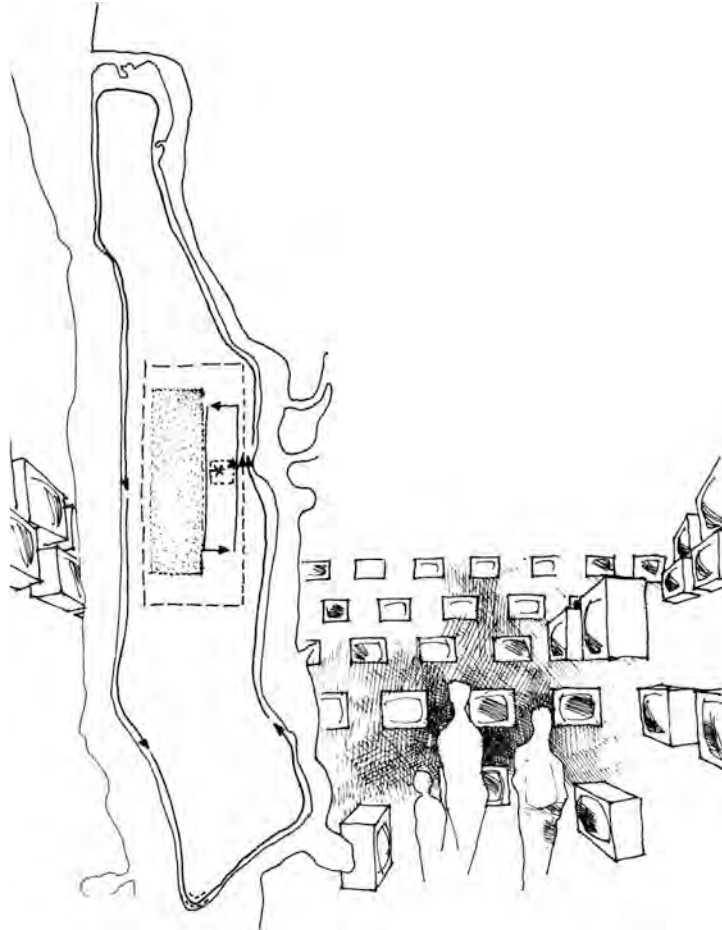
**In this concept drawing for *Manhattan Is an Island*, arrows
indicate the routes Ira Schneider planned to traverse in
order to tape Manhattan from multiple perspectives.[122]**

Media ecology drew Ryan, Gillette, and Schneider into ecology proper, even as it drew

media scholars out. The ecological strand of video art was an implementation of

121. Zippay, *Artists' Video*, 223; Schneider, "Manhattan Is an Island," 16.

122. Concept drawing drafted by Uri Shiran, from Ira Schneider, "Manhattan Is an Island," *Radical Software* 2, no. 5: 16.

Bateson's vision of recognizing that individual, society, and nature were woven together in a mutually adaptive system.

Chapter 5

The Revolution Will Not Be Televised:
Taping the New Left

"The revolution will not be televised," wrote Gil Scott-Heron in 1970, observing the gap

between the worlds depicted on network television and those in which black Americans

lived, and suggesting that revolution in consciousness before it could occur in the public

sphere represented by television. "You have to change your mind before you change the

way you're living and the way you move," Scott-Heron told PBS. "The thing that's going

to change people is something that no one will ever be able to capture on film."[1]

    Many Americans tried to capture that change on video, though, including other

participants in the Black Power movement. "I started out making video in the context of

making revolution," recalled Phillip Mallory Jones, who was involved in the activities of

the Black Panther Party.[2] These politically committed videographers often collaborated

with other experimental videographers who shared their opposition to political

authorities, and particularly to the Vietnam War, but weren't committed political

revolutionaries. The Videofreex, for example, not only made tapes about radicals like

Abbie Hoffman and Fred Hampton, but assisted political organizations like the Panthers

in screening and distributing those tapes. Nonetheless, according to member Parry

---

1.   Gil Scott-Heron, *Small Talk at 125th and Lenox*, Flying Dutchman, 1970; Gil Scott-Heron, quoted in
    Marcus Baram, *Gil Scott-Heron: Pieces of a Man* (New York: St. Martin's, 2014), 82–83.
2.   Philip Mallory Jones, interview by Chris Hill, July 1995, Vasulka Archive, last modified June 2, 2012,
    http://vasulka.org/archive/Contributors/ChrisHill/InterviewPhilipMalloryJones.pdf, p. 11.

Teasdale, the Videofreex worked "in the service of furthering a more liberated television medium, not in service of a broader political purpose."[3]

The relationship between the hip and the left has been of interest to historians. Fred Turner distinguishes between the New Communalists, who lived on communes or "saw the transformation of consciousness as the basis of the reformation of American social structure," and the New Left.[4] Timothy Miller writes that "the alternative culture… embodied at least two quite different approaches to the social crisis: there was a New Left, an overtly political opposition to the dominant culture; and there was hippiedom, the world of the dropouts and cultural dissenters." And as Miller points out, some scholars and participants in the early 1970s also drew such distinctions, between Heads and Fists, or between faith and works, while others—including Theodore Roszak— argued that there was an underlying unity to the two tendencies.[5]

This was (and is) what historians and sociologists of science might recognize as boundary-work, though with regard to political and cultural identities rather than science. Thomas Gieryn defines boundary-work as "the discursive attribution of selected qualities to scientists, scientific methods, and scientific claims for the purpose of drawing a rhetorical boundary between science and some less authoritative residual non-science."[6] If scientists purport to represent nature, though, New Left activists and hippies each

3. Dara Greenwald, "The Process Is in the Streets: Challenging Media America," in *Realizing the Impossible: Art against Authority*, ed. Josh MacPhee and Eric Reuland (Oakland: AK Press, 2007), 173.

4. Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006), 33.

5. Timothy Miller, *The Hippies and American Values*, 2nd ed. (Knoxville: University of Tennessee Press, 2011), xix–xxi.

6. Thomas F. Gieryn, *Cultural Boundaries of Science: Credibility on the Line* (Chicago: University of Chicago Press, 1999), 4–5.

purported to represent youth and the process of revolution. (The phrase "don't trust anybody over thirty" originated not in the counterculture but in the Congress of Racial Equality and the Berkeley Free Speech Movement, and expressed a suspicion on the part of young New Left activists towards older Communists.[7]) Representatives of each tendency wrote and spoke at length about how the other was inhibiting social change through hedonism or bureaucracy, violence or quietism. And on several occasions, prominent figures like Abbie Hoffman and the Weather Underground attempted syntheses of hip and left, with varying degrees of temporary success.

Liberation meant different things to a McLuhanite and a Marxist, and in the experimental video community these were often racialized categories. "Blacks are really repressed," wrote Michael Shamberg, "but if you're white and middle-class… a more genuine radical strategy… would be to build a base at the actual level of repression, which for whites is mostly psychic, not physical."[8] If for most white videographers video was—as Shamberg suggested—primarily a technology of consciousness (though he claimed this prescriptively and I'm claiming it descriptively), for some black videographers, particularly those associated with the Black Panther Party, it was a tool for propaganda against the physical and material violence of capitalism and white supremacy. Again, though, video became a boundary object, this time between hip and left, facilitating collaborations like those of the Freex and the Panthers.

---

7. Todd Gitlin, *The Sixties: Years of Hope, Days of Rage*, rev. ed. (New York: Bantam Books, 1993), 161.
8. Michael Shamberg and Raindance Corporation, *Guerrilla Television* (New York: Holt, Rinehard and Winston, 1971), section I, p. 29.

Waist Deep in the Big Muddy

> Every time I read the papers
> Them old feelings come on
> We're waist deep in the big muddy
> The big fool says to push on
>
> —Pete Seeger, "Waist Deep in the Big Muddy,"
> on *The Smothers Brothers Comedy Hour*,
> February 25, 1968[9]

In 1968 and 1969, the creators of the popular television variety show *The Smothers Brothers Comedy Hour* clashed repeatedly with CBS censors and executives over their references to recreational drugs, irreverence towards the Bible, opposition to the Vietnam War, critique of police violence, and satire of television censorship itself. The network's program practices staff read scripts and attended tapings, requesting editing both before and after each episode was shot. After CBS received complaints about a satirical sermon broadcast in October 1968, the network also began transmitting taped episodes to affiliate stations two days before broadcast so local managers could decide whether to air them.[10] Although CBS had first instituted this practice years earlier, in 1962, for shows "which in the network's opinion are sufficiently controversial in content to justify such previewing," this was the first time they applied it to every episode of a program.[11]

---

9. "Pete Seeger: Waist Deep in the Big Muddy," YouTube video, 3:03, from a performance on *The Smothers Brothers Comedy Hour* televised by CBS on February 25, 1968, posted by "PopulistParty," December 18, 2008, https://www.youtube.com/watch?v=uXnJVkEX8O4; Aniko Bodroghkozy, *Groove Tube: Sixties Television and the Youth Rebellion* (Durham, N.C. Duke University Press, 2001), 132.

10. David Bianculli, *Dangerously Funny: The Uncensored Story of* The Smothers Brothers Comedy Hour (New York: Touchstone, 2009), 156, 231–232. See also Bodroghkozy, *Groove Tube*, 123–163; and David S. Silverman, *"You Can't Air That": Four Cases of Controversy and Censorship in American Television Programming* (Syracuse, N.Y.: Syracuse University Press, 2007), 33–61.

11. Steven Alan Carr, "On the Edge of Tastelessness: CBS, the Smothers Brothers and the Struggle for Control," *Cinema Journal* 31, no. 4 (Summer 1992): 9–10.

While CBS had several reasons for canceling the *Comedy Hour* on April 3, 1969—including executives' anger that costar Tom Smothers was complaining to newspapers and politicians about censorship—the reason network president Robert Wood provided in his telegram to Smothers was that he had not delivered a tape in advance for previewing. Like the Reichs-Rundfunk-Gesellschaft during World War II, CBS used tape recording to facilitate censorship and wrest control of their broadcasts from their on-air talent. After a studio audience saw a performance live, it was edited to meet the demands of not only network executives but also advertisers and affiliate stations, providing the home viewer with an experience that might feel live (or might not, as Smothers complained about CBS's clumsy editing) but had been substantially modified.[12]

After losing his show, Smothers committed fully to his new countercultural persona; two months later, he joined Fluxus-affiliated artist Yoko Ono and her husband John Lennon—as well as Timothy Leary and his fourth wife Rosemary Leary—at their Bed-In for Peace in Montreal, where he played guitar on Lennon's song "Give Peace a Chance."[13] With the Smothers brothers gone, CBS lost a connection to the young, hip audience that the show attracted, and that its advertisers wanted to reach.

One executive, Don West, had an idea for a show that could replace it. West had left his job as managing editor of the trade magazine *Television* in 1966 for his dream job, special assistant to CBS corporate president Frank Stanton.[14] Soon after starting at CBS West wrote a memo proposing a show, *The Real World*, which would be "essentially a

---

12. Bianculli, *Dangerously Funny*, 295–296, 307.
13. Ibid., 319–320.
14. Lewis J. Paper, *Empire: William S. Paley and the Making of CBS* (New York: St. Martin's, 1987), 242, 247.

journalistic series"—as he later told Deirdre Boyle—produced as entertainment rather than news. Three anchors in a studio—"an old man, young guy, and a girl"—would tie together segments of documentary footage. When CBS cancelled the *Comedy Hour*, West "was very upset" but thought his show might fits its Sunday time slot. "I thought that there was a revolution going on in this country," he recalled. "I was afraid it was going to be in the streets. And I wanted to take it out of the streets and put it on television. Give it a ventilation, give it a place to be heard." West convinced Stanton to grant him leave from his responsibilities as assistant and persuaded vice president for programming Michael Dann, who also opposed the cancellation, to let him produce a pilot.[15]

West started a production company called SQM and hired writer-producer Bernard Sahlins—brother of anthropologist Marshall Sahlins and cofounder of Chicago's Second City comedy troupe, which he had sold his share of a tape recorder factory to start— along with director Bob Livingston, art director Stan White, and a few other writers.[16] He also hired an actress and singer, Nancy Cain, who he heard on the radio and thought could play the role of the "girl" among his anchors—and her roommate, Carol Vantobel, who had been teaching elementary school, as an office manager—and *her* friend and fellow teacher Skip Blumberg, a filmmaker who had dropped out of business school at Cornell University when graduate deferments for military service ended in 1968.[17] Cain

15. Bianculli, *Dangerously Funny*, 307; Deirdre Boyle, *Subject to Change: Guerrilla Television Revisited* (Oxford: Oxford University Press, 1997), 15–16; Les Brown, *Television: The Business behind the Box* (New York: Harcourt Brace Jovanovich, 1971), 134; Don West, interview by Deirdre Boyle, May 21, 1984, Don West file, box 6, Interview Transcripts series, Guerrilla TV Archive, Fales Library and Special Collections, New York University, pp. 1, 3 of first pagination and pp. 1, 5 of second pagination.
16. West, interview by Boyle, first pagination, 2; Bernard Sahlins, *Days and Nights at the Second City: A Memoir, with Notes on Staging Review Theatre* (Chicago: Ivan R. Dee, 2001), 23.
17. West, interview by Boyle, first pagination, 4; Parry Teasdale and Carol Vontobel, interview by Deirdre

also introduced West to her friend Michael Gilburd, an accountant who worked at a law firm that represented performers, and Gilburd became his business partner.[18]

By August this team had produced a script for the first ten minutes of a show, but West was frustrated. "We have sat here on the 34th floor of CBS saying we were going to create—or discover—or present *the real world*," he recalled thinking, "and all we've done is a television show."[19]

By the Time We Got to Woodstock

> By the time we got to Woodstock
> We were half a million strong
> And everywhere there was song and celebration
> —Joni Mitchell, "Woodstock," 1970[20]

A couple weeks later, while on vacation, Don West got a call from a "crazy kid named Lou Brill" who studied at Queens College and worked in the mailroom at CBS. Brill was at the Woodstock Music & Art Fair. "There's grass and there's girls," West recalls

Boyle, April 18, 1984, Parry Teasdale & Carol Vontobel file, box 6, Interview Transcripts series, Guerrilla TV Archive, first pagination, pp. 1, 6, 11; Nancy Cain, *Video Days: How Street Video Went from a Deep Underground Phenom to a Zillion Dollar Business; From Pirate TV to YouTube, What Was Gained and Lost along the Way and What We Saw through the Viewfinder; A Memoir* (Palm Springs, Calif.: Event Horizon, 2011), 1–5, 8; Skip Blumberg, Parry Teasdale, and Bart Friedman, interview by Jud Yalkut, "The Videofreex: Maple Tree Farm and Beyond," in Jud Yalkut, "Electronic Zen: The Alternate Video Generation" (unpublished typescript, 1984), Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive/Artists10/Yalkut,Jud/ElectronicZen.pdf, p. 7; David Farber, *The Age of Great Dreams: America in the 1960s* (New York: Hill and Wang, 1994), 148.

Cain wasn't actually interested in performing on television, but West hired her anyway as his assistant, telling her decades later that he did so because he was in love with her. Don West, in "'Subject to Change': Challenging Media," at "We're All Videofreex: Changing Media & Social Change from Portapak to Smartphone" (symposium, School of Visual Arts, New York, April 5, 2013), video, 1:12:58, iTunes U, https://itunes.apple.com/us/itunes-u/events-discussions/id635330930.

18. Teasdale and Vontobel, interview by Boyle, first pagination, 6, 11; Don West, "How the New Age of Television began 44 Years Ago," We're All Videofreex (blog), March 26, 2013, http://videofreex.tumblr.com/post/46345557537/don-west-how-the-new-age-of-television-began-44; Michael S. Gilburd, résumé, ValuCorp, last modified November 1, 2011, http://valucorp.com/ValuCorp-MGilburd-CV.pdf.

19. Boyle, *Subject to Change*, 16.

20. Joni Mitchell, "Woodstock," by Joni Mitchell, on *Ladies of the Canyon*, Reprise, 1970.

hearing. "You get down here!" West didn't, but when he got back to CBS Brill told him that he had met people who might help with his show.[21]

David Cort had travelled up to Woodstock from New York City with his video equipment and a group of "kids from my own white middle class who had gone into the ghetto," young radicals from the Lower East Side. Political organizer and agitator Abbie Hoffman—who was responsible for Movement City, Woodstock's political space, and who knew Cort from college at Brandeis University—helped him get electricity and a good location to set up a video center "astride a main route between one of several large campgrounds and the stage."[22]

Cort shot practical, educational tapes, including interviews of fairgoers who were providing first aid. "Cort produced 'First Aid #1' and 'First Aid #2' to help people handle the most prevalent problems, from sun burns to drug overdose," writes Boyle, "but perhaps the most vital tape made at Woodstock was 'Latrines,' a how-to tape shown in various strategic places around the encampment."[23] Though there were other videographers at Woodstock—one of whom was Ira Schneider—"nobody [else] took the responsibility of playing back right then and there," said Cort. "It was always the thing I wanted to do. Feed the information back right there.… You know, I never saw anything

21. Boyle, *Subject to Change*, 15; West, interview by Boyle, first pagination, 2; Parry Teasdale, interview by Chris Hill, May 1995, Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive /Contributors/ChrisHill/InterviewParryTeasdale.pdf, p. 2.

22. David Cort, interview by Deirdre Boyle, November 9, 1983, David Cort file, box 6, Interview Transcripts series, Guerrilla TV Archive, first pagination, p. 3; Marty Jezer, *Abbie Hoffman: American Rebel* (New Brunswick: Rutgers University Press, 1992), 189; Parry D. Teasdale, *Videofreex: America's First Pirate TV Station & the Catskills Collective That Turned It On* (Hensonville, N.Y.: Black Dome, 1999), 13.

23. Boyle, *Subject to Change*, 15.

of the music. I had to stick by the video equipment.… I would let equipment out to people I knew, and I would play it back."[24]

Interview in a first aid tent at Woodstock, August 1969.[25]

While doing this, Cort met Parry Teasdale, a young man who later wrote that he was "bored with psychedelics, disconnected by temperament from the militant core of the anti-war movement, adrift and apprehensive" when his sister's boyfriend Grayson Mattingly, who produced training tapes for companies and government agencies, introduced him to the medium in 1969. Teasdale bought a used surveillance camera, a television set, and a Panasonic videotape recorder from Mattingly, and connected it all to the electrical system of a 1962 Volkswagen bus; "I had become," he wrote, "an itinerant video artist."[26] A few months later, Teasdale persuaded the managers of Woodstock Ventures to permit him and his friends, operating as a new company called Video Trips,

---

24. Cort, interview by Boyle, first pagination, 3–4.

25. Still frame from Videofreex, "Woodstock Festival 1969—First Aid Interviews," YouTube video, 33:35, recorded August 1969, posted March 7, 2014, https://www.youtube.com /watch?v=rpcdP1XfVng.

26. Teasdale, *Videofreex*, 9–10. Mattingly later wrote manuals for video production, starting with Grayson Mattingly and Welby Smith, *Introducing the Single-Camera VTR System: A Layman's Guide to Videotape Recording* (New York: Charles Scribner's Sons, 1973).

to shoot video at the festival. Once there, a friend came upon Cort's video playback station and told Teasdale, who "was stunned" that someone else had brought video to Woodstock. The two men worked together, "him interviewing, me behind the camera—taping festival-goers, stoned and straight, Marxist doctors and nurses running the free health clinic, benevolently anarchist Hog Farmers, a man and his sheep—he claimed they were married—everything but the music."[27]

When they got back to New York City, Teasdale moved into the loft on the Lower East Side that Cort shared with his partner, artist Mary Curtis Ratcliff. The three of them began calling themselves the Videofreex (which, Teasdale notes, "played off a term about to become generic"), edited their Woodstock tapes with a razor blade and splicing tape, and made an appointment to show them to Don Hewitt, producer of the new CBS newsmagazine show *60 Minutes*. Hewitt dismissed the tape as old news, so Cort and Teasdale were surprised when Brill brought West and Cain to the loft to see their work.[28] Unlike Hewitt, West was ecstatic. "This is what I've wanted," he said later. "*This* was the real world and *this* was real television.… In the most rudimentary way, they would go over to the public health service and they do a spot or bit on how to dig a latrine—where do you put the shit! And here are all these people who didn't know how, back at various places around the encampment. I saw in those tapes the kind of energy I had never seen before in television."[29] Cain agreed. "It was like being there without actually having to be there," she wrote. "The people, the atmosphere, the drama."[30]

27. Teasdale, *Videofreex*, 12–13.
28. Teasdale, *Videofreex*, 12–13; Cain, *Video Days*, 14; Cort, interview by Boyle, first pagination, 4.
29. West, interview by Boyle, first pagination, 2.
30. Cain, *Video Days*, 16.

As Teasdale remembered it, West "couldn't bear to see the '60s pass him by, and when he came to the loft and David handed him the little Sony portable, it was the first time in a career in television Don had ever held a TV camera or shot a tape." He hired the Videofreex to shoot video for him using Sony, had CBS engineers optimize their gear, and let them "wander the bowels of CBS and pick out any used equipment we wanted."[31]

As this new vision came into focus, SQM's older, more professionally experienced staff left, starting with Sahlins. "They didn't want to deal with these Videofreex," said West. "They thought I was out of my mind for doing it."[32] New people also joined, though. In the spring of 1969, before Woodstock, a sculptor named Davidson Gigliotti had seen Cort carrying his camera and introduced himself as someone interested in video. Later, Gigliotti heard that West "was out hiring all these video guys" and started working for him. Around the same time, West also hired Chuck Kennedy, an electronics technician who had grown up in a Catholic orphanage, served in the army, and worked at GBC, a surveillance equipment company.[33]

"Everybody who was doing video at that time was somehow involved in this scene," recalled Gigliotti. West rented Global Village's facilities to shoot in, and worked with Ira Schneider and John Reilly there as well as director Bob Livingston.[34] "In all," writes

31. Teasdale, *Videofreex*, 15; West, interview by Boyle, first pagination, 2–3.
32. West, interview by Boyle, first pagination, 4.
33. Teasdale and Vontobel, interview by Boyle, 9, 12; Davidson Gigliotti, interview by Deirdre Boyle, April 20, 1983 (date in Boyle, *Subject to Change*, 226n5), Davidson Gigliotti file, box 6, Interview Transcripts series, Guerrilla TV Archive, pp. 2–3.
34. Gigliotti, interview by Boyle, 3; West, interview by Boyle, second pagination, 5.

Boyle, "roughly 60 people worked on 'The Now Project'"—as it was briefly known—"including filmmakers, TV professionals, and members of the video underground."[35]

SQM's offices on the third floor of the CBS Building became an increasingly hip and chaotic place. "I knew the Scotch-taped Mao posters and psychedelic head shop designs that were being thumb-tacked to the wall and the constant thump of rock and roll emanating were not going to go over well," writes Cain.[36] "I'd get drunk in CBS and ride the elevators," recalled Teasdale, "and the security people would come after me and I'd blow smoke in their face. Because we knew that we were connected to the very top. It was a time of great arrogance. It was very magical."[37]

The videographers began shooting documentary tapes for West's pilot, working informally. "We began… essentially a free form process of going out and finding out what was going on in America in 1969," said West. "It was very homegrown. We used my station wagon and quite often we'd use my kids in the act.… I think the first thing we did together was some clowns working in Central Park—young kids, Circlo del Arte."[38] They shot video of cadets doing gymnastics at West Point, of a chorus at Mount Holyoke College, and of a body-painting party in New York City.[39]

In July, about a month before he'd met the Videofreex, West had visited the Fort Hill Community, a commune in Boston led by folk musician and experimental filmmaker Mel Lyman. In October he returned with a TV crew from Boston public television station

35. Boyle, *Subject to Change*, 18.
36. Cain, *Video Days*, 11.
37. Teasdale and Vontobel, interview by Boyle, first pagination, 4–5.
38. West, interview by Boyle, first pagination, 3.
39. Gigliotti, interview by Boyle, 4; Teasdale and Vontobel, interview by Boyle, first pagination, 2; Teasdale, *Videofreex*, 11, 15.

WGBH. "I had the idea of contrasting two communes," West told *Rolling Stone* reporter

David Felton, "this young people's commune in Boston and an old people's retirement

community in Seal Beach, California," which he sent the Videofreex west to tape.[40]

According to filmmaker Bruce Conner, "Mel was one of those people who just came in

and out" of Timothy Leary's house in the early 1960s. He then became a fixture of the

experimental film scene in New York, where Jonas Mekas helped him publish his first

book*, Autobiography of a World Saviour*. In 1966, Lyman and his friends moved to the

Fort Hill neighborhood of Boston and began building a community; over the next few

years it became a cult, with Lyman as its messianic and authoritarian leader.[41]

"They were all going through acid therapy," alleged one associate in an article by

Rolling Stone reporter David Felton. "He was taking them one by one in his private

audience and hitting them with 1500 mikes of pure acid. And studying them—filming

and recording them.… He was playing with these people, programming them." Lyman

himself denied he ever forced LSD on anyone, explaining the he could "take people

through changes of consciousness without acid" anyway.[42]

It was for this purpose that Lyman had his congregation build the Magic Theater, a

movie theater in which to screen his films and play his music. "It would have been like a

church," he said, "like super LSD; people would've gone in one door and come out eight

---

40. David Felton, "The Lyman Family's Holy Siege of America," in *Mindfuckers: A Source Book on the Rise of Acid Fascism in America including Material on Charles Manson, Mel Lyman, Victor Baranco and their Followers*, ed. David Felton (San Francisco: Straight Arrow Books, 1972), 197.

41. Ibid., 155, 168–188; [Mel Lyman], *Autobiography of a World Saviour* (New York: Jonas, 1966). For an extensive collection of sources, see Steve Trussel, "Mel Lyman, 1938–1978: A Chronological Collection of Works by and about Mel Lyman and the Lyman Family including Texts and Excerpts," Trussel.com, last modified August 25, 2013, http://trussel.com/f_mel.htm.

42. Felton, "Lyman Family's Holy Siege," 182, 313.

hours later completely transformed!" Before construction was finished, though, Lyman

changed his mind and ordered the Magic Theater be torn down. "In Los Angeles," he

said, "I realized—shit, the whole world could be a Magic Theater. It's already set up—

everybody has a TV set. Now the idea of the original Magic Theater seems so small."[43]

   This interest in television was probably why the Lyman Family welcomed West into

their community. "For me this was a completely mind-blowing experience," West later

told Felton. "I came right out of the 34th floor of CBS, I was approaching middle age, and

I just fell in love with the Hill. And, I thought, they with me. I guess they thought I was

the route to taking over CBS." When the Lyman Family watched the first day's tapes,

though, they confronted him. "David Gude said something like, 'You talk about the Real

World—this is the real world,'" West recalled, "and he pulled out a German Luger and

shoved it in my face. 'This is *our* real world!'" West continued taping nonetheless,

working with a Lyman Family member named George Peper as a cameraman, and when

the project was over Lyman had acquired something like fifteen portapaks from SQN.[44]

Won't You Please Come to Chicago

In a land that's known as freedom
How can such a thing be fair
Won't you please come to Chicago
For the help that we can bring
        —Graham Nash, "Chicago," 1971[45]

Meanwhile, Nancy Cain and the Videofreex drove Don West's station wagon to Chicago

to cover the trial of the Chicago 8, political organizers charged with conspiracy to incite a

---

43. Ibid., 241–244, 311–313.
44. Ibid., 196–199; Cort, interview by Boyle, second pagination, 14.
45. Graham Nash, "Chicago," by Graham Nash, on *Songs for Beginners*, Atlantic, 1971.

riot in connection with the demonstrations that had marked the occasion of the 1968 Democratic National Convention. They arrived during the Days of Rage, actions organized by the militant Weatherman faction of Students for a Democratic Society and scheduled close to the beginning of the trial. Aligning themselves with anti-imperialist movements around the world, but particularly with the National Liberation Front in Vietnam and the government of Cuba, Weatherman sought to "bring the war home." The organizers intended, writes Dan Berger, for "thousands of working-class white youths to descend on Chicago for a violent anti-imperialist street fight"; instead, only a few hundred demonstrators arrived and only about 150 fought with police. Over the same days—October 8 to 11—another SDS faction, Revolutionary Youth Movement II, organized marches and rallies with similar goals but less confrontational tactics in cooperation with the Black Panther Party and the Puerto Rican nationalist Young Lords.[46]

"We got pulled over by the Chicago police the moment we arrived in town," writes Cain. "I showed the officer our letter of introduction from Don West at CBS, all the time with our camera running, and they allowed us to proceed. We kept the camera running, shooting the raucous throngs and playing back the video for the protesters right there in the streets." David Cort also interviewed bystanders, asking what they thought about both the demonstrations and the war. When protesters would ask what the tape was for, Cort would talk about playing it back to protesters in Lincoln Park. "This was the first inkling

---

46. Cain, *Video Days*, 17–19; Dan Berger, *Outlaws of America: The Weather Underground and the Politics of Solidarity* (Oakland: AK Press, 2006), 103–104, 107–115.

I had," Cain writes, "that David and the Videofreex were not exactly totally working for CBS.… I realized television could be something that was not even remotely like CBS."[47]

The Freex also taped a meeting of Yippies, including Chicago 8 defendants Abbie Hoffman and Jerry Rubin, each of whom they interviewed.[48] Rubin, Hoffman, his wife Anita Hoffman, Nancy Kurshan, and Paul Krassner had founded the Youth International Party on New Year's Eve 1967 in the Hoffmans' apartment on St. Mark's Place, a block from Gem's Spa. After founding their new party, they watched the evening's episode of *The Smothers Brothers*. "Yippie," writes David Farber, "began as a dope joke, as a half-cocked combination of hippie ethos and New Left activism, only the real joke was that the inventors meant it."[49]

Most of those inventors had experience in the New Left and training in the human sciences before they began using drugs and became hip as well: Rubin began graduate school in sociology, participated in the Berkeley Free Speech Movement, and ran for mayor of Berkeley; Abbie began graduate school in psychology and worked in the Civil Rights Movement for the Student Nonviolent Coordinating Committee, or SNCC; Anita earned a master's degree in psychology, worked as a drug counselor, and volunteered for the American Civil Liberties Union; and Krassner edited the satirical magazine *The*

47. Cain, *Video Days*, 17–19.
48. Videofreex, "Chicago Travelogue: Abbie Hoffman, Jerry Rubin and the Yippies," video, 40:30, October 12, 1969, Video Data Bank, School of the Art Institute of Chicago; John Schultz, *The Chicago Conspiracy Trial*, rev. ed. (New York: De Capo, 1993), 9.
49. David Farber, *Chicago '68* (Chicago: University of Chicago Press, 1988), 3; Paul Krassner, *Confessions of a Raving, Unconfined Nut: Misadventures in the Counterculture*, updated and expanded ed. (Berkeley: Soft Skull, 2012), 163.

Realist, befriended Timothy Leary, and taught at the Free University of New York, where the Yippies held their meetings in early 1968.[50]

The Yippies planned a Festival of Life that would parallel the Death Convention in Chicago. Ultimately, the city denied the Yippies permits for their festival, and also denied permits for the parallel demonstrations planned by the National Mobilization Committee to End the War in Vietnam, or the Mobe. Over the week of the convention, police repeatedly attacked demonstrators associated with both New Left organizations in what the National Commission on the Causes and Prevention of Violence famously described as a "police riot."[51]

Hoffman and Rubin were particularly interested in the role of television in political organizing. "As acolytes of Marshall McLuhan and as unconflicted members in good standing of the television generation," writes Aniko Bodroghkozy, "the Yippies confidently proclaimed their ability to manipulate mass media."[52] Drawing on a psychological metaphor also dear to McLuhan, Hoffman celebrated the limited television coverage given to demonstrations during the Democratic National Convention: "Our actions in Chicago," he wrote, "established a brilliant figure-ground relationship. The rhetoric of the Convention was allotted fifty minutes of the hour, we were given the ten or less usually reserved for the commercials. *We were an advertisement for revolution*."[53]

50. Farber, *Chicago '68*, 5–11, 25, 28; Krassner, *Confessions of a Raving, Unconfined Nut*, 111; Jonah Raskin, *For the Hell of It: The Life and Times of Abbie Hoffman* (Berkeley: University of California Press, 1996), 92.

51. Farber, *Chicago '68*, 16–17, 165, 177–204; Daniel Walker, *Rights in Conflict: Convention Week in Chicago, August 25–29, 1968* (New York: E. P. Dutton, 1968), 5.

52. Bodroghkozy, *Groove Tube*, 98.

53. Free [Abbie Hoffman], *Revolution for the Hell of It* (New York: Dial, 1968), 133–134.

At the meeting the Videofreex attended, the Yippies strategized their fundraising for

Hoffman and Rubin's defense, discussing which rock bands might play a benefit concert.

The Freex set up a television monitor so the Yippies could see what they were taping live.

"We have our own TV show," said Hoffman to Rubin. "We can swear. Say fuck!"[54]

**Abbie Hoffman and other Yippies with a microphone
and live television monitor, October 12, 1969.[55]**

When Cort asked Rubin what he thought of the Weatherman actions, he searched for

an answer: "It's significant. I don't know what to think about it. In a way I like it, but it's

frightening, cause it was definitely a new stage." Hoffman was more critical, arguing that

because Weatherman couldn't "claim some morality on your side" their tactics would

unite the ruling class rather than divide it, and that the militants had attacked the property

of working-class people like barbers and taxi drivers, as if they had "this theory of

organizing people by hitting them on the head."[56]

---

54. Videofreex, "Chicago Travelogue: Abbie Hoffman, Jerry Rubin and the Yippies."
55. Still frame from ibid.
56. Videofreex, "Chicago Travelogue: Abbie Hoffman, Jerry Rubin and the Yippies."

Hoffman saw the trial itself as "absolute poetry,… the most fascinating thing I've ever seen,… as soon as you can work the symbolism into life/death struggle.… We do well every day but the end." Like the riots for which he was being tried, the trial would "divide the ruling class" as the press recognized it as the state's vengeance on the left. "When you get the mass media like that dividing up and splitting, you know, along the different issues," said Hoffman, "then you like sort of move in, and you say, 'Look, you know, what we really need is the revolution, we really got to overthrow the country. See, we want money, we want guns, we want dynamite, lollipops, acid, dope, everything.'"[57] The Videofreex also interviewed Mobe organizers and defendants David Dellinger and Tom Hayden, and their lawyers William Kunstler and Leonard Weinglass—but when Hayden learned they were working for CBS he demanded they erase their footage.[58]

Defendant and Black Panther Party cofounder Bobby Seale was held in jail during the trial, so the Freex instead recorded a statement by his wife Artie Seale and interviewed the 21-year-old chairman of the Party's Illinois chapter, Fred Hampton.[59] Hampton had been president of the youth council of the local branch of the National Association for the Advancement of Colored People when Bobby Rush, himself a SNCC organizer, recruited

57. Ibid.

58. Teasdale and Vontobel, interview by Boyle, first pagination, 3; Cain, *Video Days*, 24.

59. Schultz, *Chicago Conspiracy Trial*, 35–80; Teasdale and Vontobel, interview by Boyle, first pagination, 3; Videofreex, "Leslie [*sic*] Seale (Mrs Bobby Seale) Interview Part 1," YouTube video, 2:21, recorded October 1969, posted January 12, 2009, https://www.youtube.com/watch?v=XZ9DcyCyA80; Videofreex, "Fred Hampton: Black Panthers in Chicago," video, 24:00, October 1969, Video Data Bank.

Part of the Videofreex' interview with Hampton may be viewed at https://www.youtube.com/watch?v=wIbeTS8G5co, and a transcript may be found in Kathy High and Dara Greenwald, "Portable Technologies, Contestational Media: New York State in 1968," in *(1968): Episodes of Culture in Contest*, ed. Cathy Crane and Nicholas Muellner (Newcastle upon Tyne, England:Cambridge Scholars, 2008), 60–70.

him to join the Panthers in 1968. Early in 1969, he stole an ice cream truck and gave away ice cream bars to children. While he was awaiting trial, Hampton started a Free Breakfast for Children Program on the model of those Panthers had organized in other cities, and other Panthers soon began a study group and distributed the Party's national newspaper, the *Black Panther*.[60]

The Freex interviewed Hampton, who was accompanied by two other men, at the home of wealthy white supporter Lucy Montgomery.[61] "The Panthers have gotten like a lot of publicity in Chicago because of the fact that Bobby Seale is on trial with the rest of the eight for the conspiracy," began Teasdale, "but we're finding out, especially today, that you have a lot more problems." Between June and October, police and FBI agents had raided the Panther's Chicago headquarters three times; in each of the latter two raids, Panthers and police exchanged fire, then police made arrests and set fire to the office. "It's not a question of nonviolence or violence," explained Hampton, "the question is between resistance to this fascism or either nonexistence within fascism."[62]

Hampton also spoke at length about the Panthers' Marxist-Leninist ideology, and how the Party expressed it through their programs, including their free health clinics. "We respect Mao," he said, "but I'd say that Chairman Bobby and Huey P. Newton and Chief of Staff David Hilliard also are the most profound Marxists in the world living today." Cort asked Hampton what he thought about the Weatherman actions as he'd asked

60. Joshua Bloom and Waldo E. Martin, Jr., *Black against Empire: The History and Politics of the Black Panther Party* (Berkeley: University of California Press, 2013), 226–232.

61. Cain, *Video Days*, 22; Michael Thelwell, in *A Circle of Trust: Remembering SNCC*, ed. Cheryl Lynn Greenberg (New Brunswick: Rutgers University Press, 1998), 201.

62. Videofreex, "Fred Hampton"; Bloom and Martin, *Black against Empire*, 233–235.

Hoffman and Rubin. "They were a bunch of anarchistic, Custeristic, muddlehead, scatter-brained fools," replied Hampton. "It's opportunistic to use the Black Panther Party as the vanguard when it benefits you but then, when the Black Panther Party as the vanguard tell you that a move that you're making is ideologically, politically, and organizationally incorrect,… you refuse to accept that."[63]

Fred Hampton, October 1969.[64]

"You and the people around you seem to be like always in danger," Teasdale observed, before asking how the Party would survive Hampton's death. "We don't produce buffoons," Hampton replied, "we produce leaders." He also suggested that the government might be "tired of wiping out power," as more militant leaders replaced those killed or jailed. "When they wiped out Huey P. Newton and Eldridge Cleaver popped up, I know very well that they said, 'We wish to God that we had kept Huey P. Newton on the scene, because this motherfucker's out of his mind.'"[65]

---

63. Videofreex, "Fred Hampton." On Hampton's complex relationship with Weatherman, see Berger, *Outlaws of America*, 108.
64. Still frame from Videofreex, "Fred Hampton."
65. Videofreex, "Fred Hampton."

A month later Spurgeon Jake Winters, a Panther, shot eleven police from an abandoned building, killing two, before other officers killed him. Then, at 4:30 AM on December 4, fourteen police, acting on advice from the FBI, entered Hampton's apartment. They shot and killed Hampton, who was in bed, as well as fellow Panther leader Mark Clark.[66]

Subject to Change

> Revolution, yes
> Destruction, no
> Life is subject to change
> Because people are always changing
>> —Hubie Davis, "Subject to Change," in
>> Don West, *Subject to Change*, 1970[67]

The Videofreex continued shooting video for Don West. He sent them, along with Michael Gilburd and Chuck Kennedy, to California, "where we had almost no contact with politics," said Parry Teasdale. "It was all space-land culture." They drove up the coast from Los Angeles to San Francisco in an RV, visiting Frank Zappa, the human potential movement center Esalen, an alternative high school, and rock radio station KSAN.[68]

West planned a screening for CBS executives for December 17, with both live and taped segments. He rented a loft for it, and Davidson Gigliotti and George Peper—who implied he was carrying a handgun—built a control room there, turning it into a television studio. When they returned to New York, the Videofreex spent three weeks at a

---

66. Bloom and Martin, *Black against Empire*, 236–239. See also *The Murder of Fred Hampton*, directed by Howard Alk, produced by Mike Gray (1971; Chicago: Facets Video, 2007), DVD; and Curtis J. Austin, *Up Against the Wall: Violence in the Making and Unmaking of the Black Panther Party* (Fayetteville: University of Arkansas Press, 2006), 189–224.
67. Hubie Davis, "Subject to Change," in Don West, *Subject to Change*, video, 1970, in "'Subject to Change': Challenging Media."
68. Teasdale and Vontobel, interview by Boyle, first pagination, 3–4.

rented house near the Catskill Mountains editing their footage, which had to be transferred to one-inch tapes because half-inch editing equipment was not yet on the market. "There was a considerable amount of drugs and drinking and smoking and acid trips," recalled Carol Vontobel. "There was a lot going on."[69]

The day before the live screening, the Freex drove down to New York and showed their final edited tape to West. "After all these months, we have virtually nothing," West remembered thinking. He liked the Abbie Hoffman interview, but the Freex had omitted the Fred Hampton interview for political reasons, and "the rest was stuff you couldn't hold a show together with." West had the rest of the tapes flown down on a chartered plane, and with Gilburd "spent most of the next 24 hours learning how to edit," producing his own version of the show that incorporated both the interview with Hampton and film of his funeral.[70]

When West arrived at the loft with his edit the next day, though, Teasdale refused to screen it. "I felt that it was maudlin," remembered Teasdale, who later wrote that "film was the old medium, distant, inflexible, elitist, impure." If West tried to play his tape, Teasdale threatened, he sabotage the show by disconnecting cables.[71] "We wanted… to try to make some kind of a format very very different," recalled Cort, "that would destroy everything in front of and behind it, so that it would be so different that it wouldn't work.… It would be unacceptable—but not bad."[72]

---

69. Ibid., 6–7; Gigliotti, interview by Boyle, 4; Yalkut, "Videofreex," 8.
70. West, interview by Boyle, 5; West, "How the New Age of Television Began."
71. Teasdale and Vontobel, interview by Boyle, first pagination, 8; Teasdale, *Videofreex*, 18.
72. Cort, interview by Boyle, first pagination, 5.

**The Videofreex loft during *Subject to Change*, with a
monitor on the left, a camera on a tripod in the center,
and friends surrounding them, December 17, 1969.[73]**

The screening that had come to be known as *Subject to Change* proceeded, then, as
West and the Freex had planned it. The Freex screened tapes of circus performers,
antiwar demonstrators, eccentric teachers and students, DJs, inflatable architectural
spaces, and Abbie Hoffman before an audience of their friends. In between tapes,
musicians Buzzy Linhart and Major Wiley performed live in the loft. It was a variety
show that featured a variety of different kinds of Americans—including bystanders in
Chicago who disapproved of demonstrators—rather than focusing on celebrities,
demonstrating that the Freex ultimately took the mission of depicting the real world more
seriously than West did. Although everything was shot in black-and-white, this all
appeared on screens in synthetic color; at the Freex' suggestion, West had flown Eric
Siegel in from Sweden with his Process Chrominance Synthesizer.[74]

73. Still frame from Videofreex, "Buzzy Linhart 'Reputation,'" YouTube video, 4:34, recorded December
    17, 1969, posted January 10, 2009, https://www.youtube.com/watch?v=Jr0W9fuWNQk.

74. Teasdale and Vontobel, interview by Boyle, first pagination, 6–7; Videofreex, *Subject to Change*,
    video, 1:18:35, December 17, 1969, Video Data Bank.

In the next room, CBS executives Michael Dann, Irwin Siegelstein, and Fred Wilverman sat on an unmade bed and watched the event as closed circuit television along with West. Dann was not pleased, and he told those assembled that it would be five years before audiences were ready for the experience.[75] "According to the Videofreex," wrote Michael Shamberg, "Dann and his assistants were so repelled by what they saw that they stumbled out early in a nervous fit."[76]

Dann gave West two weeks to produce a better pilot. "We took about all the footage we could find from the Freex and here and there," West recalled, "mostly from Freex, some of Bob Livingston's stuff," and tied it together with new narration and musical interludes by folksinger Hubie Davis, as well as film of Hampton's funeral. The result was a more conventional documentary on the varieties of social change in America, from circus arts to the New Left, that presented revolution as an essentially patriotic phenomenon. "I feel that change is what America is all about," began West's narration, over Davis' guitar. "We're all subject to change. Not just the kids and not just in the streets, but in our work and our play and our whole lifestyle. Revolution means change, and America has always meant revolution."[77]

West worked with engineers at CBS Broadcast Center to bring the footage, shot on half-inch helical scan portapaks, up to broadcast quality. "They devised a method of using a Fernseh line standard converter which CBS has just gotten to convert from 525 [scan lines] to 625," he recalled. "They somehow went through this thing and stripped the

75. West, interview by Boyle, first pagination, 5–6, second pagination, 1–2.
76. Shamberg and Raindance, *Guerrilla Television,* section II, p. 12.
77. West, "How the New Age of Television Began"; West, *Subject to Change.*

synch off the half-inch tape and transferred it to 2", and we edited my version of the show in 2"." By January 12, then, West had a tape that met the technical standards of broadcast television—albeit in black-and-white—and had a clearer structure than the Videofreex' edit.[78]

Ultimately, though, the show's content was just as challenging. "If the ideas that the Smothers Brothers were airing were enough to terrify the country," West later explained, "think of the concept that Fred Hampton was airing…. I don't know when it began to dawn on me—if it ever did—that the answer was going to be no." When he screened his pilot for Frank Smith and Robert Wood, who had cancelled *The Smothers Brothers Comedy Hour*, that was indeed the answer. Disgraced, West resigned from his job at CBS, which had spent $86,000 on the project. He spent a year and a half unsuccessfully shopping around his pilot to other networks before taking a new job as managing editor of *Broadcasting* magazine.[79]

The end of funding from CBS also meant changes for the Videofreex. Nancy Cain, Skip Blumberg, Carol Vontobel, Davidson Gigliotti, and Chuck Kennedy were all out of a job, and after working alongside the Freex for several months, they decided to join them. The Freex kept most the equipment they'd received, and sent Lou Brill into CBS with an empty guitar case to retrieve the tapes they'd recorded.[80] "There's a kind of group consciousness as well as individual consciousness," said Cort about the Videofreex. "It's like it's technological. We have a system which brings six or seven of us almost

---

78. West, interview by Boyle, first pagination, 6.
79. Ibid., second pagination, 1–4; West, "How the New Age of Television Began."
80. Teasdale and Vontobel, interview by Boyle, first pagination, 11–12; Yalkut, "Videofreex," 6.

electronically together. We've got four cameras connected into an electronic mixer—a video mixer—which mixes the cameras through special effects, devices like fading, superimpositions, split screens, and also there's a sound man, and we're all intercom-connected. That's a very exciting experience for us."[81]

The group started hosting screenings in their loft every Friday night. They had an Eidophor video projector, an unusual machine that used a scanning electron beam to deform a thin layer of liquid so that light would pass through more at some points than at others. The Videofreex also bought an International Video Corporation one-inch editing machine, making them the first New York collective to edit their tape electronically instead of with a razor blade. "We were heavy hardware, because of CBS," recalled Cort.[82]

81. David Cort, Phyllis Gershuny, Curtis Ratcliff, and Michael Shamberg, interview by G. Roy Levin, July 15, 1970, "Raindance (Michael Shamberg) and Videofreex (David Cort)," in G. Roy Levin, *Documentary Explorations: 15 Interviews with Film-Makers* (Garden City, N.Y.: Doubleday, 1971), 382–383.

82. Cort, interview by Boyle, first pagination, 6; Yalkut, "Videofreex," 7; Teasdale, interview by Hill, 5; Albert Abramson, *Electronic Motion Pictures: A History of the Television Camera* (Berkeley: University of California Press, 1955), 101–102. For a diagram of an Eidophor projector, see Kira Kitsopanidou, "The Widescreen Revolution and 20th Century-Fox's Eidophor in the 1950s," *Film History* 15, no. 1 (2003): 43.

Seize the Time

You do not act like those who care
You have not even fought
For the liberty you claim to lack
Or have you never thought
To seize the time
　　　　　—Elaine Brown, "Seize the Time," 1969[83]

Sometime in late 1970 or early 1971, three men from the New York chapter of the Black Panther Party visited the Videofreex' loft to watch their tape of Fred Hampton. One of them, Big Man, asked the Freex to screen it at a community center in Harlem and a drug rehab project on an island in the East River. "People would sit forward quietly and concentrate as Hampton spoke," recalled Parry Teasdale.[84]

　"Our direct contact with the New York Panthers ended after the showings of the Hampton tapes," writes Teasdale, "yet the fact that we'd had any involvement with the Panthers enhanced a growing mystique around the almost exclusively white, middle class video movement that the Videofreex was the radical video group, the one out there on the edge of the struggle for peace, freedom and justice."[85] Teasdale believes this reputation was mostly unearned. "I suppose we accepted the language of the political people that the war was in pursuit of American imperial ambitions," he recalls. "But anyone who went

---

83. Elaine Brown, "Seize the Time," by Elaine Brown, on *Seize the Time*, Vault, 1969. Elaine Brown joined the Black Panther Party in 1968 and became its minister of information and eventually chairwoman. Bloom and Martin, *Black against Empire*, 140, 383. On her music, see Rickey Vincent, *Party Music: The Inside Story of the Black Panthers' Band and How Black Power Transformed Soul Music* (Chicago: Lawrence Hill Books, 2013), 296–299.

84. Teasdale, *Videofreex*, 38–39.

85. Ibid., 40.

around spouting doctrinaire phrases like that would have been ridiculed or been made the subject of a tape."[86]

Some, though, saw video as a tool for not only documenting but enacting such political commitments. Among them were black experimental videographers with more direct ties to the Black Panther Party. Philip Mallory Jones grew up in Chicago, where he lived when Bobby Rush and Fred Hampton started a chapter of the Black Panther Party there in 1968. He spent that year registering voters in Mississippi and "looking for trouble" in Memphis, where he was released from jail a week before Martin Luther King, Jr. was assassinated. "For the year and a half or so proceeding my introduction to video," he recalled, "I was armed and dangerous basically."[87]

In 1969, Jones was also making animated 16 mm films and enrolled in a Master of Fine Arts program in creative writing at Cornell University, where in April armed black students occupied a campus building in a campaign of advocacy for a black studies program. Jones began shooting video after he came across a portapak in Cornell's art and architecture library. Soon, Sony released a deck capable of electronic editing. "It was really one of the defining moments of my life," he later said, "when I made my first video edit around Christmas time in the dead of winter in 1969." Soon, he met the Videofreex, who visited Ithaca.[88]

---

86. Greenwald, "Process Is in the Streets," 173.
87. Jones, interview by Hill, 11.
88. Ibid., 1–2; Philip Mallory Jones, résumé, http://philipmalloryjones.com/curriculum-vita-2/; Donald Alexander Downs, *Cornell '69: Liberalism and the Crisis of the American University* (Ithaca, N.Y.: Cornell University Press, 1999), 1–2.

Jones saw his aesthetic interests as a manifestation of his politics. On Thanksgiving 1970 he cofounded a video collective, the Ithaca Video Project, with five other local artists.[89] When they applied for a grant from the New York State Council on the Arts, the Ithaca Video Project named a proposed trailer equipped for mobile video demonstrations the "Videcong"—bringing together the technical and the revolutionary, the vidicon and the Viet Cong.[90] "What's in a name?" wrote program officer Russell Connor. "Trouble, I say, if you want to get the real people on cable television and you call your mobile unit the Videcong."[91]

When Jones studied at Cornell, he "was very much involved with some Panther Party activities," and in January 1971 he arranged for a fellow Ithaca videographer, Guy Pignolet, to travel to Algeria and interview Black Panther Party Minister of Information Eldridge Cleaver.[92] Pignolet was a French engineer who worked in oilfields around the world before studying organizational behavior at Cornell; he was also a videographer who described the medium as a "mind blowing/consciousness-raising tool."[93]

---

89. Jones, interview by Hill, 5; Ithaca Video Project, "Personnel," Ithaca Video Project 71-050F file, box 305, New York State Council on the Arts Grant Application Files (14064-84) [hereafter NYSCA Files], New York State Archives.

    One of the other members of the Ithaca Video Project, Ellen Ullman, went on become a software engineer and write an influential memoir about her experiences. Ellen Ullman, *Close to the Machine: Technophilia and Its Discontents* (San Francisco: City Lights Books, 1997).

90. Ithaca Video Project, "Appendix III: Mobile Theatre—Videcong," Ithaca Video Project 71-050F file.

91. "All-Purpose Form," Ithaca Video Project 71-050F file.

92. Jones, interview by Hill, 4; Eldridge Cleaver to Black Panther Party East Coast Ministry of Information, January 29, 1971, Cleaver-Leary Videotapes file, box 12, Internal Documents subseries, Black Panther Party Records series, Dr. Huey P. Newton Foundation Inc. Collection, Special Collections, Stanford University Libraries.

93. Guy Pignolet, "Feedback," *Radical Software* 1, no. 2 (1970): 23; Guy Pignolet, résumé, The Lindamood Family Web Page, last modified June 3, 2005, http://lindamood.com/guypignolet.htm; Bottin Video International, *Video Exchange Directory* (Vancouver: Image Bank, 1971), Optic Nerve Project Files box, Optic Nerve Collection, Pacific Film Archive Library, University of California, Berkeley.

Eldridge Cleaver's career in the Black Power movement had begun in 1966, when he was released from a nine-year prison term for assault with intent to kill. Upon his release, Cleaver moved to San Francisco, where he worked as a journalist for the left Catholic magazine *Ramparts*, cofounded a community center called Black House, and organized a memorial conference for the second anniversary of Malcolm X's death. He met Chairman Bobby Seale, Minister of Defense Huey P. Newton, and the other members of the Black Panther Party for Self-Defense in February 1967, when they provided an armed escort for Malcolm X's widow Betty Shabazz, who was speaking at the conference.[94]

The Black Panther Party was then a local Oakland organization only a few months old, focused primarily on armed patrols intended to communicate to police that they could not abuse black people with impunity. In April, they organized the residents of North Richmond, a few miles from Oakland, in response to a jury acquitting a police officer who had shot and killed a young man. Cleaver assisted the Party in producing a newspaper to publicize a rally, and thus became the first editor of the *Black Panther Community News Service* (later just the *Black Panther*), which became the Party's primary medium of communication and most steady source of income. He also soon became the Panther's minister of information.[95]

The Black Panther Party operated at more rapid tempo than the scientific, engineering, and artistic projects I've recounted thus far, and soon—with Cleaver's help—on a larger stage as well. In May 1967, armed Panthers walked into a session of the California State

---

94. Bloom and Martin, *Black against Empire*, 48–49, 76, 78, 123.
95. Ibid., 39, 45–48, 50–56; Jane Rhodes, *Framing the Black Panthers: The Spectacular Rise of a Black Power Icon* (New York: New Press, 2007), 96, 101, 104.

Assembly to protest a bill that would outlaw carrying loaded firearms in public, an event Cleaver covered for *Ramparts*. The Party also published its manifesto, the Ten Point Program, that month. Over the summer, Newton published essays in the *Black Panther* in which he drew on the work of Malcolm X, Mao Zedong, and psychiatrist Franz Fanon in order to interpret the psychological experience of black Americans as that of colonized people, albeit in an internal colony occupied by police, and align the Black Panther Party with other movements against colonialism around the world, including in Africa and Vietnam. In October, Newton was involved in a confrontation with a police officer, John Frey, in which both were shot and Frey died; his trial for murder attracted support across the left.[96]

Among those most intensely involved in the campaign to "Free Huey!" was Kathleen Neal, an alumna of Oberlin College who had previously served as secretary of SNCC's Campus Program and met Cleaver at a conference she organized in March at Fisk University. She moved to San Francisco, joined the Black Panther Party, became their communications secretary, and, at the end of 1967, married Eldridge Cleaver, changing her name to Kathleen Cleaver. Although the Party was founded by men and initially pitched its recruiting to "brothers on the block"—and although men in the Party perpetrated sexual violence against women, with Eldridge Cleaver even admitting somewhat boastfully in his 1968 book *Soul on Ice* that he had raped women in the 1950s—Kathleen Cleaver was one of many women who became involved at all levels of the organization, both in armed action and in community organizing.[97]

---

96. Bloom and Martin, *Black against Empire*, 57–61, 66–71, 99–101.
97. Ibid., 95–96, 105–106, 304; Eldridge Cleaver, *Soul on Ice* (New York: Delta, 1968), 14–15.

On April 4, 1968, Martin Luther King, Jr. was shot and killed in Memphis. Many in the Black Power movement gave up hope for nonviolent means of antiracist activism; "nonviolence has died with King's death," Cleaver told Panther Chief of Staff David Hilliard.[98] Two days later, Cleaver, Hilliard, and six other Panthers were involved in a shootout with Oakland police. After an hour and a half, Cleaver and seventeen-year-old Bobby Hutton, the Panther's first recruit, came out of a burning basement unarmed. Police arrested Cleaver and shot and killed Hutton, fueling the Party's reputation both as victims of unjust white supremacy and police brutality, and as warriors against them.[99]

Across the country, others reacted to King's murder by founding new chapters of the Black Panther Party, including Rush and Hampton in Chicago but also groups in New York and nineteen other cities. *Soul on Ice*, a collection of essay Cleaver had written in prison, soon sold over a million copies. On this tide of support, both Eldridge and Kathleen Cleaver entered electoral politics: in August the Peace and Freedom Party nominated Eldridge as its candidate for President of the United States—though he ultimately conceded the election to the Yippies' candidate, a pig named Pigasus—while Kathleen ran for the California State Assembly.[100]

In September, though, Newton was convicted of manslaughter for the shooting of John Frey, and in November prison officials ordered Eldridge Cleaver to return to prison on the grounds that his involvement in the April 6 shootout had violated the terms of his parole. Claiming that authorities planned to kill him there, he fled the country instead. He

---

98. Rhodes, *Framing the Black Panthers*, 133.
99. Bloom and Martin, *Black against Empire*, 118–119.
100. Ibid., 78, 124–125, 159; Kathleen Rout, *Eldridge Cleaver* (Boston: Twayne, 1991), 95.

secretly spent the next several months in Cuba, becoming frustrated with both racism in

Cuban society and a lack of support for his efforts to organize a guerrilla training camp

there. In July 1969, the Cubans sent him to Algeria.[101]

Cleaver arrived in time for the Pan-African Cultural Festival in Algiers, where he was

joined by Kathleen Cleaver, David Hilliard, and other representatives of the Black

Panther Party. Although the Black Panthers had been internationalist in their rhetoric

before, and opposed to the Vietnam War not only because it cost the lives of black

Americans but also because they saw it as another expression of American imperialism,

Cleaver now began to actually meet representatives of North Korea, Al Fatah, and other

political organizations.[102]

Algeria had achieved independence from France in 1962, and the Algerian Revolution

was a source of inspiration for the Black Panthers, particularly through the work of

Fanon, who had been a member of the Front de Libération Nationale until his death in

1961. During the leadership of Houari Boumediène, who took power in a 1965 coup,

Algeria was governed by a kind of Islamic socialism and dedicated to supporting

revolutions against imperialism elsewhere. Boumoudiène was also president of the

Organization for African Unity, which hosted the festival in order to encourage Pan-

African political and cultural alliances.[103]

---

101. Bloom and Martin, *Black against Empire*, 199; Rout, *Eldridge Cleaver*, 100–110; Kathleen Neal
   Cleaver, "Back to Africa: The Evolution of the International Section of the Black Panther Party (1969–
   1972)," in *The Black Panther Party Reconsidered*, ed. Charles E. Jones (Baltimore: Black Classic
   Press, 1998), 217.
102. Bloom and Martin, *Black against Empire*, 314–317.
103. Martin Evans and John Phillips, *Algeria: Anger of the Dispossessed* (New Haven: Yale University
   Press, 2007), 67–69, 81, 97–98.

The Cleavers stayed in Algiers after the festival—with their new baby, to whom Kathleen had just given birth. They set up an office and were joined by other Black Panthers who were fugitives in the United States. In the spring of 1970, the Algerian government recognized the Black Panther Party as a national liberation movement (along with organizations in eleven other countries, most of them in Africa) and gave them an embassy building, which, Kathleen wrote, "became a kind of embassy of the American revolution, receiving visitors from all over the world." The International Section of the Black Panther Party was thus formed in September.[104]

Meanwhile, on September 12, 1970, Timothy Leary escaped from prison at the California Men's Colony in San Luis Opispo. Leary had also entered electoral politics, running for governor of California in 1969, and had testified at the Chicago 8 trial. In early 1970 he had been convicted on charges of possession of marijuana in connection with both his 1965 arrest in Laredo and a 1968 arrest in Laguna Beach, California. Leary escaped by himself, climbing up a tree and over a wall, but he was met on the other side by members of the Weather Underground Organization, as Weatherman was now calling itself.[105]

Paid by the Brotherhood of Eternal Love, friends of Leary's who were drug dealers, Weather assisted Timothy and Rosemary Leary in establishing false identities with which they travelled to Algeria. Abbie Hoffman met with Huey P. Newton, who had just been released from prison on a technicality, to discuss creating a "fugitive colony" in Algeria

104. Cleaver, "Back to Africa," 223, 227–229, 235; Bloom and Martin, *Black against Empire*, 318–319.
105. Robert Greenfield, *Timothy Leary: A Biography* (Orlando: Harcourt, 2006), 354, 365–373, 383, 388–389.

for such Americans on the run. Based on Eldridge Cleaver's sponsorship, and the belief

he was an black antiwar activist rather than a white drug advocate, Algeria granted

Timothy Leary political asylum. "It was a new experience for me to be dependent on a

strong, variable, sexually restless, charismatic leader who was insanely erratic," he wrote

of Eldridge. "I usually played that role myself."[106]

The Learys were thus in Algeria with the Panthers when Guy Pignolet visited in

January 1971, as was *Village Voice* journalist Michael Zwerin.[107] Pignolet made two

tapes. One was simply entitled "The Panther Embassy in Algiers." The other, more

widely viewed, was "The Bust of Timothy Leary."[108]

In late 1970 the Learys, high on LSD, had been arrested by the Algerian border patrol.

"They had some prayer mats," recalled Eldridge Cleaver, "and they took off all their

clothes and they were laying out there in the sun and here came the Algerian border patrol

on camels. In Algeria, a naked woman is a big scandal." Eldridge restricted them to their

quarters. Then, on January 9, 1971, the Learys planned a small dinner party and Eldridge

saw the guest list. "He had every pig in town," he said. "He didn't know who was who.

Some newsagent who was straight-up CIA." For this irresponsible behavior, Eldridge

Cleaver had Timothy and Rosemary Leary arrested by Panthers and taken to his

apartment.[109]

Pignolet taped this arrest, which Cleaver referred to as "a revolutionary bust." "Cleaver

allowed Guy to shoot the tape," wrote Sami Klein in *Rolling Stone*, "and the video

106. Ibid., 385, 390–399; Bloom and Martin, *Black against Empire*, 353.
107. Cleaver to Black Panther Party East Coast Ministry of Information.
108. Guy Pignolet, "Information Exchange," *Radical Software* 1, no. 3: 9.
109. Greenfield, *Timothy Leary*, 415–417.

remains essentially intact, but he completely dubbed over Tim and Rosemary's audio track with his own, a manifesto impugning Leary as counter-revolutionary in his adherence to the drug culture and dangerous in his weakness of mind (drug-induced). The tape is a brilliant piece of political propaganda."[110]

In his monologue, Cleaver rejected the use of "acid as a weapon in the Revolutionary struggle." He acknowledged that drugs had helped build a white counterculture "when people rebelled against the straight-jacket rules and regulations of Babylonian Society," but argued that revolutionaries now needed sobriety. Timothy, alleged Eldridge, was totally committed to "the idea of changing American society by dosing everyone with L.S.D.," and believed that "freedom means getting high." Furthermore, Cleaver attributed the Learys poor judgment in Algeria to their drug use, and told "those who look to Dr. Leary for inspiration or even leadership" that "your god is dead because his mind has been blown by acid."[111]

It was actually Pignolet, Philip Mallory Jones, and other Ithaca videographers who dubbed in the monologue Cleaver provided. "We literally smuggled this tape back into this country through Canada on buses," said Jones, "and edited the video, put the audio on it, put some titles on it, put some Rolling Stones soundtrack on parts of it, made copies of it, and began to show this tape."[112] Jones and his friends screened the tape wherever they could.

---

110. Sami Klein, "Everybody Will Be on Television," *Rolling Stone*, March 18, 1971, 23; Eldridge Cleaver, "Cleaver," *East Village Other*, February 9, 1971.
111. Cleaver, "Cleaver," 3.
112. Jones, interview by Hill, 4.

> This was the guerrilla theater approach to disseminating video information.… We just set up a monitor on the sidewalk sometimes and ran the tape, and particularly around places where people could gather.… We also took in into bars. We took it into hardcore blue collar bars around shift change time. We'd ask the owner if we could set this monitor up on the bar and play a tape, and often we were told OK. At 4:00 in the afternoon, the shift change at Ithaca Gun or Morris Chain would come and hang out here, and here is Eldridge Cleaver talking about the drug culture in America and the need for revolution.[113]

The tape of "The Bust of Timothy Leary" was also listed in catalogs produced by video organizations, including Ithaca Video Project, the Video Inn in Vancouver, and *Radical Software*.[114] It was also translated into other media: underground newspapers printed Cleaver's monologue, and Paul Krassner broadcast it on the radio in New York.[115] Timothy Leary's own perspective came only through print, in Zwerin's *Village Voice* article. "If you aren't free internally," he told Zwerin, voicing the hip critique of the left, "then your external behavior—although it may be in the name of liberation—is really reactionary."[116]

According to an FBI file that apparently summarizes a wiretapped phone call between Eldridge Cleaver and Huey P. Newton, Newton was frustrated "that the BPP did not have control of the film and, in fact, had not even seen it."[117] The next day, Cleaver wrote to

113. Ibid.

114. Ithaca Video Project brochure, Ithaca Video Project, Inc. 73-586F file, box 305, NYSCA Files; Video Inn, *Video Inn Tape Catalogue* (Vancouver: Video Inn, n.d.), Video Inn Tape Catalogue file, box 11, Catalogues and Brochures series, Guerrilla TV Archive; Pignolet, "Information Exchange," 9.

115. Cleaver, "Cleaver"; Paul Krassner to Eldridge Cleaver, April 10, 1971, Correspondence 1971 Jan–June file, carton 5, International Section subseries, Black Panther Party series, Eldridge Cleaver Papers, Bancroft Library, University of California, Berkeley.

116. Michael Zwerin, "Revolutionary Bust (3)," *Village Voice*, February 11, 1971.

117. Federal Bureau of Investigation, Transcripts of Huey Newton Public Appearances, 1971 file, FBI Files on Black Extremist Organizations, Part 2: Huey Newton and Eldridge Cleaver of the Black Panther Party collection, ProQuest History Vault, http://congressional.proquest.com/histvault ?q=101788-011-0354, p. 201.

Newton that he had given Pignolet permission to distribute the tape "in the underground video tape circles," but instructed him to give the Panthers control over its mass media distribution. "In terms of that, it is worth quite a bit of money," Cleaver speculated, but Pignolet never gave it to the Party and it seems to have only been broadcast by a few stations. Nearly a month later, Newton was still frustrated "about people who keep coming to the U. S. from Algeria with things such as this video tape," complaining that "CLEAVER was just giving the material away without regard to the funds which could be raised through proper handling of the material." The reason for this inefficiency, according to Cleaver, were that he didn't have couriers or editing equipment, and therefore relied on others, not necessarily loyal to the Party, to take his tapes to the United States and edit them there.[118]

On February 12, Leary and Cleaver recorded another hour of tape about the role of LSD in political revolution, which was then broadcast by San Francisco public television station KQED.[119] They sat together on the floor with an hourglass, a globe, and Los Angeles psychologist Michael Kannas. "People who are… seeking a feeling of liberation through drugs," said Cleaver, "are illusionary allies,… donning the guise of revolutionaries," unlike Weather, the Panthers, and others taking "direct physical action aimed at physically destroying the apparatus of oppression."[120]

---

118. Cleaver to Black Panther Party East Coast Ministry of Information; FBI, Transcripts of Huey Newton Public Appearances, 1971 file, 202, 205; Mission Mediarts, "Feedback," *Radical Software* 1, no. 3: 22.
119. Hall Daily, "Cleaver Wants Revolt, No Drugs," *Stanford Daily*, February 24, 1971.
120. "Black Liberation Theory: Eldridge Cleaver VS. Timothy Leary On Drug Use as Counter-Revolutionary," YouTube video, 3:31, recorded February 12, 1971, posted by "brotherwisedispatch," June 25, 2011, https://www.youtube.com/watch?v=-tt_DncXSn0.

Michael Kannas, Eldridge Cleaver, and Timothy Leary discuss drugs and revolution, February 12, 1971.[121]

This time, Leary agreed with him, saying that "the taking of any drug which would postpone for ten minutes the revolution and the liberation of our comrades and our brothers and sisters in prison must be eliminated." He also argued, though that there were times when LSD was an aid to revolution rather than a distraction. "If a hundred FBI agents took LSD, thirty of them would drop out of that plastic, fascist bag immediately. So in that case, LSD could be seen as a revolutionary instrument."[122]

The Learys soon left Algiers, and lived in Switzerland briefly before Timothy found himself on the lam again. He was arrested in Afghanistan by an agent of the U.S. Federal Bureau of Narcotics in 1973.[123]

---

121. Still frame from "Black Liberation Theory."
122. "Black Liberation Theory."
123. Greenfield, *Timothy Leary*, 421–451.

Voodoo Child

If I don't meet you no more in this world
I'll meet you in the next one
And don't be late, don't be late
Cause I'm a voodoo child, voodoo child
—Jimi Hendrix, "Voodoo Child," 1968[124]

Part of Eldridge Cleaver's agreement with Pignolet was that he got to keep the portapak

that Pignolet had brought, providing the International Section of the Black Panther Party

with the capability to produce its own video recordings.[125] Feeling isolated from Panthers

based in the United States, and perhaps frustrated that Newton hadn't accepted his

invitation to visit Algiers, Cleaver wrote to his comrades that he understood they too had

video equipment. "I think that this is a revolutionary device for communications," he

wrote, "and I hope that you will use it fully.… It would be very stimulating for us to

receive a video tape from the Party."[126]

Meanwhile, though, the Black Panther Party was coming apart; "in the first two

months of 1971," write Joshua Bloom and Waldo Martin, "three of the most important

Panther groups broke with the national organization." First, New York Panthers published

---

124. Jimi Hendrix, "Voodoo Child," by Jimi Hendrix, on *Electric Ladyland*, Reprise, 1968. Although Jimi Hendrix often avoided involvement with the Black Panther Party, he introduced this song as the "Black Panther national anthem" at several shows in 1969. Lauren Onkey, "Voodoo Child: Jimi Hendrix and the Politics of Race in America," in *Imagine Nation: The American Counterculture of the 1960s and '70s*, ed. Peter Braunstein and Michael William Doyle (New York: Routledge, 2002), 206–207.

125. Jones, interview by Hill, 4.

126. Cleaver, "Back to Africa," 233; Cleaver to Black Panther Party East Coast Ministry of Information.

I haven't found any corroborating evidence that Newton had video equipment. According to FBI surveillance he recorded a videotape at the Instructional Services Center of the University of California, Santa Cruz on May 14, 1971 "for a community program" in Richmond, California, suggesting that he didn't have his own equipment. Federal Bureau of Investigation, FBI Surveillance of Huey Newton, 1971 file, FBI Files on Black Extremist Organizations, Part 2: Huey Newton and Eldridge Cleaver of the Black Panther Party collection, ProQuest History Vault, http://congressional.proquest.com/histvault?q=101788-012-0285, pp. 134–135.

a letter criticizing Newton for the Party's declining militancy in comparison to the Weather Underground, who were now regularly bombing government buildings; Newton in turn expelled them from the Party along with New York Panther Cetawayo Tabor, who—charged with planning to bomb department stores and police stations—fled the country for Algeria rather than appearing at trial.[127] According to FBI records, on February 19 Newton and Eldridge Cleaver spoke and "CLEAVER told NEWTON he had prepared a video tape which he was sending in which he was going to review a lot of problems and set forth his suggestions as to how many contradictions presently facing NEWTON and the Party should be dealt with." This tape, he said, "should help clear the air." Four days later, Newton told Cleaver that he "wanted to produce tapes regularly [on] wide varieties of subjects which he did not identify."[128]

Instead of "clearing the air," though, Cleaver entered the conflict himself, calling in to a television talk show on which Newton was appearing live in San Francisco on February 26. Cleaver objected to the expulsions of the New York Panthers and demanded that Chief of Staff David Hilliard—who he believed had hurt the party in his and Newton's absence—resign. Afterward, in a private phone call, "Newton blasted Cleaver for airing Party business publicly and expelled him and the entire International Section from the Party."[129]

Videotape became a resource in Cleaver's feud with Newton, in which he was otherwise at a disadvantage due to his geographic distance from Party chapters in the

127. Bloom and Martin, *Black against Empire*, 213–214, 358–362; Cleaver, "Back to Africa," 238.
128. FBI, Transcripts of Huey Newton Public Appearances, 1971 file, 203–205.
129. Ibid., 168, 207–211; Bloom and Martin, *Black against Empire*, 362.

United States. "The filming of videos," writes Panther Donald Cox, "became the means of bridging the distance between the International Section and comrades in particular and the rest of the American public in general. Thanks to friends in Algiers, the personnel of Air France, and people that received and distributed them in the states, we would film a video and it would be showing inside the United States within twenty-four hours."[130]

The Black Panther Party had developed sophisticated strategies for pursuing mass media attention in order to communicate their message to those who didn't read their newspaper; they "invented themselves and delivered the goods to the mass media," writes Jane Rhodes.[131] "Just as the media created the Panthers, they can destroy them," wrote Michael Shamberg just as the party schism occurred, "because the Panthers have no ultimate control over their own information."[132] Cleaver sought both to construct a new network of couriers screening his tapes in the United States, and to continue to collaborate with the corporate mass media.

On February 28, Eldridge Cleaver made a videotape explaining his complaints against Newton and Hilliard.[133] Six days earlier, the Dutch actress and journalist Lily van den Bergh had arrived in Algiers by boat, and in early March she flew to New York—via Rome and Paris—with the tape.[134] There, People's Video Theater and Global Village

130. Donald Cox, "The Split in the Party," in *Liberation, Imagination, and the Black Panther Party: A New Look at the Panthers and Their Legacy*, ed. Kathleen Cleaver and George Katsiaficas (New York: Routledge, 2001), 119.

131. Rhodes, *Framing the Black Panthers*, 310.

132. Shamberg and Raindance, *Guerrilla Television*, section I, p. 27.

133. "Black Panther Dispute," *Sun Reporter*, March 13, 1971.

134. Kathleen Cleaver, daily reports, February 22, March 1, and March 12, 1971, Daily Reports, by Kathleen Cleaver, Communications Secretary file, carton 5, International Section subseries, Black Panther Party series, Cleaver Papers; "Lily van den Bergh," *Beeld en Geluidwiki*, last modified July 26, 2013, http://beeldengeluidwiki.nl/index.php/Lily_van_den_Bergh.

assisted the New York chapter of the Black Panther Party in screening it for audiences of Panthers, supporters, and journalists.[135]

Van den Bergh also arranged to have the tape broadcast as part of the evening news show on WCBS-TV, the local CBS station in New York. She required that they pay her for the tape, though, by making 15 copies of it that she could distribute to other Party chapters, something that CBS didn't have the equipment or the tape to do. CBS, then, called the Videofreex, and Bart Friedman—a member of the group who had joined after *Subject to Change* and thus wouldn't be recognized at CBS as someone affiliated with that project—took tape with him to the CBS Broadcast Center.[136]

Friedman thus found himself walking around the Broadcast Center with a portapak trying to find a woman who he only knew as Lily. In the resulting tape, he shoots video as he walks, so the viewer also has an experience of wandering through hallways with occasional guards sitting at desks and men in suits also roaming the halls. Several employees advise Friedman not to tape because recording video within a CBS building

---

135. Rudi Stern, "½ Video Tape: Revolutionary Communications Medium," *East Village Other*, April 6, 1971; Thomas A. Johnson, "Panthers Fear Growing Intraparty Strife," *New York Times*, April 10, 1971.

136. Videofreex, "CBS—Lily and Cleaver Tapes," video, 23:36, March 5, 1971, Video Data Bank; Teasdale, *Videofreex*, 39.

    Parry Teasdale writes that "a long excerpt of Cleaver led the CBS Evening News with Walter Cronkite," and Deirdre Boyle makes a similar claim, but the Vanderbilt Television News Archive doesn't list a story about Cleaver on March 5, 1971, or any story on any date featuring video from Algiers. Furthermore, in Friedman's video he states repeatedly that he's visiting studio 46, which was (and is) used for WCBS-TV local news, not for the nationally broadcast CBS Evening News. Teasdale, *Videofreex*, 39; Boyle, *Subject to Change*, 236n23; Vanderbilt Television News Archive, "Programs Broadcast in March 1971," http://tvnews.vanderbilt.edu/siteindex/1971-3/; Bruce Martin, list of studio assignments at the CBS Broadcast Center in 1964, in Bobby Ellerbee, "CBS New York, Deep Studio History… Part 2," Facebook post, December 28, 2014, https://www.facebook.com/permalink.php?story_fbid=774420245928860&id=189359747768249.

would upset members of their union. "If they see you, there's apt to be trouble over it," one tells him.[137]

Eventually, Friedman meets van den Bergh and they discuss the tapes and his role in copying them. "I have a moral problem in that those tapes were made on equipment that a friend of mine left in Algiers," says Friedman without using Pignolet's name. Van den Bergh explains that the tapes are for the Panthers, not for CBS. "It's so important now about the split," she says. "It's so devastating the effect that Huey is always making these personal quotes and this and that."[138]

**Lily van den Bergh and a CBS employee
outside CBS Studio 46, March 5, 1971.**[139]

When Friedman arrives, the tape has already been broadcast, something engineers had previously told him was impossible. "We transferred it to two-inch," an engineer tells him, presumably using the same technique CBS had developed for Don West's version of *Subject to Change*. "We've got the gear to sync." "So if I came here with a newsworthy half-inch tape you could put it on the air?" asks Friedman. The engineer doesn't answer

---

137. Videofreex, "CBS—Lily and Cleaver Tapes." It was this tape that brought to my attendion that Eldridge Cleaver was using videotape, and attempting to contextualize it by figuring out how and why he did so was the original impetus for this chapter.
138. Videofreex, "CBS—Lily and Cleaver Tapes."
139. Still frame from *Videofreex Pirate TV Show (21st Century Re-Edit)* (New York: Videofreex, 2013), DVD.

directly, but tells him that by transferring to two-inch tape, they'd improved the quality, a statement with which van den Bergh agrees.[140] "Copies of the Cleaver tape she left us," writes Parry Teasdale, "found their way into some of the later showings we did for the Panthers. Together, the tapes took on an identity of their own. They were called the Voodoo tapes."**[141]**

Voo doo was a term the Cleaver had adopted for video, preserving its consonants but also evoking both a specifically black conception of this new technology and an understanding of it as a tool for magically engaging in action at a distance. "Voo doo is to us as a newspaper is to other political parties," explained Eldridge. "Because of the technical problems involved in producing a newspaper, and because of the advantages from using modern electronic communications, having the advantage of both the visual and the audial capabilities, we choose voo doo over the archaic printed word, and when we speak of voo doo we're speaking of video tape, but we don't relate to that word either."[142] Interviewed by a British reporter, Cleaver referred to himself as "the Witchdoctor" and explained that videotape "has, like, magical properties. You know how electricity moves? It's kind of mysterious.… It's invisible."[143] By practicing voo doo, Eldridge Cleaver could make himself appear in the United States even while his body was in Algeria.

---

140. Videofreex, "CBS—Lily and Cleaver Tapes."

141. Teasdale, *Videofreex*, 40.

142. Eldridge Cleaver, "Transcript of Tape Recorder Notes," March 26, [1971], Transcript of Tape Recorder Notes file, carton 5, International Section subseries, Black Panther Party series, Eldridge Cleaver Papers, p. 1.

143. Eldridge Cleaver, quoted in Bryan Burrough, *Days of Rage: America's Radical Underground, the FBI, and the Forgotten Age of Revolutionary Violence* (New York: Penguin, 2015), 193.

Eldridge became increasingly interested in video, corresponding and talking on the telephone with experimental videographers in the United States. "Many an afternoon we got on the phone with him and talked about his video equipment there, which wouldn't work," recalled John Reilly.[144]

"The International Section of the Black Panther Party," Cleaver wrote to *Radical Software* in March 1971, "has begun a video tape program to be directed to the United States and Europe on a regular basis to cover the spectrum of the international anti-imperialist revolution movement." Cleaver described video as a "revolutionary communications medium," as he had when writing to Huey P. Newton. He requested copies of nine tapes that Raindance had listed in the magazine several months earlier in exchange for copies of tapes he was making in Algiers. Cleaver's requests demonstrated interests in national politics ("President Nixon's State of the Union Message," "Post-Kent State—Washington DC Peace Demonstration"), cable television ("N.Y. State CATV operators convention"), experimental video ("Rose Art Museum Show—Vision and Television documentary, Jan. '70"), the space program ("Apollo 10 (11 and 13)"), and personal computing ("Computer: document on the home computer"). "The faster we get them," he wrote, "the faster we can make more powerful propaganda for the people's revolution around the world."[145] Kathleen Cleaver sent similar letters to the Videofreex and nine other American and British video groups.[146]

---

144. Julie Gustafson and John Reilly, interview, "Conversation with Julie Gustafson and John Reilly," *Videography*, May 1982, 61.

145. Eldridge Cleaver to Ira Schneider and Paul Ryan, March 16, 1971, in *Radical Software* 1, no. 4 (Summer 1971): 30.

146. Teasdale, *Videofreex*, 69; Kathleen Cleaver, daily report, March 17, 1971, Daily Reports, by Kathleen Cleaver, Communications Secretary file.

The Panthers also began collaborating with videographers based in Paris, including Carole and Paul Roussopoulos, a Swiss former model and a Greek chemist who worked for a pharmaceutical company who brought them more equipment and also visited the Videofreex in December 1971, and black American photojournalist Bill Stephens, who lived in Paris and who the Roussopouloses had introduced to video in 1969.[147] "In France," wrote Alfred Willener, Guy Milliard, and Alex Ganty in 1972, "almost all the early experiments with video were carried out between 1969 and 1970 either in the field of political militancy or in connection with 'cultural animation,'" a form of social practice analogous to social work. Once Sony began marketing portapaks in France in 1969, they wrote, "groups of activists who, after May 1968, were looking for ways of providing counter-information, quickly became interested in this new type of equipment, mainly at the instigation of Jean-Luc Godard," and the technology became pervasive at cultural and political events.[148]

Kathleen Cleaver, who was not herself a fugitive, travelled to the United States and throughout Europe. In July, for example, she spoke at the University of Frankfurt at the invitation of West Germany's Black Panther Solidarity Committee, an event that was videotaped.[149] In November and December, Kathleen visited New York and conducted a speaking tour of the United States.[150]

---

147. Kathleen Cleaver, daily reports, February 22, March 1, March 9, and March 30, 1971, Daily Reports, by Kathleen Cleaver, Communications Secretary file; Teasdale, *Videofreex*, 69; Bill Stephens, "Statement on the Development of Creative Style," c. 1985, Bill Stephens file, box 2, Files series, Guerrilla TV Archive.

148. Alfred Willener, Guy Milliard, and Alex Ganty, *Videology and Utopia: Explorations in a New Medium*, trans. and ed. Diana Burfield (London: Routledge and Kegan Paul, 1976): 1, 153.

149. Martin Klimke, *The Other Alliance: Student Protest in West Germany and the United States in the Global Sixties* (Princeton: Princeton University Press, 2010), 124–126.

150. Community Video Center, "Tapes for Sale and/or Exchange," *Radical Software* 1, no. 5 (Spring 1972):

As Kathleen Cleaver speaks at the University of Frankfurt, a man on the left tapes the audience, July 7, 1971.[151]

Newton and his allies sometimes attempted to limit the distribution of tapes from the International Section. Philip Mallory Jones was in New Haven at the same time as Newton once, and sought him out to talk to him about the "revolutionary bust" tape.

> I was close to some people that were close to Huey Newton, and one of them says come with me, and he takes me over and introduces me to someone else.… So the person puts me in a pay phone booth, dials the phone and says something and puts the received to my head, and this woman's voice on the other end of the line is the Minister of Information from the Panther chapter in New York City who says—turn over all copies of this tape, don't make any more copies, destroy whatever you have, we don't want to see nothing else about this.… The subjugation of the discourse that I felt I was involved in to some other agenda was not acceptable, and that was the end of my relationship to the Panther Party, that night.[152]

More egregiously, Cox alleges that Newton had William Seider, a white Philadelphian who owned a clothing store, killed for distributing the International Section's tapes.[153]

72; Kathleen Cleaver, script about returning to New York, December 1971, Writings—Cleaver, Kathleen file; Larry Magid to Eldridge Cleaver, RPCN Correspondence file, carton 5, International Section subseries, Black Panther Party series, Cleaver Papers.

151. Photograph from Klimke, *Other Alliance*, 126.

152. Jones, interview by Hill, 4–5.

153. Cox, "Split in the Party," 119–120.

Newton also considered producing his own tapes in response. "I know Godard has in mind circulating some videotapes that showed various BPP programs in practice," wrote flimmaker Tom Luddy, "and I think that such material with narration and organization by you would be very valuable.... They would be the best and most devastating audio-visual replies to the videocassettes circulating from Algeria, the Voodoo tapes or whatever they are called."[154]

During this period of late 1971 and early 1972, the Cleavers devoted much of their energy to establishing two new organizations: the Black Liberation Army and the Revolutionary Peoples Communications Network. In January 1972, Panther Pete O'Neal took over as head of the International Section, with Eldridge "assuming new duties in the Afro-American Liberation Army."[155] The Black Liberation Army was "a movement of autonomous clandestine units," argues Akinyele Omowale Umoja, which involved both Panthers and other "underground military forces of the revolutionary nationalist Black movement."[156] Most accounts of the BLA portray Cleaver as merely an ally of those engaged in underground violence.[157] Bryan Burrough, perhaps overstating Cleaver's involvement but also clarifying its specific mode, writes in contrast that "Cleaver laid out

---

154. Tom Luddy to Huey P. Newton, April 22, 1971, Videotapes file, box 12, Internal Documents subseries, Black Panther Party Records series, Newton Foundation Collection.

155. Kathleen Cleaver, "RPCN News Release," January 17, 1972, in RPCN Correspondence file.

156. Akinyele Omowale Umoja, "Repression Breeds Resistance: The Black Liberation Army and the Radical Legacy of the Black Panther Party," in Cleaver and Katsiaficas, *Liberation, Imagination, and the Black Panther Party*, 4, 6.

157. Ibid., 10–11; Russell Shoats, "Black Fighting Formations: Their Strengths, Weaknesses, and Potentialities," in Cleaver and Katsiaficas, *Liberation, Imagination, and the Black Panther Party*, 145; Jalil Muntaqim, *On the Black Liberation Army* (1979; Montreal: Abraham Guillen Press / Arm the Spirit, 2002), 4.

his initial plans for the BLA in a set of 'voodoo' tapes, which his favorite courier—a…

Puerto Rican radical named Denise Oliver—brought to New York."[158]

As Burrough writes, "what most interested Cleaver, and the subject he returned to again and again in his transatlantic phone calls, was the need to establish an aboveground network to support the BLA."[159] This was the Revolutionary Peoples Communications Network, an organization totally absent from the formal historiography of the Panthers. "The essence of the RPCN/AALA duality," wrote the Cleavers, "is to allow freedom of movement to revolutionaries.… Communications serve actions. The aboveground serves the underground by relating theory to action."[160] The RPCN invited revolutionaries, "especially sisters," to join in its efforts by making "tapes about revolutionary conditions and actions about captures and attacks against revolutionaries, and all kinds of information that is not available from existing sources." It also published two newspapers, *Right On!* in New York and *Voice of the Lumpen*, "for the black GI movement," in Frankfurt.[161]

The RPCN was short-lived, though. "Your friend Bill has really fucked up on the video end of the RPCN," Kathleen Cleaver wrote to Lily van den Bergh in July 1972, by never providing the International Section with photographs and video he had produced of

---

158. Burrough, *Days of Rage*, 194.
159. Ibid., 195–196.
160. "RPCN/ALAA," Formation of RPCN and Afro-American Liberation Army file, carton 5, International Section subseries, Black Panther Party series, Cleaver Papers, p. 2.
161. "To Form a Unit in the Revolutionary Peoples Communications Network," Formation of RPCN and Afro-American Liberation Army file, pp. 1–2.

Cleaver's speaking tour. "The New York cadre of the RPCN fell apart, leaving a lot of people hanging."[162]

The International Section soon fell apart as well. In 1972 two groups of Americans hijacked planes to Algiers and sought refuge with the Panthers. The government, which was negotiating a natural gas contract with American companies, gave back their ransom money and threatened the Cleavers, who moved to Paris in January 1973 and back to the United States in 1975.[163]

In Paris, Eldridge Cleaver continued to experiment with video, working with Carole and Paul Roussopoulos' organization Video Out. "I am very interested in exploring the world of VIDEO further," he wrote in October 1973 to Carol Vontobel and Parry Teasdale, about whom he'd heard positive things from the Roussopouloses. And as Kathleen had to van den Bergh, Eldridge complained about Bill Stephens.

> While we were in Algeria, we had begun to amass a large amount of info and a bit of equipment. However, due to the turn of events on that scene, we had to run off and leave it all. Also, we got burned for a lot of equipement [sic] and software by a black cat named Bill Stevens [sic], who was working with us in Alger, and who is now working in New York with VIDEO, as I understand it.… So in a sense I am trying to get back into VOODOO, starting from Scratch and working with VIDEO OUT.[164]

Stephens was indeed working with video in New York, converting his participation in the Revolutionary Peoples Communications Network into the Peoples Communications Network, which was also sometimes called Voodoo—Peoples Communications

---

162. Kathleen Cleaver to Lily van den Bergh, July 18, 1972, van den Bergh, Lily Correspondence file, carton 5, International Section subseries, Black Panther Party series, Cleaver Papers, p. 1.

163. Cleaver, "Back to Africa," 245–251.

164. Eldridge Cleaver to Carol Vontobel and Parry Teasdale, October 30, 1973, collection of Parry Teasdale and Carol Vontobel, exhibited in *Videofreex: The Art of Guerrilla Television*, Samuel Dorsky Museum of Art, State University of New York at New Paltz, 2015.

Network.[165] "The Peoples Communication Network," wrote Stephens and his cofounder Elaine Baly, "is a multi-media communication arts organization that specializes in providing training and creating video communications arts media in ethnic minority communities."[166] Rather than supporting guerrilla warriors, the organization that inherited the name PCN carried out the kind of community organizing that Newton embraced, and that Cleaver rejected, as the core activity of the Black Panther Party.

Give Peace a Chance

> Everybody's talking about
> John and Yoko, Timmy Leary
> Rosemary, Tommy Smothers
> Bobby Dylan, Tommy Cooper
> Derek Taylor, Norman Mailer
> Allen Ginsberg, Hare Krishna
> Hare Hare Krishna
>
> All we are saying
> Is give peace a chance
> —Plastic Ono Band, "Give Peace a Chance,"
> 1969[167]

In 1971, the Videofreex were involved in one last attempt to bring together hip and left youth movements. On April 24, half a million people demonstrated in Washington against the Vietnam War. About 30,000—the "May Day Tribe," organized by Chicago 8 defendant Rennie Davis—stayed, camping at Potomac Park, for a day of direct action on May 3. They planned to shut down the federal government by blocking 21 bridges and traffic circles with vehicles, barricades, and their own bodies, in what L. A. Kauffman

165. "Video Comes to Harlem" flyer, Peoples Communications Network, Inc. 73-299F file, box 459, NYSCA Files.

166. Peoples Communication Network, Inc., "Community Culture and Art Communication Center: Multi-Ethnic Cultural Exchange," Peoples Communication Network, Inc. 74-570S file, box 459, NYSCA Files, p. 1.

167. Plastic Ono Band, *Give Peace a Chance*, Apple, 1969.

describes as "the largest and most audacious civil disobedience action in American history."[168]

David Cort and a police officer, May 1971.[169]

On April 29, several of the Videofreex arrived in Washington, joining seven other video groups from Washington, Amherst, and Boston to form the Mayday Video Collective. They set up a "field playback system" so they could show tapes of participants to their fellow activists, using a transmitter brought by Chuck Kennedy and Parry Teasdale.[170] The group also accepted $500 from NBC in exchange for giving them priority access to their footage, but, as Davidson Gigliotti wrote, became "uptite about

168. Terry H. Anderson, *The Movement and the Sixties: Protest in America from Greensboro to Wounded Knee* (New York: Oxford University Press, 1995), 375; L. A. Kauffman, "Ending a War, Inventing a Movement: Mayday 1971," *Radical Society* 29, no. 4 (2002): http://libcom.org/library /ending-war-inventing-movement-mayday-1971. Kauffman's article is a rare example of historical research that incorporates video as a primarily source. Specifically, she uses that shot by the Videofreex as a source of insight into the interactions that occurred among activists.

169. Photograph from Rhea Kennedy, "We're All Videofreex—The Symposium, the Reunion," October 25, 2012, The Videofreex (blog), http://videofreex.com/2012/10/25 /we-are-all-videofreex-the-symposium-the-reunion/.

170. Davidson Gigliotti, "Mayday in Washington: The Videofreex Journal," *Radical Software* 1, no. 5: 61; May Day Collective, "May Day Collective," *Radical Software* 1, no. 4: 31.

NBC since Parry, Carol and I told them of our experiences with CBS." Gigliotti himself

was arrested on May 2—one of 13,500 arrestees that week, the most at any event in

American history. He produced a tape of his experience hanging out in a holding cell with

other demonstrators and singing "We Shall Overcome," "Power to the People," and

"Give Peace a Chance." On May 7, wrote Gigliotti, "CBS called about the jail tape. Parry

told them to get lost. David is still mad with me."[171]

Ultimately, none of this footage was broadcast. A few of the groups, though, including

the Videofreex, produced their own edits of it for screenings at "local video theaters" like

Global Village. The Freex' tape, *Mayday Realtime*, is a sort of synthesis of their tapes of

Woodstock and Chicago, mixing of interviews with bystanders about the war and the

demonstrations with footage of helicopters landing, street medics helping demonstrators

injured by police, and crowds blocking traffic and running from police and tear gas.[172]

Many of the participants in the May Day Video Collective viewed it as a failed

experiment in cooperation between video groups. The ostensible collectivity of the

enterprise served, according to one polemical group,

> to disguise a fundamental divergence within the group, namely, political
> commitment as opposed to media commitment, or in plainer words, the
> difference between video workers at the service of the people and… video
> artists working for themselves.
> The fact that various people have ½ inch video equipment doesn't mean
> they are together. What brings people and keeps people together is the use
> of the machine, not the machine itself. An M-16 in the hands [of]

---

171. "May Day Collective," 31; Gigliotti, "Mayday in Washington," 61; Kauffman, "Ending a War";
     Videofreex, "Davidson's Jail Tape," video, 27:20, May 2, 1971, Video Data Bank.
172. "May Day Collective," 31; David Cort and Mary Curtis Ratcliff, "Mayday Realtime," video, 59:45,
     May 1971, Video Data Bank; Community Video Center, "Videotapes for Sale," 72; Antioch Baltimore,
     "Videotapes for Sale and/or Exchange," *Radical Software* 1, no. 5: 71.

American forces is an imperialist weapon, but the M-16 in the hands of the Viet-Cong is a revolutionary weapon.[173]

This was precisely the distinction Teasdale described between "a more liberated television medium" and "a broader political purpose."[174]

Video was a boundary object around which hip and left Americans negotiated their common ground, but it was ultimately insufficient ground on which to maintain a community. By 1971 there were enough people using video that the practice alone didn't define a shared identity; videographers started to become aware that they were interested in the medium for different reasons and using it for different purposes. It was the beginning of the end of a period in which video itself had meaning as a revolutionary medium, and was thus associated by many of its users with revolutionary activity both political and more broadly cultural. Video was becoming ubiquitous, and taking on new and different cultural resonances.

---

173. "May Day Collective," 31. The ellipsis in this quotation is necessary only because of an editorial error, in which the phrase "video workers at the service of the people and" appears twice in the published text.

174. Greenwald, "Process Is in the Streets," 173.

Conclusion
How VT Became TV

"VT," wrote Paul Ryan in 1968, "is not TV."[1] As we have seen, though, the origins of videotape were indeed in television, as a tool for rebroadcasting. This dissertation has focused on the period when video and television were socially and technically distinct from each other, as videographers outside the television industry produced tapes that were generally considered unfit for broadcast. This was a brief period, though, and in the 1970s video rapidly found its way back into television.

The two media constantly threatened to reenter one another. On the same trip to California on which Ryan and Michael Shamberg shot *Supermarket*, they, along with Gillette, John French, and Allen Rucker—who had been Shamberg's college roommate, and then studied communications at Stanford University and cofounded the Portola Media Access Center—shot a tape called *The Rays* on the beach at Point Reyes in Marin County. The five men passed around the camera, conversing and taping each other's expression.[2] "Videotaping with friends is like having a collective consciousness," Shamberg wrote of this sort of experience. "Besides videotape, it would take telepathy to internalize that possibility."[3]

As Kris Paulsen writes, though, the five men were not the only actors on camera, and there was another kind of telepathy at work besides that of videotape.

---

1. Paul Ryan, "Videotape: Thinking about a Medium," *Educators Guide to Media & Methods*, December 1968, 38.
2. Raindance, *The Rays*, video, 23:08, 1970, Electronic Arts Intermix; Deirdre Boyle, *Subject to Change: Guerrilla Television Revisited* (New York: Oxford University Press, 1997), 37.
3. Michael Shamberg and Raindance Corporation, *Guerrilla Television* (New York: Holt, Rinehart and Winston, 1971), ix, section II, pp. 49, 52.

From the first moments of the recording, Paul Ryan's talking head is rhythmically disrupted by "the rays." The graphic waves pull apart the image and uncouple Ryan's words from the moving form of his mouth. Curiously, the lines are visible through the viewfinder, as if they are a feature of the surrounding physical environment. From the other side of the lens, Frank Gillette says, "These are strange rays, Ryan. Explain these rays." The rays are, indeed, strange, but they are also quite familiar. They do more than graphically bisect the view and disturb the sound; they pull images—TV images—in their wake. Bullwinkle, the cartoon moose, appears marching left to right over the Northern California landscape.[4]

Raindance, *The Rays*, 1970.[5]

A nearby television transmitter was interfering with the portapak camera itself, inserting a broadcast image into what was supposed to be a distinct video phenomenon. "Another parallel, equally co-present world," that of television transmission, "becomes visible through the camera's lens," writes Paulsen.[6] Over the next few years, more and more experimental videographers would enter that world, some by producing programs

---

4. Kris Paulsen, "Half-Inch Revolution: The Guerilla Video Tape Network," *Amodern*, no. 2 (Fall 2013), http://amodern.net/article/half-inch-revolution/.
5. Still frame from ibid.
6. Paulsen, "Half-Inch Revolution."

for commercial and public television networks, and some by establishing their own television station.

Lanesville TV

After the Chicago 8 trial, Abbie Hoffman continued to collaborate with the Videofreex. As soon as the trial ended in February 1970—with a conviction for Hoffman, though he didn't spend much time in prison—he began compiling a guidebook to the countercultural revolution, *Steal This Book*, with advice on everything from street fighting to starting a food cooperative.[7] Hoffman asked Parry Teasdale to contribute instructions on setting up a pirate television station. "I didn't know the first thing about broadcasting," Teasdale recalled. "The title of his manuscript was *Steal This Book*, so I went to a university library and stole a paperback book on the physics of television."[8]

What Hoffman was really interested in, though, was building a transmitter that could take over the airwaves, replacing a commercial broadcast with a guerrilla one. "One day while turning on with the Video Freex," he later wrote, "I asked if it was possible to pirate an image onto network television." Like Cleaver, Hoffman saw control of the means of television production as a valuable propaganda tool and a step towards political liberation. At the advice of Chuck Kennedy, the Videofreex' technical expert, he bought the Freex a $325 used modulator that could convert their video signals into the radio frequency signals received by television sets. After a few days work, Teasdale and Kennedy managed to transmit a television signal across a loft, which only annoyed

7. Jonah Raskin, *For the Hell of It: The Life and Times of Abbie Hoffman* (Berkeley: University of California Press, 1996), 215, 223; Abbie Hoffman, *Steal This Book* (New York: Pirate Editions, 1971).
8. Parry D. Teasdale, *Videofreex: America's First Pirate TV Station & the Catskills Collective That Turned It On* (Hensonville, N.Y.: Black Dome, 1999), 29.

Hoffman; Teasdale suggests that Hoffman exaggerated a bit when he claimed that "a couple fucking appeared on a number of sets in the Soho area of downtown." To transmit further, the Freex would need a powerful amplifier, and they didn't know where to get one. "What we were showing him," writes Teasdale, "was a toy with no relevance to his grand schemes."[9]

In *Steal This Book* itself, Teasdale (presumably with Hoffman editing his contribution, which was not attributed to him) presented a number of ways radicals might transmit video, from closed-circuit installations "for broadcasting rallies, rock concerts, or teach-ins to other locations" to broadcast television stations. The latter, Teasdale wrote, would require an RF modulator, a linear amplifier ("not that easily available, but they can be constructed with some electrical engineering knowledge"), and an antenna. "Becoming TV guerrillas is not everyone's trip, but a small band with a few grand can indeed pull it off," wrote Teasdale, despite the fact there there had never been such a pirate television station in the United States. "Guerrilla TV is the vanguard of the communications revolution.… One pirate picture on the set in Amerika's living rooms is worth a thousand wasted words."[10]

In his book *Guerrilla Television*, Shamberg criticized this section, which shared the title "Guerrilla Television." "Typically," wrote Shamberg, "it deals only with one fringe use of the medium (breaking into broadcast-TV signals with your own transmitter) and offers no suggestions on how people can build their own support system instead of

---

9. Abbie Hoffman, *The Best of Abbie Hoffman*, ed. Daniel Simon and Abbie Hoffman (New York: Four Walls Eight Windows, 1989), 190; Teasdale, *Videofreex*, 29–30.

10. Hoffman, *Steal This Book*, 141–144.

ripping off others'."[11] As they developed their own forms of guerrilla television, though, building their own support system was exactly what the Freex did.

When CBS broadcast Eldridge Cleaver's critique of Huey P. Newton, they demonstrated for the Videofreex that half-inch tape could be broadcast. "We always suspected the networks were lying to us," writes Teasdale, "about the technical barriers associated with broadcasting half-inch tape. They had erected a wall of engineering gibberish to pre-empt any demands that they air our programs. The Cleaver Voodoo tape confirmed the deception."[12]

Soon after May Day, the Videofreex moved to Lanesville, New York, a town of about two hundred people in the Catskills, where they rented a large house called Maple Tree Farm.[13] "Lanesville," wrote Teasdale in 1980," is no more than a few clusters of houses, a gas station and general store (now defunct), and two bars (both recently burned to the ground)."[14] Maple Tree Farm itself became both a commune for the Videofreex and a place where videographers from around the world would visit to work with them; it "functioned at times," writes Andrew Ingall, "like a kind of country B&B for the media arts community."[15]

---

11. Shamberg and Raindance, *Guerrilla Television*, ix.

12. Teasdale, *Videofreex*, 40.

13. Ibid., 23; Skip Blumberg, Parry Teasdale, and Bart Friedman, interview by Jud Yalkut, "The Videofreex: Maple Tree Farm and Beyond," in Jud Yalkut, "Electronic Zen: The Alternate Video Generation" (unpublished typescript, 1984), Vasulka Archive, last modified June 2, 2012, http://vasulka.org/archive/Artists10/Yalkut,Jud/ElectronicZen.pdf, p. 13.

14. Parry D. Teasdale, "A Micro-TV Service in the United States" (report to the Federal Communications Commission, April 1980), 23.

15. Andrew Ingall, "Videofreex: The Art of Guerrilla Television," in *Videofreex: The Art of Guerrilla Television*, ed. Andrew Ingall and Daniel Belasco (New Paltz, N.Y.: Samuel Dorsky Museum of Art, 2015), 74–77; Nancy Cain, *Video Days: How Street Video Went from a Deep Underground Phenom to a Zillion Dollar Business; From Pirate TV to YouTube, What Was Gained and Lost Along the Way and What We Saw through the Viewfinder; A Memoir* (Palm Springs, Calif.: Event Horizon, 2011), 63.

The New York State Council on the Arts had begun substantially funding video in 1970, and the Freex had heard that much of the money was going to be spent upstate. They started a project called Media Bus "to serve museums, schools and community organizations across the state"; at first, NYSCA funded Media Bus through the Rochester Museum and Science Center, then the Videofreex incorporated it as a nonprofit so they could receive funding directly. "It serves," they wrote, "as a mobile media laboratory and arts workshop, focusing primarily on the applications of ½ inch video tape technology" and on educating New Yorkers about how they could use this medium. At first, the Freex planned to buy an actual bus, "but before long," writes Teasdale, "we concluded that a heavily-equipped bus mimicked the networks" and bought a van instead.[16]

When they moved to Lanesville, the primarily dialectic in the Videofreex' life shifted from that between hip and left back to that between hip and straight, between a group of young artists used to living in a city and a conservative rural community. "For many Lanesville residents," wrote Teasdale, "this outwardly unorthodox approach was the embodiment of a social phenomenon of that time called, among other things, the 'counterculture.' The organizations and its members did not win immediate acceptance."[17]

This dialectic was literally mediated by television, as the Freex built, at Maple Tree Farm, America's first—and certainly longest lasting—unlicensed low power television

16. Teasdale, *Videofreex*, 21–22; Eric Larrabee to Rochester Museum and Science Center, January 5, 1971, Rochester Museum Videofreex 70-0158-V file, box 504, New York State Council on the Arts Grant Application Files (14064-84) [hereafter NYSCA Files], New York State Archives; Media Bus grant proposal, June 4, 1971, The Media Bus (Videofreex) 71-090F file, box 357, NYSCA Files.
17. Teasdale, "Micro-TV Service," 27–28.

station with locally originated programming. Abbie Hoffman had met a radio pirate, Joseph Paul Ferraro, who had operated the Falling Star Network, a set of four unlicensed radio stations in Yonkers, New York. The Network, according to Andrew Yoder, "set out to present a community service alternative of new folk and political music (Arlo Guthrie, Country Joe and the Fish, The Fugs, etc.) and talk about social issues" for about a year, but Ferraro and partner Alan Weiner were arrested and their equipment confiscated by the FCC in 1971. Hoffman told Ferraro about the Freex' modulator, and in late 1971 Ferraro began building an antenna to mount on the roof of Maple Tree Farm while Kennedy built an amplifier from plans he had found in the magazine *Electronic Design*. "The heart of the amplifier," writes Teasdale, "the $50 transistor, a flat disk about the size of a quarter, was mounted with its companion circuitry in a small aluminum box.… I had always envisioned a pirate transmitter as a kind of Dr. Frankenstein device, a Van de Graaff generator with bolts of static electricity sliding up and down gleaming posts. Ours looked a lot like a box of animal crackers."[18]

On March 18, 1972, Lanesville TV conducted a test broadcast. "The next day," wrote Teasdale, "a video tape crew visited several residents of Lanesville to inform them of the station's first regular broadcast and to record their thoughts in anticipation of the new TV service.… The owner of the bar nearest to Maple Tree Farm characterized the advent of the local station as 'Something new and extounding' (*sic*) and agreed to tune in the shows on the set above the bar on a regular basis." Viewers called in if their reception was hazy—so the Freex could adjust the modulator—or to let the broadcasters know what

18. Teasdale, *Videofreex*, 58–63, 75–76; Andrew Yoder, *Pirate Radio: The Incredible Saga of America's Underground, Illegal Broadcasters* (Solana Beach, Calif.: HighText, 1996), 15–18.

they thought of the program. "Some of the calls came," wrote Teasdale, "from as far as four miles down the road."[19]
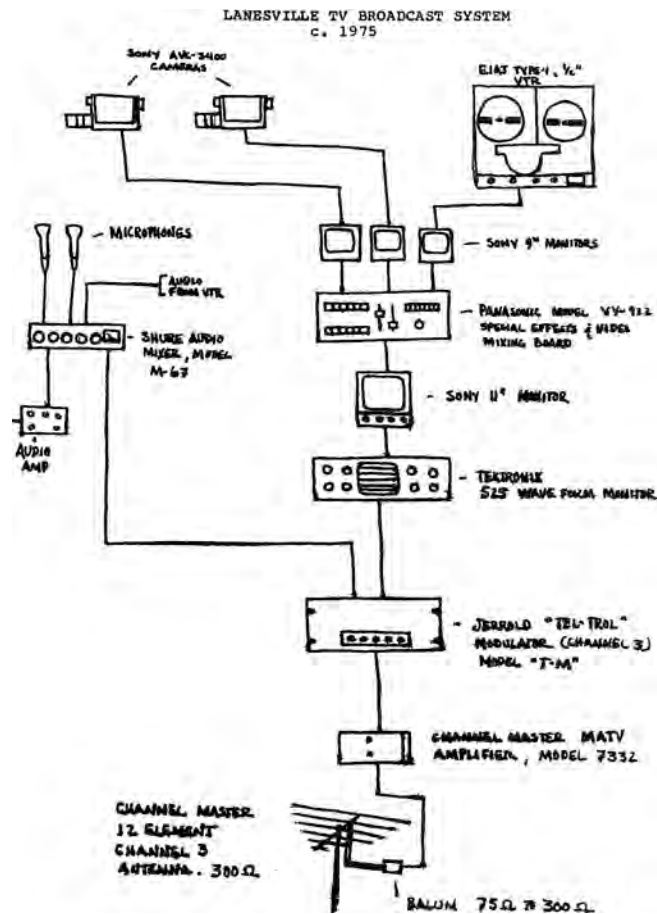
**"Lanesville TV Broadcast System" diagram, from Parry Teasdale's
report to the Federal Communications Commission, 1980.[20]**

   When Skip Blumberg wrote to the Federal Communications Commission to ask if they

could apply for a license for their low power TV station, he was informed that no such

license existed, so the Freex continued broadcasting illegally. Although neither NYSCA

nor the National Endowment for the Arts formally funded Lanesville TV, Teasdale writes

_____

19.   Teasdale, "Micro-TV," 32–33.
20.   Diagram from ibid., appendix 2. A speaker to the left of the audio amplifier is missing from the
      diagram because the report's binding covered it as I scanned the page.

that "had Media Bus not continued to operate the station, there is little question that funds

to the company would have been drastically reduced." Eventually, in 1979, the FCC hired

Teasdale to write a report on the station, and in 1980 they adopted new regulations which

made it possible to receive a license for low power television transmission in some rural

areas.[21]

**Nancy Cain and Carol Vontobel tape
in Lanesville, March 22, 1972.[22]**

Over the next five years, the Videofreex produced 258 episodes of their television

program, usually broadcasting weekly. "The residents of Lanesville had a far more

diverse programming service available to them than any other small community," wrote

Teasdale.[23] It became a cross between community video and traditional television, with

neighbors hosting cooking shows and the Videofreex going out with their

"newsbuggy"—a baby buggy carrying their portapak deck—to report the news. Like

Subject to Change, Lanesville interspersed taped segments with live performance in the

---

21. Teasdale, "Micro-TV," 38–39; Teasdale, *Videofreex*, 78–79, 209–211.
22. Videofreex, "Lanesville Overview I," video, 32:18, March 22, 1972, Video Data Bank, School of the Art Institute of Chicago.
23. Teasdale, "Micro-TV," 40, 42.

studio, but as often as not the live performance was simply the hosts taking telephone calls from viewers.[24]

Lanesville TV was an experiment in community participation that was social but not explicitly political. "Without video it would have taken us years to become part of that community," observes Bart Friedman, "but there we were out on the streets with cameras and decks.… I feel we accomplished something in Lanesville. We gave people television the likes of which they had never seen. We created a dialogue."[25] The Freex were unsuccessful, though, in involving their neighbors in the technical aspects of television production, or in involving very many adults as reporters or actors. "Despite strong and continued encouragements to do so," wrote Teasdale, "few local people became involved in producing programs. The taciturn nature of the local people, their pressing economic conditions and the disquieting sense they felt toward the communal arrangements at Maple Tree Farm prevented a strong bond from developing between Media Bus and the community."[26]

Nonetheless, in their professional work teaching New Yorkers across the state about video the Videofreex became evangelists for this sort of community television, which in most communities was broadcast over new cable systems in the absence of an unlicensed low-power transmitter. In 1972, for example, the Freex ran a workshop in Cooperstown "designed to introduce museum personnel, teachers, and other historical workers to the problems and possibilities of applying half-inch video tape technology to their work," the

---

24. Teasdale, *Videofreex*, 185.
25. Bart Friedman, "Freexback," in Ingall and Belasco, *Videofreex*, 131.
26. Teasdale, "Micro-TV," 42.

curriculum of which they also published at *Cooperstown TV Is a Museum*. The

participants produced a one-hour show on Cooperstown itself, featuring interviews with

staff at the National Baseball Hall of Fame and the Carriage and Harness Museum, as

well as with elementary school students and people walking down Main Street.[27] Through

projects like these, as well as through Lanesville TV, the Videofreex took New York

City's street tape format upstate.

TVTV

In 1972, Michael Shamberg started a new video group called Top Value Television, or

TVTV, to cover that year's Democratic and Republican National Conventions and "prove

to people that half-inch tape could be used professionally."[28] He brought together 28

videographers from Raindance (including himself, Ira Schneider, and Megan Williams),

the Videofreex (including Skip Blumberg, Nancy Cain, Chuck Kennedy, and Parry

Teasdale), the Fuller-inspired San Francisco architecture collective Ant Farm, and the

Portola Media Access Center. Through Allen Rucker, TVTV found financial and

organizational support from Stewart Brand and the Portola Institute. The $16,000

required to make the first documentary also came from the regional cable television

companies in New York and Ohio that were to broadcast it.[29]

 Both 1972 conventions were held in the same convention hall in Miami Beach. Both

were also as much television events as political ones: the convention floor was lit with

---

27. Videofreex, *Cooperstown TV Is a Museum* (Lanesville, N.Y.: Maple Tree Farm, 1973), 4, 49.

28. TVTV, *VTR:TVTV*, episode of *VTR*, produced by WNET/Thirteen, 28:30, 1975, Electronic Arts Intermix.

29. Boyle, *Subject to Change*, 36–38, 228n5; TVTV, *The World's Largest TV Studio*, video, 59:22, 1972, VHX, https://tvtv.vhx.tv/watch/tvtv-worlds-largest-tv-studio.

spotlights to help the TV cameras, and the networks spent more than twice as much as the

candidates and party on the Democratic convention. TVTV titled their documentary *The

World's Largest TV Studio*, and interviewed the television networks and delegates, rather

than the politicians. "We'll loop broadcast TV back onto itself," said Rucker. This was

partly strategic—it would take two weeks for TVTV to edit their footage, so it was

important that the result be different from what their audience had already seen live—but

it also allowed TVTV to make a show about media rather than politics.[30]

**Alberta Johnson appears on a monitor, as Alberta Johnson
watches, in TVTV,** ***The World's Largest TV Studio*, 1972.[31]**

TVTV included themselves and their process in the edit of *World's Largest TV Studio*

to a remarkable degree. In one segment of the documentary, Shamberg and other

members of TVTV interview Alberta Johnson, a delegate for George Wallace, about the

media, and introduce her to their practice of video feedback. After playing a tape back for

her, Shamberg tells Johnson, "We shot a tape of you watching a tape of you, and then

---

30. Boyle, *Subject to Change*, 38–41; Maureen Orth, "Days of Tape at the Conventions," *Rolling Stone*, July 20, 1972, 6.
31. Still frame from TVTV, *World's Largest TV Studio*.

we'll show you the tape of you watching the tape of you, and then make a tape of you watching that." Laughing, Johnson asks, "So, when do I get out of here?"[32]

Although they continued to use such recursive interview practices, this was the last time their product would reveal so much of their process. TVTV's next project, *Four More Years*, was their treatment of the 1972 RNC. They followed it with *TVTV Meets Rolling Stone*, a collection of "fairly conventional ego-stroking interviews," according to Deirdre Boyle, of the staff of a magazine that Shamberg had criticized in *Guerrilla Television* as "a whole alternate escape environment… which conditions passivity by publicizing superstars and one-way events." As Boyle observes, though, TVTV had joined *Rolling Stone* in "packaging countercultural ideology into a mainstream commodity."[33]

In 1973 TVTV incorporated, moved to San Francisco, and sold $100,000 in shares to family, friends, and Brand's Point Foundation. In a prospectus for investors, they presented themselves as resurrecting television rather than developing a new video medium. "TV," they wrote, "seems to have burned itself out.… Recently we decided that simply starting TV all over again might be the best answer."[34]

TVTV's first documentary after incorporation was *Lord of the Universe*, about 15-year-old guru Maharaj Ji and "Millennium '73," an event at the Houston Astrodome which his Divine Light Mission billed as "the central event in human history." They shot

---

32. TVTV, *World's Largest TV Studio*; Boyle, *Subject to Change*, 62.

33. Boyle, *Subject to Change*, 62, 72; Shamberg and Raindance, *Guerrilla Television*, section I, p. 25; TVTV, *Four More Years*, video, 1:02:05, 1972, Media Burn Independent Video Archive, http://mediaburn.org/video/four-more-years-5/.

34. Boyle, *Subject to Change*, 74; TVTV, "Prime Time" (1973), Top Value Television (TVTV) file, Files series, Guerrilla TV Archive, Fales Library and Special Collections, New York University.

part of the documentary on a new color camera manufactured by the small Japanese

company Asaca, tethered to a heavy one-inch deck that filmmaker Paul Goldsmith

harnessed onto his back. May Day Tribe organizer Rennie Davis had become a prominent

follower of Maharaj Ji, so TVTV recruited Abbie Hoffman to join them as a

commentator. "There's a difference between saying you've found God," joked Hoffman,

"and saying you know his address." *Lord of the Universe* was broadcast nationally by

PBS and received the prestigious Alfred I. du Pont-Columbia University Award in

Broadcast Journalism.[35] By cooperating with the broadcast television institutions

Raindance had rejected in *Guerrilla Television*, TVTV brought the products of portable

video to the mainstream.

**Abbie Hoffman watches, and comments on, a tape of
Rennie Davis, in TVTV, *The Lord of the Universe*, 1974.[36]**

Prompted by the financial failure of their documentary efforts, in the late 1970s the

group began incorporating comedic acting into their work. Comedians Bill Murray, John

---

35. Boyle, *Subject to Change*, 76–78, 84, 115; TVTV, *Lord of the Universe*, video, 58:00, broadcast February 24, 1974 on PBS, VHX, https://tvtv.vhx.tv/watch/tvtv-the-lord-of-the-universe-guru.
36. Still frame from TVTV, *Lord of the Universe*.

Belushi, and Lily Tomlin appeared in TVTV productions, and in 1977 there was briefly a *TVTV Show* on NBC.[37] In a 1975 interview, Shamberg maintained that "on-location videotape is really a new medium," but added that "tape per se doesn't create a new distribution form. Had it created video cassettes it might have been one thing, but it's still within the existing system."[38]

   At TVTV and Lanesville TV, videotape became television in distinct ways—in one case, through a modest but real local project that shaped Lanesville into a mediated community, in the other through partnership with large corporations and national distribution. Strikingly, some of the same people—Nancy Cain, Skip Blumberg, Parry Teasdale—were involved in both projects, offering two models for how even independent VT could become TV.

The End of Experimental Videography

In 1978, Michael Shamberg began producing feature films, moving on to another established distribution system. His first blockbuster was 1983's *The Big Chill*, in which a group of baby boomers, coping in their own ways with the responsibilities of adulthood, reunite on the occasion of a friend's funeral. The film, like TVTV's documentaries, incorporated the practice of mediated self-observation that so many videographers had found exciting and therapeutic. In one scene, William Hurt's character Nick Carlton, a drug dealer and former radio psychologist who had begun graduate school at the

---

37. Boyle, *Subject to Change*, 177–181.
38. TVTV, *VTR:TVTV*.

University of Michigan, finds a video camera—a Panasonic Omnipro—and looks through its viewfinder with wonder.[39]

Lawrence Kasdan, *The Big Chill*, 1983.[40]

A moment later, we're watching Carlton on a television as he turns back and forth from the role of interviewer to that of interviewed, asking himself questions about his career failures. Our perspective—that of the film camera, itself a little unstable and apparently handheld, reminiscent of TVTV's video camerawork—pans to Carlton, sitting on a couch in front of the camera, dialoging with himself live. When Harold Cooper, portrayed by Kevin Kline, interrupts him, Carlton motions to the camera and objects, "Harold, we're on the air here."[41] Carlton isn't watching the monitor for the most part, and it's not clear if the recorder is taping. Video is only a prop in his psychological exploration, but one that legitimizes it.

This scene is not evidence of the currency of this practice in 1983. *The Big Chill* is a nostalgic movie in part because its characters indulge in experiences from their youth,

---

39. Boyle, *Subject to Change*, 185; Lawrence Kasdan, *The Big Chill* (1983).
40. Still frame from Kasdan, *Big Chill*.
41. Kasdan, *Big Chill*.

like smoking marijuana and dialoguing with video cameras, that were no longer part of their everyday lives. Video was a different phenomenon than it had been in 1973, both socially and technically.

On a technical level, portable video equipment underwent three major transformations: First, by the mid 1970s manufacturers were producing portapaks that recorded in color.[42] Second, half-inch tape was enclosed in cassettes, making it more durable and obviating the need the thread tape through a recorder; Sony introduced Betamax recorders in 1975, and JVC, Matsushita, and RCA introduced the competing VHS format the next year.[43] Finally, in the early 1980s Sony and JVC began producing camcorders, devices that included a camera and a recording deck in a single unit rather than connecting them with a cable.[44]

These technical changes, as well as the decreasing costs that came with them, facilitated the adoption of video as a domestic technology. So did a new set of practices and institutions, most prominently the video store. Although many users taped their own lives and surroundings, more used the cassette as a medium for viewing professional films, or for time-shifting television shows and watching them after they were broadcast.[45]

---

42. Christoph Blase, "Welcome to the Labyrinth of Machines: Tapes and Video Formats, 1960–1980," in *Record Again! 40jahrevideokunst.de Teil 2*, edited by Christoph Blase and Peter Weibel (Ostfildern, Germany: Hatje Cantz Verlag, 2010), 504.

43. Lucas Hilderbrand, *Inherent Vice: Bootleg Histories of Videotape and Copyright* (Durham, N.C.: Duke University Press, 2009), 46–47.

44. Aaron Foisi Nmungwun, *Video Recording Technology: Its Impact on Media and Home Entertainment* (Hillsdale, N.J.: Lawrence Erlbaum Associates, 1989), 194–198.

45. The literature on cultures of video use in the 1980s and 1990s includes Frederick Wasser, *Veni, Vidi, Video: The Hollywood Empire and the VCR* (Austin: University of Texas Press, 2001); James M. Moran, *There's No Place Like Home Video* (Minneapolis: University of Minnesota Press, 2002); Joshua M. Greenberg, *From Betamax to Blockbuster: Video Stores and the Invention of Movies on*

As the medium of video grew, those who used it politically and artistically no longer had a sense that it belonged to them alone. The sense of shared identity videographers possessed in the late 1960s and early 1970s shattered—a process already evident, as I've written above, among the May Day Video Collective in 1971. Paul Ryan has written that the "utopian current in video history… lived and died with the video collective of the late 1960s and early 1970s."[46] Although many of the videographers involved continued to work in the medium, most developed professional identities as video artists, documentarians, or television professionals.

It was only in the art world, where video could be displayed in galleries rather than broadcast, that Ryan's dictum that "VT is not TV" remained true. Even in 1983 Gene Youngblood could write, echoing Ryan, that "it is apparent that video art is not television art."[47] Outside museums and galleries, through, it was apparent that video *was* television. Sculptural installations became the most unambiguously artistic form of video because, as Martha Rosler wrote, "installations can live only in museums."[48] The demise of video as an independent medium and that of experimental video as a cultural movement went hand in hand.

The ubiquity of video in the 1980s also contributed to an interest in the history of video art."The naturalization of video in mass culture," wrote Rosler, "puts the pressure on to produce a history of art video, or video art, that belongs in the art world" in order to draw

Video (Cambridge, Mass.: MIT Press, 2008); and Hilderbrand, *Inherent Vice*.

46. Paul Ryan, "Video Journey through Utopia," *Afterimage* 27, no. 3 (November 1999): 10.
47. Gene Youngblood, "A Medium Matures: Video and the Cinematic Enterprise," in *The Second Link: Viewpoints on Video in the Eighties* (Banff, Alberta: Walter Phillips Gallery, 1983), 9.
48. Martha Rosler, "Video: Shedding the Utopian Moment," *Block*, no. 11 (1985/1986), 39.

distinctions. "Video's history is not to be a *social* history but an art history," she both observed and predicted.[49]

The project of this dissertation, then, has been to begin to construct that social—and cultural and intellectual—history. Or, to put it another way, it has been to construct a network history, one that focuses on the connections between art, science, technology, and politics rather than taking these domains of human practice in isolation. When videographers from Raindance and the Videofreex to Milton Berger and Albert Scheflen to Eldridge Cleaver shared the use of video, they also began to share a discourse about video as a medium for reflecting on and reshaping consciousness, and a social network structured by *Radical Software* and other common fora. The practice and discourse of experimental video drew on a variety of intellectual and material resources, from Marshall McLuhan to LSD to the New York State Council on the Arts to the portapak itself. By drawing on these influences and associating the technology of video with ideas about the nature of self and society, the therapeutic nature of introspective self-observation, and the possibility that mind could be a collective phenomenon, a network of experimental videographers made video into a technology of consciousness.

---

49. Ibid., 42–43.

Bibliography

Abel, Theodora M. "Free Designs of Limited Scope as a Personality Index: A Comparison of Schizophrenics with Normal, Subnormal, and Primitive Culture Groups." *Character and Personality* 7, no. 1 (September 1938): 50–62.

Abramson, Albert. *Electronic Motion Pictures: A History of the Television Camera.* Berkeley: University of California Press, 1955.

———. *The History of Television, 1880 to 1941.* Jefferson, N.C.: McFarland, 1987.

———. *The History of Television, 1942 to 2000.* Jefferson, N.C.: McFarland, 2003.

Abramson, Harold A., ed. *The Use of LSD in Psychotherapy: Transactions of a Conference on D-Lysergic Acid Diethylamide (LSD-25).* New York: Josiah Macy, Jr. Foundation, 1960.

Alcorn, Allan. Interview by Henry Lowood, May 26, 2008. Computer History Museum. http://www.computerhistory.org/collections/catalog/102658257.

Alger, Ian, and Peter Hogan. "Enduring Effects of Videotape Playback Experience on Family and Marital Relationships." *American Journal of Orthopsychiatry* 19, no. 1 (January 1969): 86–98.

———. "The Use of Videotape Recordings in Conjoint Marital Therapy." *American Journal of Psychiatry* 123, no. 11 (May 1967): 1425–30.

Alk, Howard. *The Murder of Fred Hampton.* Film, 1971.

Ampex. *Ampex Operating Manual for Videotape Recorder Model VR-7000.* Ampex Corporation, 1966. http://labguysworld.com/Ampex-Manual_001.htm.

Anderson, Benedict. *Imagined Communities: Reflections on the Origins and Spread of Nationalism.* Rev. ed. London: Verso, 1991.

Anderson, Terry H. *The Movement and the Sixties: Protest in America from Greensboro to Wounded Knee.* New York: Oxford University Press, 1995.

"A New Pastime with a Big Future: Tape-It-Yourself TV." *Life*, September 17, 1965.

Angell, Callie. "Andy Warhol: Outer and Inner Space." In *From Stills to Motion & Back Again: Texts on Andy Warhol's Screen Tests & Outer and Inner Space*, 13–17. North Vancouver, BC: Presentation House Gallery, 2003.

———. "Doubling the Screen: Andy Warhol's Outer and Inner Space." *Millennium Film Journal*, no. 38 (Spring 2002), 19–33.

Anker, Peder. *From Bauhaus to Ecohouse: A History of Ecological Design.* Baton Rouge: Louisiana State University Press, 2010.

Antin, David. "Video: The Distinctive Features of the Medium." In *Video Art*, by Institute of Contemporary Art, 57–72. Philadelphia: Institute of Contemporary Art, 1975.

Antioch Baltimore. "Videotapes for Sale And/or Exchange." *Radical Software* 1, no. 5 (Spring 1972): 71.

Arbib, Michael A. "Warren McCulloch's Search for the Logic of the Nervous System." *Perspectives in Biology and Medicine* 43, no. 4 (Winter 2000): 193–216.

Arlo, Raymond. "Media Ecology." *Radical Software* 1, no. 3 (Spring 1971): 19.

Armes, Roy. *On Video*. London: Routledge, 1988.

Atkinson, Paul. "The Curious Case of the Kitchen Computer: Products and Non-Products in Design History." *Journal of Design History* 23, no. 2 (June 2010): 163–79.

Atwood, David. "The Very First On-The-Air Half-Inch Video Tape Festival Ever." Boston: WGBH, 1972. WGBH Media Library and Archive.

Audio Engineering Society. "Magnetic Recording History Pictures." Audio Engineering Society, July 6, 2004. http://www.aes.org/aeshc/docs/recording.technology.history/tape.html.

Austin, Curtis J. *Up Against the Wall: Violence in the Making and Unmaking of the Black Panther Party*. Fayetteville: University of Arkansas Press, 2006.

Bähr, Johannes, Paul Erker, and Geoffrey Giles. "The Politics of Ambiguity: Reparations, Business Relations, Denazification and the Allied Transfer of Technology." In *Technology Transfer out of Germany after 1945*, edited by Matthias Judt and Burghard Ciesla, 131–44. Amsterdam: Harwood Academic, 1996.

Baram, Marcus. *Gil Scott-Heron: Pieces of a Man*. New York: St. Martin's, 2014.

Barnouw, Erik. *The Golden Web*. New York: Oxford University Press, 1968.

———. *Tube of Plenty: The Evolution of American Television*. 2nd ed. New York: Oxford University Press, 1990.

Barzyk, Fred. "Paik and the Video Synthesizer." In *Fred Barzyk: The Search for a Personal Vision in Broadcast Television*, edited by Fred Barzyk, Curtis L. Carter, George Fifield, and Mary Ide, 73–75. Milwaukee: Marquette University Patrick & Beatrice Haggerty Museum of Art, 2001.

Bateson, Gregory. "Bali: The Value System of a Steady State." In *Social Structure: Studies Presented to A. R. Radcliffe-Brown*, edited by Meyer Fortes, 35–53. Oxford: Clarendon, 1949.

———. Curriculum vitae. In *About Bateson*, edited by John Brockman, 248–49. New York: E. P. Dutton, 1977.

———. "The Cybernetics of 'Self': A Theory of Alcoholism." In *Steps to an Ecology of Mind*, 309–37. Chicago: University of Chicago Press, 2000.

———. *Naven: A Survey of the Problems Suggested by a Composite Picture of the Culture of a New Guinea Tribe Drawn from Three Points of View*. Cambridge: Cambridge University Press, 1936.

———. *Naven: A Survey of the Problems Suggested by a Composite Picture of the Culture of a New Guinea Tribe Drawn from Three Points of View*. 2nd ed. Stanford: Stanford University Press, 1958.

———. "Restructuring the Ecology of a Great City." *Radical Software* 1, no. 3 (Spring 1971): 2–3.

———. *Steps to an Ecology of Mind*. Chicago: University of Chicago Press, 2000. First published 1972.

———, Don D. Jackson, Jay Haley, and John Weakland. "Toward a Theory of Schizophrenia." *Behavioral Science* 1 (1956): 251–64.

Bateson, Gregory, and Margaret Mead. *Balinese Character: A Photographic Analysis*. New York: New York Academy of Sciences, 1942.

———. Interview by Stewart Brand. "For God's Sake, Margaret." *CoEvolution Quarterly*, June 1976. 32–44.

Bateson, Mary Catherine. *Our Own Metaphor: A Personal Account of a Conference on the Effects of Conscious Purpose on Human Adaptation*. Expanded ed. Washington, D.C.: Smithsonian Institution Press, 1991. First published 1972.

Beck, Stephen C. "A Description of the Voltage to Position Converter, a Portion of the Direct Video Synthesizer, a Real Time Electronic System for Generating Color Graphics in the Television Format," May 29, 1971. Vasulka Archive. http://vasulka.org/archive/Artists1/Beck,Stephen/VoltToPosition.pdf.

Bedford, Sybille. *Aldoux Huxley: A Biography*. New York: Knopf, 1974.

Behrent, Michael C. "Foucault and Technology." *History and Technology* 29, no. 1 (March 2013): 54–104.

Belo, Jane. *Trance in Bali*. New York: Columbia University Press, 1960.

Berger, Dan. *Outlaws of America: The Weather Underground and the Politics of Solidarity*. Oakland: AK Press, 2006.

Berger, Milton. "Multiple Image Self Confrontation." *Radical Software* 2, no. 4 (Fall 1973): 8–12.

Berger, Milton M. "Confrontation through Videotape." In *Videotape Techniques in Psychiatric Training and Treatment*, edited by Milton M. Berger, 18–35. New York: Brunner/Mazel, 1970.

———. Foreword. In *Video in Mental Health Practice: An Activities Handbook*, by Ira Heilveil, xi – xii. New York: Springer, 1983.

———. Introduction. In *Beyond the Double Bind: Communication and Family Systems, Theories, and Techniques with Schizophrenics*, edited by Milton M. Berger, xi–xviii. New York: Brunner/Mazel, 1978.

———. Introduction. In *Videotape Techniques in Psychiatric Training and Treatment*, edited by Milton M. Berger, xi–xv. New York: Brunner/Mazel, 1970.

———. Letter. *TV in Psychiatry Newsletter* 3, no. 1 (February 1971): 9.

———. "The Use of Videotape in the Integrated Treatment of Individuals, Couples, Families and Groups in Private Practice." In *Videotape Techniques in Psychiatric Training and Treatment*, edited by Milton M. Berger, 119–60. New York: Brunner/ Mazel, 1970.

Bergmeier, Horst J.P., and Rainer E. Lotz. *Hitler's Airwaves: The Inside Story of Nazi Radio Broadcasting and Propaganda Swing*. New Haven: Yale University Press, 1997.

Bergson, Henri. *Creative Evolution*. Translated by Arthur Mitchell. Mineola, N.Y.: Dover, 1998. First published in English in 1911.

———. *Matter and Memory*. Translated by Nancy Margaret Paul and W. Scott Palmer. New York: Zone Books, 1988. First published in English in 1919.

———. "Presidential Address." Translated by H. Wildon Carr. *Proceedings of the Society for Psychical Research* 27 (1914–1915): 157–75.

———. *The Creative Mind: An Introduction to Metaphysics*. Translated by Mabelle L. Andison. Mineola, N.Y.: Dover, 2007. First published in English in 1946.

———. *Time and Free Will: An Essay on the Immediate Data of Consciousness*. Translated by F. L. Pogson. Mineola, N.Y.: Dover, 2001. First published in English in 1913.

Berke, Joseph. "The Free University of New York." In *Counter Culture*, edited by Joseph Berke, 212–27. London: Peter Owen, 1969.

Bianculli, David. *Dangerously Funny: The Uncensored Story of The Smothers Brothers Comedy Hour*. New York: Touchstone, 2009.

Birdwhistell, Ray L. "Contribution of Linguistic-Kinesic Studies to the Understanding of Schizophrenia." In *Schizophrenia: An Integrated Approach*, edited by Alfred Auerback, 99–118. New York: Ronald, 1959.

"Black Liberation Theory: Eldridge Cleaver VS. Timothy Leary On Drug Use as Counter-Revolutionary." Recorded February 12, 1971. YouTube video, 3:31. Posted by "brotherwisedispatch," June 25, 2011. https://www.youtube.com/watch?v=-tt_DncXSn0.

"Black Panther Dispute." *Sun Reporter*. March 13, 1971.

Blase, Christoph. "Welcome to the Labyrinth of Machines: Tapes and Video Formats 1960–1980." In *Record Again! 40jahrevideokunst.de. Teil 2*, edited by Christoph Blase and Peter Weibel, 500–508. Ostfildern: Hatje Cantz, 2010.

Blom, Ina. "The Autobiography of Video: Outline for a Revisionist Account of Early Video Art." *Critical Inquiry* 39, no. 2 (Winter 2013): 276–95.

Blom, John David. *Unmanned Aerial Systems: A Historical Perspective*. Fort Leavenworth, Kans.: Combat Studies Institute Press, 2009.

Bloom, Joshua, and Waldo E. Martin, Jr. *Black against Empire: The History and Politics of the Black Panther Party*. Berkeley: University of California Press, 2013.

Bloore, Carolyn. *Hugh Welch Diamond, 1808–1886: Doctor, Antiquarian, Photographer*. Twickenham, England: Orleans House Gallery, 1980.

Blumberg, Skip. Interview by Melanie La Rosa. "Early Video Pioneer: An Interview with Skip Blumberg." *Journal of Film and Video* 64, no. 1 (Spring/Summer 2012): 30–41.

Bodroghkozy, Aniko. *Groove Tube: Sixties Television and the Youth Rebellion*. Durham, N.C.: Duke University Press, 2001.

Bonanos, Christopher. *Instant: The Story of Polaroid*. New York: Princeton Architectural Press, 2012.

Bowker, Geoffrey. "How to Be Universal: Some Cybernetic Strategies, 1943-70." *Social Studies of Science* 23, no. 1 (February 1993): 107–27.

———. *Memory Practices in the Sciences*. Cambridge, Mass.: MIT Press, 2005.

Bowler, Peter J. *The Eclipse of Darwinism: Anti-Darwinian Evolution Theories in the Decades around 1900*. Baltimore: Johns Hopkins University Press, 1983.

Boyle, Deirdre. *Subject to Change: Guerrilla Television Revisited*. New York: Oxford University Press, 1997.

Braderman, Joan. "TV/Video: Reclaiming the Utopian Moment." In *Roar! The Paper Tiger Television Guide to Media Activism*, edited by Daniel Marcus, 19–21. New York: Paper Tiger Television Collective, 1991.

Bradley, Peter. Interview by Davidson Gigliotti, December 17, 1999. Early Video Project. http://davidsonsfiles.org/PeterBradleyPart1.html.

Brand, Stewart. "Spacewar: Fanatic Life and Symbolic Death among the Computer Bums." *Rolling Stone*, December 7, 1972.

———. "Why Haven't We Seen the Whole Earth?" In *The Sixties: The Decade Remembered Now, by the People Who Lived It Then*, edited by Lynda Rosen Obst, 168–70. New York: Random House, 1977.

Brockman, John. *Afterwords*. Garden City, N.Y.: Anchor Books, 1973.

———. Introduction. In *About Bateson*, edited by John Brockman, 1–18. New York: E. P. Dutton, 1977.

Brodey, Warren. "Warren Brodey M.D." Recorded 1969. YouTube video, 3:34. Posted February 5, 2008. https://www.youtube.com/watch?v=xA0nJHSLyEA.

———, and Nilo Lindgren. "Human Enhancement through Evolutionary Technology." *IEEE Spectrum*, September 1967, 87–97.

Brooks, Ron. "Philips EL3400 MrOldVTR." YouTube video, 5:46. Posted October 19, 2010. https://www.youtube.com/watch?v=VAGeeeW0pvs.

Brown, Les. *Television: The Business behind the Box*. New York: Harcourt Brace Jovanovich, 1971.

Brown, Rev. J. E. "Introduction to LSD Experience," December 8, 1957. Memory Hole, archived Internet Archive. http://web.archive.org/web/20100513043508/http://www.thememoryhole.org/hubbard/hubbard03.htm.

Brushfield, T. N. "Application of Photography to Lunacy." *Journal of the Photographic Society*, no. 54 (May 21, 1857), 289.

Bugos, Glenn E. "The Aerospace Impetus to Silicon Valley." *Journal of the West* 36, no. 3 (July 1997): 97–104.

Burrough, Bryan. *Days of Rage: America's Radical Underground, the FBI, and the Forgotten Age of Revolutionary Violence*. New York: Penguin, 2015.

Burrows, Adrienne, and Iwan Schumacher. *Portraits of the Insane: The Case of Dr. Diamond*. London: Quartet, 1990.

Bycroft, Michael. "Psychology, Psychologists, and the Creativity Movement: The Lives of Method Inside and Outside the Cold War." In *Cold War Social Science: Knowledge Production, Liberal Democracy, and Human Nature*, edited by Mark Solovey and Hamilton Cravens, 197–214. New York: Palgrave Macmillan, 2012.

Cain, Nancy. *Video Days: How Street Video Went from a Deep Underground Phenom to a Zillion Dollar Business; From Pirate TV to YouTube, What Was Gained and Lost Along the Way and What We Saw through the Viewfinder; A Memoir*. Palm Springs, Calif.: Event Horizon, 2011.

Camras, Marvin. Means for recording and reproducing video signals. US Patent 2,900,444, filed January 12, 1953, and issued August 18, 1959.

Canales, Jimena. "'A Number of Scenes in a Badly Cut Film': Observation in the Age of Strobe." In *Histories of Scientific Observation*, edited by Lorraine Daston and Elizabeth Lunbeck, 230–54. Chicago: University of Chicago Press, 2011.

———. *A Tenth of a Second: A History*. Chicago: University of Chicago Press, 2009.

Carpenter, Edmund. *Oh, What a Blow That Phantom Gave Me!*. New York: Holt, Rinehart and Winston, 1973.

Carr, Steven Alan. "On the Edge of Tastelessness: CBS, the Smothers Brothers and the Struggle for Control." *Cinema Journal* 31, no. 4 (Summer 1992): 3–24.

Cavell, Richard. *McLuhan in Space: A Cultural Geography*. Toronto: University of Toronto Press, 2002.

Chiu, Melissa, and Michelle Yun, eds. *Nam June Paik: Becoming Robot*. New York: Asia Society, 2014.

Choi, Hyungsub. "Manufacturing Knowledge in Transit: Technical Practice, Organizational Change, and the Rise of the Semiconductor Industry in the United States and Japan, 1948–1960." PhD diss., Johns Hopkins University, 2007.

Clarke, Bruce. "John Lilly, The Mind of the Dolphin, and Communication Out of Bounds." *Communication +1* 3 (2014). doi:10.7275/R5RB72JG.

Clark, Mark H. "Steel Tape and Wire Recorders." In *Magnetic Recording: The First 100 Years*, edited by Eric D. Daniel, C. Denis Mee, and Mark H. Clark, 30–46. New York: IEEE Press, 1999.

———. "The Magnetic Recording of Sound." In *Magnetic Recording: The First 100 Years*, edited by Eric D. Daniel, C. Denis Mee, and Mark H. Clark, 6–14. New York: IEEE Press, 1999.

———. "The Magnetic Recording Industry, 1878–1960: An International Study in Business and Technological History." PhD diss., University of Delaware, 1992.

———, and Henry Nielsen. "Crossed Wires and Missing Connections: Valdemar Poulsen, The American Telegraphone Company, and the Failure to Commercialize Magnetic Recording." *Business History Review* 69, no. 1 (Spring 1995): 1–41.

Cleaver, Eldridge. "Cleaver." *East Village Other*. February 9, 1971.

———. Letter to Ira Schneider and Paul Ryan. *Radical Software* 1, no. 4 (Summer 1971): 30.

———. *Soul on Ice*. New York: Delta, 1968.

Cleaver, Kathleen Neal. "Back to Africa: The Evolution of the International Section of the Black Panther Party (1969–1972)." In *The Black Panther Party Reconsidered*, edited by Charles E. Jones, 211–51. Baltimore: Black Classic Press, 1998.

Coates, James. *Seeing the Invisible: Practical Studies in Psychometry, Thought Transference, Telepathy, and Allied Phenomena*. London: Fowler, 1906.

Coffman, Elizabeth. "Raindance Reunion." Recorded November 30, 2010 at Loyola University Chicago. Vimeo video, 2:04:16. Posted June 11, 2011. https://vimeo.com/24978087.

———. "'VT Is Not TV': The Raindance Reunion in the Digital Age." *Journal of Film and Video* 64, no. 1–2 (Spring/Summer 2012): 65–71.

Cohen-Cole, Jamie. *The Open Mind: Cold War Politics and the Sciences of Human Nature*. Chicago: University of Chicago Press, 2014.

Coleman, William. "Bateson and Chromosomes: Conservative Thought in Science." *Centaurus* 15, no. 3–4 (1970): 228–314.

Collopy, Peter Sachs. "History of Cybernetics Bibliography," May 19, 2015. https://collopy.net/projects/bibliography.html.

———. "Video Synthesizers: From Analog Computing to Digital Art." *IEEE Annals of the History of Computing* 36, no. 4 (December 2014): 74–86.

Community Video Center. "Videotapes for Sale And/or Exchange." *Radical Software* 1, no. 5 (Spring 1972): 72.

Conners, Peter. *White Hand Society: The Psychedelic Partnership of Timothy Leary & Allen Ginsberg*. San Francisco: City Lights Books, 2010.

Cornelison, Jr., Floyd S., and Jean Arsenian. "A Study of the Response of Psychotic Patients to Photographic Self-Image Experience." *Psychiatric Quarterly* 34, no. 1 (1960): 1–8.

Cort, David, Phyllis Gershuny, Curtis Ratcliff, Michael Shamberg. Interview by G. Roy Levin. In *Documentary Explorations: 15 Interviews with Film-Makers*, by G. Roy Levin, 379–404. Garden City, N.Y.: Doubleday, 1971.

Cort, David, and Mary Curtis Ratclif. *Mayday Realtime*. Recorded May 1971. Video, 59:45. Video Data Bank.

Cox, Arthur J., and Thomas Malim. *Ferracute: The History of an American Enterprise*. Bridgeton, N.J., 1985.

Cox, Donald. "The Split in the Party." In *Liberation, Imagination, and the Black Panther Party: A New Look at the Panthers and Their Legacy*, edited by Kathleen Cleaver and George Katsiaficas, 118–22. New York: Routledge, 2001.

Cuénot, Claude. *Teilhard de Chardin: A Biographical Study*. Translated by Vincent Colimore. Baltimore: Helicon, 1965.

Culkin, John. "Marshall's New York Adventure." *Antigonish Review*, no. 74–75 (Summer–Fall 1988): 106–16.

Daily, Hall. "Cleaver Wants Revolt, No Drugs." *Stanford Daily*. February 24, 1971.

Darnton, Robert. *Mesmerism and the End of the Enlightenment in France*. Cambridge, Mass.: Harvard University Press, 1968.

Dart, Andrew K. "The First Videotape Machines at KRLD-TV." Akdart.com, last modified December 13, 2010. http://akdart.com/vtr/vtr3.html.

David Joselit. *Feedback: Television against Democracy*. Cambridge, Mass.: MIT Press, 2007.

Davis, Douglas. *Art and the Future: A History/Prophecy of the Collaboration between Science, Technology and Art*. New York: Praeger, 1973.

Dawson, Max. "Home Video and the 'TV Problem': Cultural Critics and Technological Change." *Technology and Culture* 48, no. 3 (July 2007): 524–49.

Day, Deanna. "98.6: Fevers, Fertility, and the Patient Labor of American Medicine." PhD diss., University of Pennsylvania, 2014.

de Brigard, Emilie. "The History of Ethnographic Film." In *Principles of Visual Anthropology*, edited by Paul Hockings, 13–43. The Hague: Mouton, 1975.

de Bruyn, Eric. "Topological Pathways of Post-Minimalism." *Grey Room*, no. 25 (Fall 2006): 32–63. doi:10.1162/grey.2006.1.25.32.

Decker-Phillips, Edith. *Paik Video*. Translated by Karin Koppensteiner, Marie-Genviève Iselin, and George Quasha. Barrytown, N.Y.: Barrytown, 1998.

Deleuze, Gilles. *Bergsonism*. Translated by Hugh Tomlinson and Barbara Habberjam. New York: Zone, 1991.

Delisle, Richard G. "Expanding the Framework of the Holism/Reductionism Debate in Neo-Darwinism: The Case of Theodosius Dobzhansky and Bernhard Rensch." *History and Philosophy of the Life Sciences* 30, no. 2 (2008): 207–26.

de Neergaard, Leif Eric. Method and means for recording and reproducing displacements. US Patent 2,628,539, filed January 4, 1945, and issued February 17, 1953.

Diamond, Hugh W. "On the Application of Photography to the Physiognomic and Mental Phenomena of Insanity." In *The Face of Madness: Hugh W. Diamond and the Origin of Psychiatric Photography*, edited by Sander L. Gilman, 17–24. New York: Brunner/Mazel, 1976. First published May 22, 1856.

Dickson, Paul. *The Electronic Battlefield*. Bloomington: Indiana University Press, 1976.

Diehl, Richard. "1963 Ampex VR-1500 Two Inch Helical Scan Consumer VTR." LabGuy's World, last modified June 29, 2008. http://labguysworld.com /Ampex_VR-1500.htm.

———. "1967 Sony CV-2000D First Consumer Videocorder." LabGuy's World, last modified January 9, 2005. http://labguysworld.com/Sony_CV-2000D.htm.

———. "Ampex VR-3000 Portable Quadruplex VTR 40th Anniversary!" LabGuy's World, last modified March 31, 2007. http://labguysworld.com/Ampex_VR-3000-Anniversary.htm.

———. "Extinct Philips/Norelco Video Equipment." LabGuy's World, last modified January 9, 2005. http://labguysworld.com/Cat_Philips.htm.

Dobzhansky, Theodosius. *The Biology of Ultimate Concern*. New York: New American Library, 1967.

Donaldson, Elizabeth J. "Psychomimesis: LSD and Disability Immersion Experiences of Schizophrenia." *Disability Studies Quarterly* 33, no. 1 (2013). http://dsq-sds.org/ article/view/3431.

Doody, Tim. "The Heretic." *Morning News*, July 26, 2012. http://www.themorningnews.org/article/the-heretic.

Dorrestijn, Steven. "Technical Mediation and Subjectivation: Tracing and Extending Foucault's Philosophy of Technology." *Philosophy of Technology* 25, no. 2 (June 2012): 221–41.

Douglas, Paul. *Bergson, Eliot, and American Literature*. Lexington: University Press of Kentucky, 1986.

Downs, Donald Alexander. *Cornell '69: Liberalism and the Crisis of the American University*. Ithaca, N.Y.: Cornell University Press, 1999.

Duhem, Pierre. *The Aim and Structure of Physical Theory*. Translated by Philip P. Wiener. Princeton: Princeton University Press, 1954.

Dunn, David, ed. *Eigenwelt Der Apparate-Welt: Pioneers of Electronic Art*. Linz: Oberösterreichisches Landesmuseum, 1992.

Dyck, Erika. *Psychedelic Psychiatry: LSD from Clinic to Campus*. Baltimore: Johns Hopkins University Press, 2008.

Edwards, Paul. *The Closed World: Computers and the Politics of Discourse in Cold War America*. Cambridge, Mass.: MIT Press, 1996.

"Electronica-501-Video." Vintage Technics. http://vintage-technics.ru /Eng-Electronica-501-video.htm.

"Electronica-Video VMP-1." Vintage Technics. http://www.vintage-technics.ru /Eng-Electronica-video_VMP-1.htm.

Ellerbee, Bobby. "CBS New York, Deep Studio History... Part 2." Facebook post, December 28, 2014. https://www.facebook.com/permalink.php?story_fbid =774420245928860&id=189359747768249.

Engel, Friedrich Karl. "Walter Weber's Technical Innovation at the Reichs-Rundfunk-Gesellschaft," August 28, 2006. http://richardhess.com/tape/history /Engel--Walter_Weber_2006.pdf.

———. "The Introduction of the Magnetophon." In *Magnetic Recording: The First 100 Years*, edited by Eric D. Daniel, C. Denis Mee, and Mark H. Clark, 47–71. New York: IEEE Press, 1999.

———. "Magnetic Tape from the Early Days to the Present." *Journal of the Audio Engineering Society* 36, no. 7/8 (August 1988): 606–16.

———, ed. "Oberlin Smith and the Invention of Magnetic Sound Recording: An Appreciation on the 150th Anniversary of the Inventor's Birth," July 2006. http://oberlinsmith.org/Library/Library-PDFs/Engel--Oberlin_Smith_2006.pdf.

Engstrom, E. W. "A History of Radio Corporation of America: The Years 1938 to 1958." *RCA Engineer* 4, no. 1 (July 1958): 28–34.

Evans, Martin, and John Phillips. *Algeria: Anger of the Dispossessed*. New Haven: Yale University Press, 2007.

"Exhibition of Photographic Pictures at the Society of Arts." *Athenaeum*, January 1, 1853, 23.

Fadiman, James. "Opening the Doors of Perception." In *Time It Was: American Stories from the Sixties*, edited by Karen Manners Smith and Tim Koster, 228–35. Upper Saddle River, N.J.: Pearson Prentice Hall, 2008.

———. *The Psychedelic Explorer's Guide: Safe, Therapeutic, and Sacred Journeys*. Rochester, Vt.: Park Street, 2011.

———. "Transpersonal Transitions: The Higher Reaches of Psyche and Psychology." In *Higher Wisdom: Eminent Elders Explore the Continuing Impact of Psychedelics*, edited by Roger Walsh and Charles S. Grob. Albany: State University of New York Press, 2005.

Falby, Alison. *Between the Pigeonholes: Gerald Heard, 1889–1971*. Newcastle upon Tyne, England: Cambridge Scholars, 2008.

Farber, David. *Chicago '68*. Chicago: University of Chicago Press, 1988.

———. *The Age of Great Dreams: America in the 1960s*. New York: Hill and Wang, 1994.

———. "The Intoxicated State/Illegal Nation: Drugs in the Sixties Counterculture." In *Imagine Nation: The American Counterculture of the 1960s and '70s*, edited by Peter Braunstein and Michael William Doyle. New York: Routledge, 2002.

Felton, David. "The Lyman Family's Holy Seige of America." In *Mindfuckers: A Source Book on the Rise of Acid Fascism in America Including Material on Charles Manson, Mel Lyman, Victor Baranco and Their Followers*, edited by David Felton, 147–324. San Francisco: Straight Arrow Books, 1972.

Fifield, George. "The WGBH New Television Workshop." In *Fred Barzyk: The Search for a Personal Vision in Broadcast Television*, edited by Fred Barzyk, Curtis L. Carter, George Fifield, and Mary Ide, 63–71. Milwaukee: Marquette University Patrick & Beatrice Haggerty Museum of Art, 2001.

Flaherty, Robert. "Robert Flaherty Talking." In *The Cinema 1950*, edited by Roger Manvell, 11–29. Harmondsworth, England: Penguin Books, 1950.

———. "How I Filmed 'Nanook of the North.'" *World's Work* 44 (September 1922): 553–60.

———. "Life among the Eskimos." *World's Work* 44 (October 1922): 632–40.

———. "The Belcher Islands of Hudson Bay: Their Discovery and Exploration." *Geographical Review* 5, no. 6 (June 1918): 433–58. doi:10.2307/207804.

Foucault, Michel. *Discipline and Punish: The Birth of the Prison*. Translated by Alan Sheridan. New York: Vintage Books, 1995.

———. *Madness and Civilization: A History of Insanity in the Age of Reason*. Translated by Richard Howard. New York: Vintage Books, 1988.

———. "Technologies of the Self." In *Technologies of the Self: A Seminar with Michel Foucault*, edited by Luther H. Martin, Hugh Gutman, and Patrick H. Hutton. Amherst: University of Massachusetts Press, 1988.

———. *The Care of the Self*. Translated by Robert Hurley. New York: Vintage Books, 1988.

———. *The History of Sexuality: An Introduction*. Translated by Robert Hurley. New York: Vintage Books, 1990.

———. Interview by Paul Rabinow. "Space, Knowledge, and Power." In *Power*, by Michel Foucault, edited by James D. Faubion. New York: New Press, 2000.

Freedman, Mervin B., and Harvey Powelson. "Drugs on Campus: Turned on & Tuned out." *Nation*, January 31, 1966, 125–27.

Free School of New York. "Summer Catalog." *Treason* 1, no. 1 (Summer 1967): 62–67.

———. "Winter Catalog 1968." *Treason* 1, no. 2–3 (Winter 1968): 60–65.

Freud, Sigmund. "On Narcissism: An Introduction." In *Collected Papers*, translated by Joan Riviere, 4:30–59. London: Hogarth, 1953.

Friedman, Bart. "Freexback." In *Videofreex: The Art of Guerrilla Television*, edited by Andrew Ingall and Daniel Belasco, 130–31. New Paltz, N.Y.: Samuel Dorsky Museum of Art, 2015.

Fuller, R. Buckminster. Introduction. In *Expanded Cinema*, by Gene Youngblood, 15–35. New York: Dutton, 1970.

———. "Pirated Transcription of Interview Videotaped by Raindance Corporation." *Radical Software* 1, no. 1 (Summer 1970): 5.

———. *Utopia or Oblivion: The Prospects for Humanity*. New York: Overlook, 1969.

Fuller, Robert C. *Mesmerism and the American Cure of Souls*. Philadelphia: University of Pennsylvania Press, 1982.

Fuqua, Joy V. *Prescription TV: Therapeutic Discourse in the Hospital and at Home*. Durham, N.C.: Duke University Press, 2012.

Furlong, Lucinda. "Notes toward a History of Image-Processed Video: Eric Siegel, Stephen Beck, Dan Sandin, Steve Rutt, Bill and Louise Etra." *Afterimage* 11, no. 1 and 2 (Summer 1983): 35–38.

"The Future of Radical Software." *Radical Software* 1, no. 5 (1972).

Galison, Peter. "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision." *Critical Inquiry* 21, no. 1 (Fall 1994): 228–66.

Garner, Harry H. "A Review of Confrontation in Psychotherapy from Hypnosis to the Problem-Solving Technique." In *Videotape Techniques in Psychiatric Training and Treatment*, edited by Milton M. Berger, 3–17. New York: Brunner/Mazel, 1970.

Geertsma, Robert H. "Studies in Self-Cognition: An Introduction." *Journal of Nervous and Mental Disease* 148, no. 3 (March 1969): 193–97.

———, and Ronald S. Reivich. "Repetitive Self-Observation by Videotape Playback." *Journal of Nervous and Mental Disease* 141, no. 1 (January 1965): 29–41.

Geiger, John. *Chapel of Extreme Experience: A Short History of Stroboscopic Light and the Dream Machine*. Brooklyn: Soft Skull, 2003.

Gelber, Steven M., and Martin L. Cook. *Saving the Earth: The History of a Middle-Class Millenarian Movement*. Berkeley: University of California Press, 1990.

Gibson, James William. *The Perfect War: Technowar in Vietnam*. Boston: Atlantic Monthly Press, 1986.

Gieryn, Thomas F. *Cultural Boundaries of Science: Credibility on the Line*. Chicago: University of Chicago Press, 1999.

Gigliotti, Davidson. "A Brief History of RainDance." Radical Software, 2003. http://radicalsoftware.org/e/history.html.

———. "Mayday in Washington: The Videofreex Journal." *Radical Software* 1, no. 5 (Spring 1972): 61.

Gilburd, Michael S. Résumé. ValuCorp, November 1, 2011. http://valucorp.com /ValuCorp-MGilburd-CV.pdf.

Gillette, Frank. *Between Paradigms: The Mood and Its Purposes*. New York: Gordon and Breach, 1973.

———. "On the Revolutionary Contingent." *Treason* 1, no. 1 (Summer 1967): 14–18.

———. "Quidditas." In *Video Art: An Anthology*, edited by Ira Schneider and Beryl Korot, 56–57. New York: Harcourt Brace Jovanovich, 1976.

———. "Six Matrices (1971–1973)." *Radical Software* 2, no. 5 (Winter 1973): 23–30.

———. *Tetragrammaton*. 1972. Video, 23:00. Video Data Bank.

Gillette, Frank, and Ira Schneider. Interview by Jud Yalkut. "Frank Gillette and Ira Schneider: Parts I and II of an Interview." *Radical Software* 1, no. 1 (Summer 1970): 9–10.

Gilman, Sander L. "Hugh W. Diamond and Psychiatric Photography." In *The Face of Madness: Hugh W. Diamond and the Origin of Psychiatric Photography*, edited by Sander L. Gilman, 3–16. New York: Brunner/Mazel, 1976.

Gimbel, John. *Technology and Reparations: Exploitation and Plunder in Postwar Germany*. Stanford: Stanford University Press, 1990.

Ginsberg, Allen. "Lysergic Acid." In *Kaddish and Other Poems 1958–1960,* 50th anniversary ed., 86–91. San Francisco: City Lights Books, 2010.

———, and Louis Ginsberg. *Family Business: Selected Letters between a Father and Son*. Edited by Michael Schumacher. New York: Bloomsbury, 2001.

Ginsburg, Charles P. "The Birth of Video Recording." Paper presented at the 82nd Convention of the Society of Motion Picture and Television Engineers, October 5, 1957. LabGuy's World, last modified July 11, 2005. http://labguysworld.com/ VTR_BirthOf.htm.

———, Shelby F. Henderson Jr., Ray M. Dolby, and Charles E. Anderson. "Broad band magnetic tape system and method. US Patent 2,956,114, filed July 24, 1955, and issued October 11, 1960.

Gioscia, Victor. "Editor's Preface." In *Birth and Death and Cybernation: Cybernetics of the Sacred*, by Paul Ryan, v–vi. New York: Gordon and Breach, 1973.

———. "Frequency and Form." *Radical Software* 1, no. 2 (Fall 1970): 7.

———. "Groovin' on Time: Fragments of a Sociology of the Psychedelic Experience." In *Psychedelic Drugs: Proceedings of a Hahnemann Medical College and Hospital*

Symposium Sponsored by the Department of Psychiatry, edited by Richard E. Hicks and Paul Jay Fink, 167–76. New York: Grune & Stratton, 1969.

———. "LSD Subcultures: Acidoxy versus Orthodoxy." *American Journal of Orthopsychiatry* 39, no. 3 (April 1969): 428–36.

———. "Notes on Videotherapy." *Radical Software* 2, no. 4 (Fall 1973): 1–2.

———. "On Social Time." In *The Future of Time: Man's Temporal Environment*, edited by Henri Yaker, Humphry Osmond, and Frances Cheek, 73–141. Garden City, N.Y.: Anchor Books, 1972.

———. "Practice Dying and Dance as Often as You Can." In *Birth and Death and Cybernation: Cybernetics of the Sacred*, by Paul Ryan, 117–29. New York: Gordon and Breach, 1973.

———. "Psychedelic Myths, Metaphors, and Fantasies." In *Origin and Mechanisms of Hallucinations: Proceedings of the 14th Annual Meeting of the Eastern Psychiatric Research Association Held in New York City, November 14–15, 1969*, 435–47. New York: Plenum, 1970.

———. Review of Steps to an *Ecology of Mind*, by Gregory Bateson, and *Our Own Metaphor*, by Mary Catherine Bateson. *American Journal of Orthopsychiatry* 43, no. 1 (January 1973): 168–71.

———. *TimeForms beyond Yesterday and Tomorrow*. New York: Gordon and Breach, 1974.

Gitlin, Todd. *The Sixties: Years of Hope, Days of Rage*. Rev. ed. New York: Bantam Books, 1993.

Goldberg, Marty, and Curt Vendel. *Atari Inc.: Business Is Fun*. Carmel, N.Y.: Syzygy, 2012.

Greenberg, Cheryl Lynn, ed. *A Circle of Trust: Remembering SNCC*. New Brunswick: Rutgers University Press, 1998.

Greenberg, Joshua M. *From Betamax to Blockbuster: Video Stores and the Invention of Movies on Video*. Cambridge, Mass.: MIT Press, 2008.

Greenfield, Robert. *Timothy Leary: A Biography*. Orlando: Harcourt, 2006.

Greenwald, Dara. "The Process Is in the Streets: Challenging Media America." In *Realizing the Impossible: Art against Authority*, edited by John MacPhee and Eric Reuland, 168–79. Oakland: AK Press, 2007.

Griffiths, Alison. *Wondrous Difference: Cinema, Anthropology, & Turn-of-the-Century Visual Culture*. New York: Columbia University Press, 2002.

Grimshaw, Anna. *The Ethnographer's Eye: Ways of Seeing in Modern Anthropology*. Cambridge: Cambridge University Press, 2001.

Groening, Stephen. "Film in Air: Airspace, In-Flight Entertainment, and Nontheatrical Distribution." *Velvet Light Trap*, no. 62 (Fall 2008), 4–14.

Grogin, R. C. *The Bergsonian Controversy in France 1900–1914*. Calgary: University of Calgary Press, 1988.

Gross, Alex. "Tape Rape." *East Village Other*, September 22, 1970.

Grossman, Edward. "New York's Schoolhouse for the Left." *Harper's*, April 1966, 75–76, 81–83.

Grosswiler, Paul. *The Method Is the Message: Rethinking McLuhan through Critical Theory*. Montreal: Black Rose Books, 1998.

Gustafson, Julie, and John Reilly. Interview. "Conversation with Julie Gustafson and John Reilly." *Videography*, May 1982, 60–74.

Guy, David. *The Red Thread of Passion: Spirituality and the Paradox of Sex*. Boston: Shambhala, 1999.

Hale, Piers J. "The Search for Purpose in a Post-Darwinian Universe: George Bernard Shaw, 'Creative Evolution', and Shavian Eugenics: 'The Dark Side of the Force.'" *History and Philosophy of the Life Sciences* 28, no. 2 (2006): 191–213.

Hall, Doug, and Sally Jo Fifer. "Introduction: Complexities of an Art Form." In *Illuminating Video: An Essential Guide to Video Art*, edited by Doug Hall and Sally Jo Fifer, 13–27. New York: Aperture, 1990.

Hallström, Per. Nobel Prize award ceremony speech. December 10, 1928. http://www.nobelprize.org/nobel_prizes/literature/laureates/1927/press.html.

Hammar, Peter. "The Birth of Tape Recording in the U.S." Paper presented at the 72nd Convention of the Audio Engineering Society, Anaheim, Calif., October 1982. Last modified Anaheim: History of Recording, 1982. History of Recording, last modified September 17, 2011. http://www.historyofrecording.com/support-files /aes_preprint_1928_1982-09_birth_of_tape_recording.pdf.

Hanhardt, John G. "Nam June Paik: An Illustrated Chronology." In *Nam June Paik*, edited by John G. Hanhardt, 9–72. New York: Whitney Museum of American Art, 1982.

———. *The Worlds of Nam June Paik*. New York: Guggenheim Museum, 2000.

Haraway, Donna. "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s." *Socialist Review*, no. 80 (1985), 65–107.

Harithas, James. "Blueprint for a Creative Reorientation." In *Frank Gillette: Video; Process and Meta-Process*, edited by Judson Rosebush, 3–6. Syracuse, N.Y.: Everson Museum of Art, 1973.

———. Foreword. In *Aransas: Axis of Observation*, by Frank Gillette, 2–3. Houston: Points of View, 1978.

Harman, Willis, and James Fadiman. "Breakthrough Research: Selective Enhancement of Creative Capacities." In *The Psychedelic Explorer's Guide: Safe, Therapeutic, and Sacred Journeys*, by James Fadiman, 119–35. Rochester, Vt.: Park Street, 2011.

Harman, Willis W., Robert H. McKim, Robert E. Mogar, James Fadiman, and Myron J. Stolaroff. "Psychedelic Agents in Creative Problem-Solving: A Pilot Study." *Psychological Reports* 19 (August 1966): 211–27.

Harman, Willis W., and Elisabet Sahtouris. *Biology Revisioned*. Berkeley: North Atlantic, 1998.

Hartman, P. Letter to Dr. A. M. Hubbard, May 31, 1955. Memory Hole, archived by the Internet Archive. http://web.archive.org/web/20100513043506/http://www .thememoryhole.org/hubbard/hubbard02.htm.

Hayes, Peter. *Industry and Ideology: IG Farben in the Nazi Era*. 2nd ed. Cambridge: Cambridge University Press, 2000.

Hayles, N. Katherine. *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: University of Chicago Press, 1999.

Haynes, Renée. *The Society for Psychical Research 1882–1982: A History*. London: Macdonald, 1982.

Heard, Gerald. "'Can This Drug Enlarge Man's Mind?.'" *Psychedelic Review* 1, no. 1 (1963): 7–17.

———. "The Poignant Prophet." *Kenyon Review* 27, no. 1 (Winter 1965): 49–70.

Hecht, Gabrielle. *The Radiance of France: Nuclear Power and National Identity after World War II*. Cambridge, Mass.: MIT Press, 1998.

Heidenry, John. *What Wild Ecstasy: The Rise and Fall of the Sexual Revolution*. New York: Simon & Schuster, 1997.

Heider, Karl G. *Ethnographic Film*. Rev. ed. Austin: University of Texas Press, 2006.

Heims, Steve Joshua. *The Cybernetics Group*. Cambridge, Mass.: MIT Press, 1991.

Herf, Jeffrey. *Reactionary Modernism: Technology, Culture, and Politics in Weimar and the Third Reich*. Cambridge: Cambridge University Press, 1984.

High, Kathy. "Mods, Pods and Designs: Designing Tools and Systems." In *The Emergence of Video Processing Tools: Television Becoming Unglued*, edited by Kathy High, Sherry Miller Hocking, and Mona Jimenez, 2:359–83. Bristol: Intellect, 2014.

———, and Dara Greenwald. "Portable Technologies, Contestational Media: New York State in 1968." In *(1968): Episodes of Culture in Contest*, edited by Cathy Crane and Nicholas Muellner, 52–71. Newcastle upon Tyne, England: Cambridge Scholars, 2008.

Hilderbrand, Lucas. *Inherent Vice: Boogleg Histories of Videotape and Copyright*. Durham, N.C.: Duke University Press, 2009.

Hoffman, Abbie. *The Best of Abbie Hoffman*. Edited by Daniel Simon and Abbie Hoffman. New York: Four Walls Eight Windows, 1989.

———. *Revolution for the Hell of It*. New York: Dial, 1968.

———. *Steal This Book*. New York: Pirate Editions, 1971.

Howard, Jane. *Margaret Mead: A Life*. New York: Simon & Schuster, 1984.

Howard Wise Gallery. *TV as a Creative Medium*. New York: Howard Wise Gallery, 1969. http://eai.org/user_files/supporting_documents/tvasacreativemedium _exhibitionbrochure.pdf.

Hubbard, Alfred M. "Statement of Investigator," c. 1967. Memory Hole, archived by the Internet Archive. http://web.archive.org/web/20100513043530/http://www .thememoryhole.org/hubbard/hubbard17.htm.

Hughes, Howard C. *Sensory Exotica: A World beyond Human Experience*. Cambridge, Mass.: MIT Press, 1999.

Hughes, Thomas P. "Lusting for the Gratifications of Technology." Review of *Technological Utopianism in American Culture*, by Howard P. Segal. *Reviews in American History* 14, no. 2 (June 1986): 265–69.

Hultén, K. G. Pontus. *The Machine as Seen at the End of the Mechanical Age*. New York: Museum of Modern Art, 1968.

Huxley, Aldoux. *The Art of Seeing*. New York: Harper, 1942.

———. *The Doors of Perception*. New York: Harper, 1954.

———. *Letters of Aldous Huxley*. Edited by Grover Smith. London: Chatto & Windus, 1969.

Huxley, Julian. "The Future of Man: Evolutionary Aspects." In *Man and His Future*, edited by Gordon Wolstenholme, 1–22. Boston: Little, Brown, 1963.

Imperato, Pascal James, and Eleanor M. Imperato. *They Married Adventure: The Wandering Lives of Martin and Osa Johnson*. New Brunswick: Rutgers University Press, 1992.

Ingall, Andrew. "Videofreex: The Art of Guerrilla Television." In *Videofreex: The Art of Guerrilla Television*, edited by Andrew Ingall and Daniel Belasco, 18–101. New Paltz, N.Y.: Samuel Dorsky Museum of Art, 2015.

Innis, Harold A. *Empire and Communications*. Edited by David Godfrey. Victoria: Porcépic, 1986. First published 1950.

Ippolito, Jon. "Random Access." *Vectors: Digital Art of Our Time*, 2002. http://nydigitalsalon.org/10/artwork.php?artwork=13.

Jacknis, Ira. "Margaret Mead and Gregory Bateson in Bali: Their Use of Photography and Film." *Cultural Anthropology* 3, no. 2 (May 1988): 160–77.

Jackson, Mark. *The Age of Stress: Science and the Search for Stability*. Oxford: Oxford University Press, 2013.

Jameson, Fredric. *Postmodernism, Or, The Cultural Logic of Late Capital*. Durham, N.C.: Duke University Press, 1991.

Jezer, Marty. *Abbie Hoffman: American Rebel*. New Brunswick: Rutgers University Press, 1992.

Johns, Adrian. *Piracy: The Intellectual Property Wars from Gutenberg to Gates*. Chicago: University of Chicago Press, 2009.

Johnson, Chalmers. *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975*. Stanford: Stanford University Press, 1982.

Johnson, Osa. *I Married Adventure: The Lives and Adventures of Martin and Osa Johnson*. Philadelphia: Lippencott, 1940.

Johnson, Thomas A. "Panthers Fear Growing Intraparty Strife." *New York Times*. April 10, 1971.

Jonas, Adolphe D. *Irritation and Counterirritation: A Hypothesis about the Autoamputative Property of the Nervous System*. New York: Vantage, 1962.

Jones, Philip Mallory. Résumé. http://philipmalloryjones.com/curriculum-vita-2/.

———. Interview by Chris Hill, July 1995. Vasulka Archive. http://vasulka.org/archive/Contributors/ChrisHill/InterviewPhilipMalloryJones.pdf.

Jorgensen, Finn. "Early Fixed-Head Video Recorders." In *Magnetic Recording: The First 100 Years*, edited by Eric D. Daniel, C. Denis Mee, and Mark H. Clark, 137–52. New York: IEEE Press, 1999.

———. "Instrumentation Recording on Magnetic Tape." In *Magnetic Recording: The First 100 Years*, edited by Eric D. Daniel, C. Denis Mee, and Mark H. Clark, 316–32. New York: IEEE Press, 1999.

Kagan, Norman, David R. Krathwohl, and Ralph Miller. "Stimulated Recall in Therapy Using Video Tape: A Case Study." *Journal of Counseling Psychology* 10, no. 3 (1963): 237–43.

Kaizen, William. "Steps to an Ecology of Communication: Radical Software, Dan Graham, and the Legacy of Gregory Bateson." *Art Journal* 67, no. 3 (Fall 2008): 86–107.

Kallis, Aristotle A. *Nazi Propaganda and the Second World War*. Basingstone, England: Palgrave Macmillan, 2005.

Kane, Carolyn. "The Electric 'Now Indigo Blue': Synthetic Color and Video Synthesis Circa 1969." *Leonardo* 46, no. 4 (2013): 360–66.

Kasdan, Lawrence. *The Big Chill*. Film, 1983.

Kauffman, L. A. "Ending a War, Inventing a Movement: Mayday 1971." *Radical Society* 29, no. 4 (2002): 29–49.

Kay, Lily E. "From Logical Neurons to Poetic Embodiments of Mind: Warren S. McCulloch's Project in Neuroscience." *Science in Context* 14, no. 4 (December 2001): 591–614.

———. *Who Wrote the Book of Life? A History of the Genetic Code*. Stanford: Stanford University Press, 2000.

Keen, Ben. "'Play It Again, Sony': The Double Life of Home Video Technology." *Science as Culture* 1, no. 1 (1987): 7–52.

Keene, L. C., and T. E. Pierson. "Astrovision: An In-Flight Entertainment System." *Electronics World*, March 1965, 42–43, 69–70.

Kennedy, Rhea. "We're All Videofreex—The Symposium, the Reunion." *The Videofreex* (blog), October 25, 2012. http://videofreex.com/2012/10/25/we-are-all-videofreex-the-symposium-the-reunion/.

Kihara, Nobutoshi. Interview by William Aspray, May 24, 1994. IEEE Global History Network, last modified April 8, 2015. http://ieeeghn.org/wiki/index.php/Oral-History:Nobutoshi_Kihara.

Kilbon, Kenyon. "Pioneering in Electronics: A Short History of the Origins and Growth of RCA Laboratories, Radio Corporation of America, 1919 to 1964," August 1964. David Sarnoff Library, last modified October 31, 2014. http://www.davidsarnoff.org/kil.html.

Kirschenbaum, Matthew G. *Mechanisms: New Media and the Forensic Imagination*. Cambridge, Mass.: MIT Press, 2008.

Kitsopanidou, Kira. "The Widescreen Revolution and 20th Century-Fox's Eidophor in the 1950s." *Film History* 15, no. 1 (2003): 32–56.

Kittler, Friedrich A. *Gramophone, Film, Typewriter*. Translated by Geoffrey Winthrop-Young and Michael Wutz. Stanford: Stanford University Press, 1999.

———. *Optical Media: Berlin Lectures, 1999*. Translated by Anthony Enns. Cambridge: Polity, 2010.

Kleiner, Art. *The Age of Heretics: A History of the Radical Thinkers Who Reinvented Corporate Management*. 2nd ed. San Francisco: Jossey-Bass, 2008.

Klein, Sami. "Everybody Will Be on Television." *Rolling Stone*, March 18, 1971, 22–23.

Klimke, Martin. *The Other Alliance: Student Protest in West Germany and the United States in the Global Sixties*. Princeton: Princeton University Press, 2010.

Krassner, Paul. *Confessions of a Raving, Unconfined Nut: Misadventures in the Counterculture*. Updated and expanded ed. Berkeley: Soft Skull, 2012.

Krauss, Rosalind. "Video: The Aesthetics of Narcissism." *October*, no. 1 (Spring 1976), 50–64.

Kripal, Jeffrey J. *Esalen: America and the Religion of No Religion*. Chicago: University of Chicago Press, 2007.

Kubie, Lawrence S. "Problems and Techniques of Psychoanalytic Validation and Progress." In *Psychoanalysis as Science: The Hixon Lectures on the Scientific Status of Psychoanalysis*, edited by E. Pumpian-Mindlin, 46–124. Stanford: Stanford University Press, 1952.

———. "Some Aspects of the Significance to Psychoanalysis of the Exposure of a Patient to the Televised Audiovisual Reproduction of His Activities." *Journal of Nervous and Mental Disease* 148, no. 4 (April 1969): 301–9.

Lafferty, Jr., William Charles. "The Early Development of Magnetic Sound Recording in Broadcasting and Motion Pictures, 1928–1950." PhD diss., Northwestern University, 1981.

Lakoff, Andrew. "Freezing Time: Margaret Mead's Diagnostic Photography." *Visual Anthropology Review* 12, no. 1 (Spring 1996): 1–18.

Lane, Basil. "75 Years of Magnetic Recording: 3—From Steel to Plastic." *Wireless World*, May 1975, 222–25.

Lardner, James. *Fast Forward: Hollywood, the Japanese, and the Onslaught of the VCR*. New York: W. W. Norton, 1987.

Latour, Bruno. "On Technical Mediation—Philosophy, Sociology, Genealogy." *Common Knowledge* 3, no. 2 (Fall 1994): 29–64.

Lattin, Don. *Distilled Spirits: Getting High, Then Sober, with a Famous Writer, a Forgotten Philosopher, and a Hopeless Drunk*. Berkeley: University of California Press, 2012.

———. *The Harvard Psychedelic Club: How Timothy Leary, Ram Dass, Huston Smith, and Andrew Weil Killed the Fifties and Ushered in a New Age for America*. New York: HarperOne, 2010.

Laurent, Laurence. "Viewers Startled by Tape's Quick Repeat." *Washington Post and Times Herald*. January 22, 1957.

Lawlor, Leonard, and Valentine Moulard Leonard. "Henri Bergson." In *Stanford Encyclopedia of Philosophy*. Article published May 8, 2013. http://plato.stanford.edu/entries/bergson/.

Leary, Timothy. *Change Your Brain*. Berkeley: Ronin, 2000.

———. *Flashbacks: A Personal and Cultural History of an Era; An Autobiography*. Los Angeles: Jeremy P. Tarcher, 1990.

———. *High Priest*. New York: New American Library, 1968.

———. "How to Change Behavior." In *LSD: The Consciousness-Expanding Drug*, edited by David Solomon, 97–113. New York: G. P. Putnam's Sons, 1964.

———. *Interpersonal Diagnosis of Personality: A Functional Theory and Methodology for Personality Evaluation*. New York: Ronald, 1957.

———. "The Molecular Revolution." In *The Politics of Ecstacy*, 332–61. Berkeley: Ronin, 1990.

———, Ralph Metzner, and Richard Alpert. *The Psychedelic Experience: A Manual Based on the Tibetan Book of the Dead*. Secaucus, N.J.: Citadel, 1964.

Lécuyer, Christophe. *Making Silicon Valley: Innovation and the Growth of High Tech, 1930–1970*. Cambridge, Mass.: MIT, 2006.

Lee, Martin A., and Bruce Shlain. *Acid Dreams: The Complete Social History of LSD; The CIA, The Sixties, and Beyond*. New York: Grove, 1992.

Lemov, Rebecca. *World as Laboratory: Experiments with Mice, Mazes, and Men*. New York: Hill and Wang, 2005.

Lenson, David. *On Drugs*. Minneapolis: University of Minnesota Press, 1995.

Leslie, John, and Ross Snyder. "History of the Early Days of Ampex Corporation." December 17, 2010. Audio Engineering Society Historical Committee, last modified April 19, 2012. http://www.aes.org/aeshc/docs/company.histories/ampex/leslie_snyder_early-days-of-ampex.pdf.

Leslie, Stuart W. *The Cold War and American Science: The Military-Industrial-Academic Complex at MIT and Stanford*. New York: Columbia University Press, 1993.

Letcher, Andy. *Shroom: A Cultural History of the Magic Mushroom*. New York: Ecco, 2007.

Levy, David M. *Scrolling Forward: Making Sense of Documents in the Digital Age*. New York: Arcade, 2001.

Levy, Steven. *Hackers: Heroes of the Computer Revolution*. New York: Doubleday, 1984.

Light, Jennifer. *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America*. Baltimore: Johns Hopkins University Press, 2003.

Lilly, John C. *The Center of the Cyclone: An Autobiography of Inner Space*. New York: Julian, 1972.

———. *Programming and Metaprogramming in the Human Biocomputer*. 2nd ed. New York: Julian, 1972.

———. *The Scientist: A Novel Autobiography*. Philadelphia: J. B. Lippincott, 1978.

Lindsay, Harold. "Magnetic Recording Part I." *dB: The Sound Engineering Magazine*, December 1977, 38–44.

———, and Myron Stolaroff. "Magnetic Tape Recorder of Broadcast Quality." *Audio Engineering* 32 (October 1948): 13–16.

Lipset, David. *Gregory Bateson: The Legacy of a Scientist*. Boston: Beacon, 1982.

Loison, Laurent. "French Roots of French Neo-Lamarckisms, 1879–1985." *Journal of the History of Biology* 44, no. 4 (November 2011): 713–44.

Love, Howard Louis. "Gerald Heard's Natural Theology in Relation to the Philosophy of Henri Bergson." PhD diss., Boston University, 1962.

Lui, Chi Tien. Interview by Emanuel Lorrain, May 30, 2011. PACKED. http://packed.be /en/resources/detail/interview_met_chi_tien_lui_ctl_electronics.

Lum, Casey Man Kong. "Notes toward an Intellectual History of Media Ecology." In *Perspectives on Culture, Technology and Communication: The Media Ecology Tradition*, edited by Casey Man Kong Lum, 1–60. Creskill, N.J.: Hampton, 2006.

Lunbeck, Elizabeth. *The Americanization of Narcissism*. Cambridge, Mass.: Harvard University Press, 2014.

Lutkehaus, Nancy C. *Margaret Mead: The Making of an American Icon*. Princeton: Princeton University Press, 2008.

[Lyman, Mel]. *Autobiography of a World Saviour*. New York: Jonas, 1966.

Lyons, Nick. *The Sony Vision*. New York: Crown, 1976.

Mack, Theresa H. "Portable Video Documentary: An Historical Perspective." New York, May 1976. Downtown Collection, Fales Library & Special Collections, New York University.

MacLean, J. Ross, D. C. MacDonald, Ultan P. Byrne, and A. M. Hubbard. "The Use of LSD-25 in the Treatment of Alcoholism and Other Psychiatric Problems." *Quarterly Journal of Studies on Alcohol* 22 (1961): 34–45.

Mailer, Norman. *The Armies of the Night: History as a Novel, The Novel as History*. New York: Signet, 1968.

Mallinson, John C. "The Ampex Quadraplex Recorders." In *Magnetic Recording: The First 100 Years*, edited by Eric D. Daniel, C. Denis Mee, and Mark H. Clark, 153–69. New York: IEEE Press, 1999.

Malone, Michael S. *The Big Score: The Billion-Dollar Story of Silicon Valley*. Garden City, N.Y.: Doubleday, 1985.

Mandler, Peter. *Return from the Natives: How Margaret Mead Won the Second World War and Lost the Cold War*. New Haven: Yale University Press, 2013.

Manuel, Frank E. "Toward a Psychological History of Utopias." In *Utopias and Utopian Thought: A Timely Appraisal*, ed. Frank E. Manuel, 69–98. Boston: Beacon, 1967.

Marchand, Philip. *Marshall McLuhan: The Medium and the Messenger*. Cambridge, Mass.: MIT Press, 1998.

Maritain, Jacques. *Bergsonian Philosophy and Thomism*. Translated by Mabelle L. Andison and J. Gordon Andison. New York: Philosophical Library, 1955.

Markley, O.W., and Willis W. Harman, eds. *Changing Images of Man*. Oxford: Pergamon, 1982.

Markoff, John. *What the Dormouse Said: How the Sixties Counterculture Shaped the Personal Computer Industry*. New York: Penguin, 2005.

Marks, John. *The Search for the "Manchurian Candidate": The CIA and Mind Control*. New York: W. W. Norton, 1979.

Martin, Jeff. "The Dawn of Tape: Transmission Device as Preservation Medium." *The Moving Image* 5, no. 1 (Spring 2005): 45–66.

Mattingly, Grayson, and Welby Smith. *Introducing the Single-Camera VTR System: A Layman's Guide to Videotape Recording*. New York: Charles Scribner's Sons, 1973.

May Day Collective. "May Day Collective." *Radical Software* 1, no. 4 (Summer 1971): 31.

McCulloch, Warren S. Commentary. In *Communication Theory and Research: Proceedings of the First International Symposium*, edited by Lee Thayer, 412–21. Springfield, Ill.: Charles C. Thomas, 1967.

McCulloch, Winifred. *A Short History of the American Teilhard Association*. Chambersburg, Penn.: ANIMA Publications, 1979.

McLuhan, Marshall. *The Gutenberg Galaxy: The Making of Typographic Man*. New York: Signet, 1969. First published 1962.

———. *Understanding Media: The Extensions of Man*. Cambridge, Mass.: MIT Press, 1994. First published 1964.

———, and Quentin Fiore. *War and Peace in the Global Village*. New York: Bantam Books, 1968.

McQuade, Martin, and Pete Hammar. "Bing Crosby's Magnetic Tape Revolution." In *Going My Way: Bing Crosby and American Culture*, edited by Ruth Prigozy and Walter Raubicheck, 151–158. Rochester: University of Rochester Press, 2007.

Mead, Margaret. *Blackberry Winter: My Earlier Years*. New York: William Morrow, 1972.

———. *Letters from the Field, 1925–1975*. New York: Harper Colophon Books, 1979.

———. "Visual Anthropology in a Discipline of Words." In *Principles of Visual Anthropology*, edited by Paul Hockings, 3–10. The Hague: Mouton, 1975.

———, and Frances Cooke Macgregor. *Growth and Culture: A Photographic Study of Balinese Childhood*. New York: G. P. Putnam's Sons, 1951.

Mellencamp, Patricia. "The Old and the New: Nam June Paik." *Art Journal* 54, no. 4 (Winter 1995): 41–47.

Merrin, William. "Still Fighting 'the Beast': *Guerrilla Television* and the Limits of YouTube." *Cultural Politics* 8, no. 1 (March 2012): 97–119.

Miller, Timothy. "Notes on the Prehistory of the Human Potential Movement: The Vedanta Society and Gerald Heard's Trabuco College." In *On the Edge of the Future: Esalen and the Evolution of American Culture*, edited by Jeffrey J. Kripal and Glenn W. Shuck. Bloomington: Indiana University Press, 2005.

———. *The Hippies and American Values*. 2nd ed. Knoxville: University of Tennessee Press, 2011.

Mindell, David A. *Between Human and Machine: Feedback, Control, and Computing before Cybernetics*. Baltimore: Johns Hopkins University Press, 2002.

Mirowski, Philip. *Machine Dreams: Economics Becomes a Cyborg Science*. Cambridge: Cambridge University Press, 2001.

Mission Mediarts. "Feedback." *Radical Software* 1, no. 3 (Spring 1971): 22.

Monod, Jacques. *Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology*. Translated by Austryn Wainhouse. New York: Alfred A. Knopf, 1971.

Moore, Floy Jack, Eugene Chernell, and Maxwell J. West. "Television as a Therapeutic Tool." *Archives of General Psychiatry* 12, no. 2 (February 1965): 217–20.

Moran, James M. *There's No Place Like Home Video*. Minneapolis: University of Minnesota Press, 2002.

Morton, David. *Off the Record: The Technology and Culture of Sound Recording in America*. New Brunswick: Rutgers University Press, 2000.

Morton, Jr., David Lindsay. "The History of Magnetic Recording in the United States, 1888–1978." PhD diss., Georgia Institute of Technology, 1995.

Mullin, John T. "Archive: The Crosby VTR." *Video*, March 1982, 28–31.

———. "The Birth of the Recording Industry." *Billboard*, November 18, 1972, 56, 58–59, 77, 79.

———. "Creating the Craft of Tape Recording." *High Fidelity and Musical America*, April 1976, 62–67.

———. "Video Magnetic Tape Recorder." *Tele-Tech & Electronic Industries*, May 1954, 77, 127–29.

Mulvin, Dylan. "Game Time: A History of the Managerial Authority of the Instant Replay." In *The NFL: Critical and Cultural Perspectives*, edited by Thomas P. Oates and Zack Furness, 40–59. Philadelphia: Temple University Press, 2014.

Mumford, Lewis. *Technics and Civilization*. New York: Harbinger, 1963. First published 1934.

Muntaqim, Jalil. *On the Black Liberation Army*. Montreal: Abraham Guillen Press / Arm the Spirit, 2002. First published 1979.

Nathan, John. *Sony: The Private Life*. Boston: Houghton Mifflin, 1999.

Negroponte, Nicholas. *Being Digital*. New York: Alfred A. Knopf, 1995.

Nelson, Theodor H. *Computer Lib*. Chicago, 1974.

Newman, Michael Z. *Video Revolutions: On the History of a Medium*. New York: Columbia University Press, 2014.

New York State Council on the Arts. *New York State Council on the Arts Annual Report, 1969–70*. New York: New York State Council on the Arts, 1970.

———. *New York State Council on the Arts Annual Report, 1970–71*. New York: New York State Council on the Arts, 1971.

Nmungwun, Aaron Foisi. *Video Recording Technology: Its Impact on Media and Home Entertainment*. Hillsdale, N.J.: Lawrence Eribaum Associates, 1989.

Noble, David F. *Forces of Production: A Social History of Industrial Automation*. Oxford: Oxford University Press, 1984.

Noll, Richard. *American Madness: The Rise and Fall of Dementia Praecox*. Cambridge, Mass.: Harvard University Press, 2011.

Norton, Quinn. "A Sixth Sense for a Wired World." *Wired*, June 7, 2006. http://archive.wired.com/gadgets/mods/news/2006/06/71087.

O'Mara, Margaret Pugh. *Cities of Knowledge: Cold War Science and the Search for the Next Silicon Valley*. Princeton: Princeton University Press, 2005.

Onkey, Lauren. "Voodoo Child: Jimi Hendrix and the Politics of Race in America." In *Imagine Nation: The American Counterculture of the 1960s and '70s*, edited by Peter Braunstein and Michael William Doyle, 189–214. New York: Routledge, 2002.

Optic Nerve. "Optic Nerve." *Radical Software* 2, no. 3 (Summer 1973): 11.

Orth, Maureen. "Days of Tape at the Conventions." *Rolling Stone*, July 20, 1972, 6.

Ostherr, Kirsten. *Medical Visions: Producing the Patient through Film, Television, and Imaging Technologies*. Oxford: Oxford University Press, 2013.

Paik, Nam June. "Electronic Video Recorder." In *Nam June Paik: Videa 'n' Videology 1959–1973*, edited by Judson Rosebush, 11. Syracuse, N.Y.: Everson Museum of Art, 1965.

———. "Mr. Abe: The Greatest Doctor for Me." In *Paik-Abe Video Synthesizer: As Freely as Picasso, As Colorfully as Renoir*, edited by Manu Park, Sang Ae Park, and Ki Jun Lee, 14–21. Yongin, South Korea: Nam June Paik Art Center, 2011.

———. "New Projects." In *Nam June Paik: Videa 'n' Videology 1959–1973*, edited by Judson Rosebush, 75–77. Syracuse, N.Y.: Everson Museum of Art, 1973.

———. "Video Synthesizer Plus." *Radical Software* 1, no. 2 (Fall 1970): 25.

Paper, Lewis J. *Empire: William S. Paley and the Making of CBS*. New York: St. Martin's, 1987.

Paradis, James G., ed. *Samuel Butler, Victorian against the Grain: A Critical Overview*. Toronto: University of Toronto Press, 2007.

Park, Sang Ae, and Ki Jun Lee. "Abe Video Synthesizer Restoration Project." In *Paik-Abe Video Synthesizer: As Freely as Picasso, As Colorfully as Renoir*, edited by Manu Park, Sang Ae Park, and Ki Jun Lee, 40–61. Yongin, South Korea: Nam June Paik Art Center, 2011.

Paulsen, Kris. "Direct to Video: Stephen Beck's Cameraless Television." Paper presented at the 17th International Symposium on Electronic Art, Istanbul, September 14, 2011. ISEA2011 Istanbul. http://isea2011.sabanciuniv.edu/paper /direct-video-stephen-becks-cameraless-television.

———. "Half-Inch Revolution: The Guerilla Video Tape Network." *Amodern*, no. 2 (Fall 2013). http://amodern.net/article/half-inch-revolution/.

———. "In the Beginning, There Was the Electron." *X-TRA* 15, no. 2 (Winter 2013): 56–73.

Pearl, Sharrona. *About Faces: Physiognomy in Nineteenth-Century Britain*. Cambridge, Mass.: Harvard University Press, 2010.

Peebles, Curtis. *Dark Eagles: A History of Top Secret U.S. Aircraft Programs*. Novato, Calif.: Presidio, 1995.

Perkins, Michael. *The Secret Record: Modern Erotic Literature*. New York: William Morrow, 1976.

Peters, John Durham. *Speaking into the Air: A History of the Idea of Communication*. Chicago: University of Chicago Press, 1999.

Peterson, Erik L. "Finding Mind, Form, Organism, and Person in a Reductionist Age: The Challenge of Gregory Bateson and C. H. Waddington to Biological and Anthropological Orthodoxy, 1924–1980." PhD diss., University of Notre Dame, 2010.

Philips. *Beeld + Geluid = Philips Video-Recorder EL 3400*. Eindhoven, Netherlands: Philips, 1965. http://marcelstvmuseum.com/folders/Folder%20Philips %20EL3400.pdf.

Phillips, Glenn, ed. *California Video: Artists and Histories*. Los Angeles: Getty Research Institute, 2008.

Phillips, William B. "Data Storage on Tape." In *Magnetic Recording: The First 100 Years*, edited by Eric D. Daniel, C. Denis Mee, and Mark H. Clark, 252–69. New York: IEEE Press, 1999.

Pickering, Andrew. *The Cybernetic Brain: Sketches of Another Future*. Chicago: University of Chicago Press, 2010.

Pignolet, Guy. "Feedback." *Radical Software* 1, no. 2 (Fall 1970): 23.

———. "Information Exchange." *Radical Software* 1, no. 3 (Spring 1971): 9.

———. Résumé. Lindamood Family Web Page, last modified June 3, 2005. http://lindamood.com/guypignolet.htm.

Pinch, Trevor J., and Wiebe E. Bijker. "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other." In *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, edited by Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch, 17–50. Cambridge, Mass.: MIT Press, 1987.

Podair, Jerald E. *The Strike that Changed New York: Blacks, Whites, and the Ocean Hill-Brownsville Crisis*. New Haven: Yale University Press, 2002.

Ponsot, Claude. "Klein Worms." *Radical Software* 1, no. 3 (Spring 1971): 2.

Postman, Neil. "The Reformed English Curriculum." In *High School 1980: The Shape of the Future in American Secondary Education*, edited by Alvin C. Eurich, 160–68. New York: Pitman, 1970.

Price, David H. *Anthropological Intelligence: The Deployment and Neglect of American Anthropology in the Second World War*. Durham, N.C.: Duke University Press, 2008.

Price, Jonathan. *Video-Visions: A Medium Discovers Itself*. New York: Plume, 1977.

"Process." *Radical Software* 1, no. 3 (Spring 1971).

"proxxima038," "Philips EL3400 Open Reel Video." YouTube video, 2:32. Posted October 8, 2010. https://www.youtube.com/watch?v=BhC0SFYPcXU.

Quirk, Tom. *Bergson and American Culture: The Worlds of Willa Cather and Wallace Stevens*. Chapel Hill: University of North Carolina Press, 1990.

Raby, Peter. *Samuel Butler: A Biography*. Iowa City: University of Iowa Press, 1991.

Radio Corporation of America. "Advertisement." *Time*, February 15, 1954.

RCA Victor Division, "RCA's Contribution to the War Effort through Television, 1937–1946." Camden: RCA Victor Division, 1946. Early Television Foundation and Museum, last modified April 7, 2015. http://earlytelevision.org/military_tv.html.

Raindance. "Cultural Data Bank." *Radical Software* 1, no. 2 (Fall 1970): 19.

———. *Interview with Buckminster Fuller*. Recorded 1970. Video, 33:49. Electronic Arts Intermix.

———. *The Rays*. Recorded 1970. Video, 23:08. Electronic Arts Intermix.

Raskin, Jonah. *For the Hell of It: The Life and Times of Abbie Hoffman*. Berkeley: University of California Press, 1996.

Ready, Naomi, and Lyman L. Samo. Foreword. In *Television and Videotape in Psychiatry: An Annotated Bibliography and Other Data*, by Floy Jack Moore. Decatur, Ill.: Learning Media Institute, 1970.

Reilly, John. Interview by Davidson Gigliotti, December 14, 1999. Early Video Project, last modified May 24, 2001. http://davidsonsfiles.org/johnreillyinterview.html.

Rein, Lisa, and Michael Horowitz. "Timothy Leary and Marshall McLuhan, Turned On and Tuned In." *Boing Boing*, June 3, 2014. http://boingboing.net/2014/06/03/timothy-leary-and-marshall-mcl.html.

Reusch, Jurgen, and Gregory Bateson. *Communication: The Social Matrix of Psychiatry*. New York: W. W. Norton, 1951.

Rhodes, Jane. *Framing the Black Panthers: The Spectacular Rise of a Black Power Icon*. New York: New Press, 2007.

Roach, Matthew. "Too Good to Be True—The Hubbard Coil." *Between the Lines: Washington State Library Blog*, December 20, 2012. http://blogs.sos.wa.gov/library/index.php/2012/12/too-good-to-be-true-the-hubbard-coil/.

Robinson, Richard. *The Video Primer: Equipment, Production and Concepts*. New York: Links, 1974.

Rogers, Carl R. "The Use of Electrically Recorded Interviews in Improving Psychotherapeutic Techniques." *American Journal of Orthopsychiatry* 12, no. 3 (1942): 429–34.

Roman Catholic Archdiocese of Vancouver. "Archdiocese of Vancouver Former Bishops." http://rcav.org/archdiocese-of-vancouver-former-bishops/.

Rose Art Museum. *Vision & Television: An Exhibition of the Poses Institute of Fine Arts*. Waltham, Mass.: Rose Art Museum, 1970.

Rosebush, Judson, ed. *Frank Gillette: Video; Process and Meta-Process*. Syracuse, N.Y.: Everson Museum of Art, 1973.

Rosenbloom, Richard S., and Karen J. Freeze. "Ampex Corporation and Video Innovation." In *Research on Technological Innovation, Management and Policy: A Research Annual*, edited by Richard S. Rosenbloom, 2:113–85. Greenwich, Conn.: JAI, 1985.

Rosler, Martha. "Video: Shedding the Utopian Moment." *Block*, no. 11 (1985/1986), 27–39.

Ross, David A. "Ocham's Electric Razor." In *Aransas: Axis of Observation*, by Frank Gillette, 42–43. Houston: Points of View, 1978.

Roszak, Theodore. *The Making of a Counter Culture: Reflections on the Technocratic Society and Its Youthful Opposition*. Garden City, N.Y.: Doubleday, 1969.

———. "The Summa Popologica of Marshall McLuhan." *New Politics* 5, no. 4 (Fall 1966): 22–29.

Rotha, Paul. *Robert J. Flaherty: A Biography*. Edited by Jay Ruby. Philadelphia: University of Pennsylvania Press, 1983.

Rout, Kathleen. *Eldridge Cleaver*. Boston: Twayne, 1991.

Ruby, Jay. "Feedback." *Radical Software* 1, no. 2 (Fall 1970): 23.

———. *Picturing Culture: Explorations of Film & Anthropology*. Chicago: University of Chicago Press, 2000.

Ryan, Paul. *Birth and Death and Cybernation: Cybernetics of the Sacred*. New York: Gordon and Breach, 1973.

———. "Cybernetic Guerrilla Warfare." *Radical Software* 1, no. 3 (Spring 1971): 1–2.

———. "The Earthscore Notational System for Orchestrating Perceptual Consensus about the Natural World." *Leonardo* 24, no. 4 (1991): 457–65.

———. Interview by Felicity D. Scott and Mark Wasiuta. "Cybernetic Guerrilla Warfare Revisited: From Klein Worms to Relational Circuits." *Grey Room*, no. 44 (Summer 2011), 114–33.

———. Interview by Willoughby Sharp. "Paul Ryan: Video Pioneer." *Video 81*, 1981, 14–17.

———. Letter to the editor. *Art Journal* 68, no. 1 (Spring 2009): 111–12.

———. "The Raw and the Overcooked: Cable Television and the Schools." *Media & Methods*, October 1969, 48–50, 68.

———. "Self-Processing." *Radical Software* 1, no. 2 (Fall 1970): 15.

———. "Toward an Information Economy." *Radical Software* 1, no. 3 (Spring 1971): 14.

———. "Video Journey through Utopia." *Afterimage* 27, no. 3 (December 1999): 10.

———. *Video Mind, Earth Mind: Art, Communications, and Ecology*. New York: Peter Lang, 1992.

———. "Videotape: Thinking about a Medium." *Educators Guide to Media & Methods*, December 1968, 36–41.

———, and Raindance Corporation. "Proto Media Primer." Recorded 1970. Video, 14:42. In *Surveying the First Decade: Video Art and Alternative Media in the U.S.* Vol. 2. Chicago: Video Data Bank, 1995. DVD.

Sahlins, Bernard. *Days and Nights at the Second City: A Memoir, with Notes on Staging Review Theatre*. Chicago: Ivan R. Dee, 2001.

Sanner, Howard. "Ampex Literature." Ampex Virtual Museum and Mailing List, last modified July 31, 2010. http://recordist.com/ampex/apxlit.html.

Sawaji, Yoshio. "EIAJ Standards for ½-in Videotape Recorders." *Journal of the Society of Motion Picture and Television Engineers* 79 (December 1970): 1091–93.

Saxenian, AnnaLee. *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, Mass.: Harvard University Press, 1996.

Sayers, Jentery. "How Text Lost Its Source: Magnetic Recording Cultures." PhD diss., University of Washington, 2011.

———. "Making the Perfect Record: From Inscription to Impression in Early Magnetic Recording." *American Literature* 84, no. 4 (December 2013). doi:10.1215 /00029831-2370230.

Schaeffer, Joseph H. "Videotape: New Techniques of Observation and Analysis in Anthropology." In *Principles of Visual Anthropology*, edited by Paul Hockings, 253–82. The Hague: Mouton, 1975.

———. "Videotape Techniques in Anthropology: The Collection and Analysis of Data." PhD diss., Columbia University, 1970.

Scheflen, Albert E. *Communicational Structure: Context Analysis of a Psychotherapy Transaction*. Bloomington: Indiana University Press, 1973.

———. *Stream and Structure of Communicational Behavior: Context Analysis of a Psychotherapy Session*. Philadelphia: Eastern Pennsylvania Psychiatric Institute, 1965.

———, Adam Kendon, and Joseph Schaeffer. "On the Choices of Audiovisual Media." In *Videotape Techniques in Psychiatric Training and Treatment*, edited by Milton M. Berger, 233–43. New York: Brunner/Mazel, 1970.

Schneider, Ira. "Manhattan Is an Island." *Radical Software* 2, no. 5 (Winter 1973): 16.

———. Résumé. Last modified March 16, 2015. http://www.ira-schneider.com/artist /Resume.pdf.

Schultz, John. *The Chicago Conspiracy Trial*. Rev. ed. New York: De Capo, 1993.

Schumacher, Michael. *Dharma Lion: A Critical Biography of Allen Ginsberg*. New York: St. Martin's, 1992.

Scott, Felicity D. "Fluid Geographies: Politics and the Revolution by Design." In *New Views on R. Buckminster Fuller*, edited by Hsiao-Yun Chu and Roberto G. Trujillo, 160–75. Stanford: Stanford University Press, 2009.

Secord, James A. "Knowledge in Transit." *Isis* 95, no. 4 (December 2004): 654–72.

Seeger, Pete, performer. "Pete Seeger: Waist Deep in the Big Muddy." *The Smothers Brothers Comedy Hour*. CBS, February 25, 1968. YouTube video, 3:03. Posted by "PopulistParty" on December 18, 2008. https://www.youtube.com/watch?v=uXnJVkEX8O4.

Segal, Howard P. "R. Buckminster Fuller: America's Last Genuine Utopian?" In *New Views on R. Buckminster Fuller*, edited by Hsiao-Yun Chu and Roberto G. Trujillo, 36–52. Stanford: Stanford University Press, 2009.

———. *Technological Utopianism in American Culture*. Chicago: University of Chicago Press, 1985.

Segura, Phyllis. "Creating Radical Software: A Personal Account." *Rhizome*, April 28, 2015. http://rhizome.org/editorial/2015/apr/28/creating-radical-software-personal-account/.

———. Letter to Davidson Gigliotti. September 11, 2002. Early Video Project, last modified September 12, 2002. http://davidsonsfiles.org/letters.html.

Shamberg, Michael. "The Medium: Taking Waste out of the Wasteland." *Time*, May 30, 1969.

———, and Raindance Corporation. *Guerrilla Television*. New York: Holt, Rinehart and Winston, 1971.

Shaw, George Bernard, and H. G. Wells. *Bernard Shaw and H.G. Wells*. Edited by J. Percy Smith. Toronto: University of Toronto Press, 1995.

Sherwood, J. N., M. J. Stolaroff, and W. W. Harman. "The Psychedelic Experience: A New Concept in Psychotherapy." *Journal of Neuropsychiatry* 4 (December 1962): 69–80.

Shoats, Russell. "Black Fighting Formations: Their Strengths, Weaknesses, and Potentialities." In *Liberation, Imagination, and the Black Panther Party: A New Look at the Panthers and Their Legacy*, edited by Kathleen Cleaver and George Katsiaficas, 128–38. New York: Routledge, 2001.

Siegel, Eric. "Color Video Abstract Synthesizer," June 26, 1973.

———. *Einstine*. Recorded 1968. Video, 5:22.. In *Surveying the First Decade: Video Art and Alternative Media in the U.S.* Vol. 2. Chicago: Video Data Bank, 1995. DVD.

———. "Eric Siegel's Statement." 2001. Electronic Arts Intermix. http://eai.org/supportingDocumentView.htm?id=272.

———. Interview by Katharina Gsöllpointner, December 9, 1991. Vasulka Archive, last modified June 2, 2012. http://vasulka.org/archive/Artists6/Siegel,Eric/Interview.pdf.

———. Interview by Woody Vasulka, January 21, 1992. Vasulka Archive, last modified June 2, 2012. http://vasulka.org/archive/RightsIntrvwInstitMediaPolicies /IntrvwInstitKaldron/74/Siegel.pdf.

———. "The EVS Video Standard." Vasulka Archive, last modified June 2, 2012. http://vasulka.org/archive/Artists6/Siegel,Eric/ElectronicSynth.pdf.

———. Letter to Howard Wise, May 23, 1970. Electronic Arts Intermix, last modified June 12, 2008. http://eai.org/user_files/supporting_documents/sketch1.JPG.

———. Video color synthesizer. US Patent 3,657,942, filed April 23, 1970 and issued March 7, 1972.

Silverman, David S. *"You Can't Air That": Four Cases of Controversy and Censorship in American Television Programming*. Syracuse, N.Y.: Syracuse University Press, 2007.

Sion, Ronald T. "Aldous Huxley and the Human Cost of Technological Progress." PhD diss., Salve Regina University, 1998.

Skodnick, Roy. Letter to the editor. *Art Journal* 68, no. 1 (Spring 2009): 112–13.

Smith, Gene. "Trial by Fire Tests New Sony TV Unit." *New York Times*. July 14, 1966.

Smith, Oberlin. "If Material, Why Mortal?" *Andover Review* 8, no. 45 (September 1887): 263–74.

———. "Some Possible Forms of Phonograph." *Electrical World*, September 8, 1888, 116–17.

———. *Tho Material, Why Not Immortal?*. Boston: Gorham, 1921.

Smith, Sherry L. *Hippies, Indians, and the Fight for Red Power*. Oxford: Oxford University Press, 2012.

Sony. Advertisement. *Life*, October 15, 1965, 121.

———. Advertisement. *Army*, 1969.

———. "PV-100 Product Design." Sony Design. http://www.sony.net/Fun/design /history/product/1960/pv-100.html.

———. *Sony Portable Videocorder Kit DVK-2400 Owner's Instruction Manual*. LabGuy's World, last modified February 27, 2005. http://labguysworld.com /Sony-Manual_017.htm.

———. *Sony Video Camera Kit VCK-2400 Owner's Instruction Manual*. LabGuy's World, last modified February 27, 2005. http://labguysworld.com /Sony-Manual_018.htm.

———. *Sony Videocorder AV-3400 Owner's Instruction Manual*. LabBuy's World, last modified January 9, 2005. http://labguysworld.com/Sony-Manual_003.htm.

Southwest Museum of Engineering, and Communications and Computation. "RCA Telemite Minature Television Camera." Last modified May 8, 2015. http://smecc.org/rca_telemite_miniature_television_camera.htm.

Southwest Museum of Engineering, Communications and Computation. "Sony CV Series Video." Last modified May 8, 2015. http://smecc.org/sony_cv_series_video.htm.

Spiegel, John P. Preface. In *Videotape Techniques in Psychiatric Training and Treatment*, edited by Milton M. Berger, Rev. ed. New York: Brunner/Mazel, 1978.

Spielmann, Yvonne. *Video: The Reflexive Medium*. Translated by Anja Welle and Stan Jones. Cambridge, Mass.: MIT Press, 2008.

"Standardization." *Radical Software* 1, no. 1 (Summer 1970): 3.

Stanton, Julia A., and Michael J. Stanton. "Video Recording: A History." *SMPTE Journal* 96 (March 1987): 253–63.

Star, Susan Leigh, and James R. Griesemer. "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39." *Social Studies of Science* 19, no. 3 (August 1989): 387–420.

Steffes, David M. "Panpsychic Organicism: Sewell Wright's Philosophy for Understanding Complex Genetic Systems." *Journal of the History of Biology* 40, no. 2 (June 2007): 327–61.

Sterne, Jonathan. *MP3: The Meaning of a Format*. Durham, N.C.: Duke University Press, 2012.

Stern, Gerd. "Support of Television Arts by Public Funding: The New York State Council on the Arts." In *The New Television: A Public/Private Art*, edited by Douglas David and Alison Simmons, 140–56. Cambridge, Mass.: MIT Press, 1977.

Stern, Rudi. "½ Video Tape: Revolutionary Communications Medium." *East Village Other*, April 6, 1971.

———. Interview by Davidson Gigliotti, December 1999. Early Video Project, last modified May 24, 2001. http://davidsonsfiles.org/RudiSternInterview.html.

Stevens, Jay. *Storming Heaven: LSD and the American Dream*. New York: Grove, 1987.

Stokes, Raymond G. "From the IG Farben Fusion to the Establishment of BASF AG." In *German Industry and Global Enterprise: BASF: The History of a Company*, by Werner Abelshauser, Wolfgang von Hippel, Jeffrey Allan Johnson, and Raymond G. Stokes, 206–361. Cambridge: Cambridge University Press, 2004.

Stolaroff, Myron J. "History of Experiences with CO2." December 8, 1958. Erowid, last modified August 27, 2009. https://www.erowid.org/experiences/exp.php?ID=80817.

———. "How Much Can People Change?" In *Higher Wisdom: Eminent Elders Explore the Continuing Impact of Psychedelics*, edited by Roger Walsh and Charles S. Grob. Albany: State University of New York Press, 2005.

———. Interview by Robert Forte. "Stolaroff on Leary." In *Timothy Leary: Outside Looking In*, edited by Robert Forte, 279–86. Rochester, Vt.: Park Street, 1999.

———. Letter to Timothy Leary, February 28, 1963. Myron Stolaroff Vault, Erowid, last modified January 31, 2013. https://erowid.org/archive/stolaroff/stolaroff_collection __sc2-28-63-R.pdf.

———. "Performance Results of the Ampex Magnetic Tape Recorder Recording Frequency Modulated and Pulse Width Telemetering Data." In *Joint AIEE-NTF Conference on Telemetering*, 205–8. New York: American Institute of Electrical Engineers, 1950.

———. *Thanatos To Eros: Thirty-Five Years of Psychedelic Exploration*. Berlin: Verlag für Wissenschaft und Bildung, 1994.

Stoller, Frederick H., and Milton M. Berger. "Discussants: Video-Tape Papers." *Comparative Group Studies* 1, no. 2 (May 1970): 177–90.

Strate, Lance. "Drugs: The Intensions of Humanity." In *Drugs & Media: New Perspectives on Communication, Consumption, and Consciousness*, edited by Robert C. MacDougall, 19–34. New York: Continuum, 2012.

———. *Echoes and Reflections: On Media Ecology as a Field of Study*. Creskill, N.J.: Hampton, 2006.

Strauss, Neil. *Everyone Loves You When You're Dead: Journeys into Fame and Madness*. New York: It Books, 2011.

Sturken, Marita. "TV as a Creative Medium: Howard Wise and Video Art." *Afterimage*, May 1984, 5–9.

Sugaya, Hiroshi. "Consumer Video Recorders." In *Magnetic Recording: The First 100 Years*, edited by Eric D. Daniel, C. Denis Mee, and Mark H. Clark, 182–200. New York: IEEE Press, 1999.

Sullivan, Gerald. "Bali as It Might Have Been Known: Margaret Mead, Gregory Bateson, Wolfgang Weck, Schizophrenia and Human Agency." PhD diss., University of Virginia, 1998.

———. *Margaret Mead, Gregory Bateson, and Highland Bali: Fieldwork Photographs of Bayung Gedé, 1936–1939*. Chicago: University of Chicago Press, 1999.

"Survey! Survey! Survey!" *TV in Psychiatry Newsletter and Progress Report* 2, no. 1 (February 1970): 2–4.

"The Tape Jungle." *TV in Psychiatry Newsletter and Progress Report* 1, no. 2 (April 1969): 2–3.

Taylor, Peter J. "Technocratic Optimism, H. T. Odum, and the Partial Transformation of Ecological Metaphor after World War II." *Journal of the History of Biology* 21, no. 2 (Summer 1988): 213–44.

Teasdale, Parry. Interview by Chris Hill, May 1995. Vasulka Archive, last modified June 2, 2012. http://vasulka.org/archive/Contributors/ChrisHill /InterviewParryTeasdale.pdf.

———. "A Micro-TV Service in the United States." Federal Communications Commission, April 1980.

———. *Videofreex: America's First Pirate TV Station & the Catskills Collective That Turned It On*. Hensonville, N.Y.: Black Dome, 1999.

Teilhard de Chardin, Pierre. *The Heart of Matter*. Translated by René Hague. New York: Harcourt Brace Jovanovich, 1979.

———. *Human Energy*. Translated by J.M. Cohen. London: Collins, 1969.

———. *The Phenomenon of Man*. Translated by Bernard Wall. New York: Harper Torchbooks, 1965. First published 1959.

Theall, Donald F. *The Virtual Marshall McLuhan*. Montreal: McGill-Queen's University Press, 2001.

———, and Joan Theall. "Marshall McLuhan and James Joyce: Beyond Media." *Canadian Journal of Communication* 14, no. 4 (1989): 46–63.

Thiele, Heinz H. K. "Magnetic Sound Recording in Europe up to 1945." *Journal of the Audio Engineering Society* 36, no. 5 (May 1988): 396–408.

Thompson, E. P. "Time, Work-Discipline, and Industrial Capitalism." *Past & Present*, no. 38 (December 1967), 56–97.

Tiger, Fern. "Video on the Left: A Discussion." *Left Curve*, no. 7 (1978), 56–65.

Tresch, John. *The Romantic Machine: Utopian Science and Technology after Napoleon*. Chicago: University of Chicago Press, 2012.

Trussel, Steve. "Mel Lyman, 1938–1978: A Chronological Collection of Works by and about Mel Lyman and the Lyman Family Including Texts and Excerpts." Trussel.com, last modified August 25, 2013. http://trussel.com/f_mel.htm.

Turkle, Sherry. "The Subjective Computer: A Study in the Psychology of Personal Computation." *Social Studies of Science* 12, no. 2 (May 1982): 173–205.

Turner, Fred. "Bohemian Technocracy & the Countercultural Press." In *Power to the People: The Graphic Design of the Radical Press and the Rise of the Counter-Culture, 1964–1974*, edited by Geoff Kaplan, 132–59. Chicago: University of Chicago Press, 2013.

———. *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*. Chicago: University of Chicago Press, 2006.

———. *The Democratic Surround: Multimedia & American Liberalism from World War II to the Psychedelic Sixties*. Chicago: University of Chicago Press, 2013.

———. "The Pygmy Gamelan as Technology of Consciousness." In *Paul DeMarinis: Buried in Noise*, edited by Ingrid Beirer, Sabine Himmelsbach, and Carsten Seiffarth, 22–31. Heidelberg: Kehrer Verlag, 2010.

———. "R. Buckminster Fuller: A Technocrat for the Counterculture." In *New Views on R. Buckminster Fuller*, edited by Hsiao-Yun Chu and Roberto G. Trujillo, 146–59. Stanford: Stanford University Press, 2009.

TVTV. *Four More Years*. Broadcast 1972. Video, 1:02:05. Media Burn Independent Video Archive. http://mediaburn.org/video/four-more-years-5/.

———. *Lord of the Universe*. PBS, February 24, 1974. Video, 58:00. VHX. https://tvtv.vhx.tv/watch/tvtv-the-lord-of-the-universe-guru.

———. "VTR:TVTV." *VTR*. WNET/Thirteen, 1975. Electronic Arts Intermix.

———. *The World's Largest TV Studio*. Broadcast 1972. Video, 59:22. VHX. https://tvtv.vhx.tv/watch/tvtv-worlds-largest-tv-studio.

Uhrich, Andy. "The Sony CV Videocorder: The Shared Origins, Uses and Marketing of Home Video and Video Art." November 20, 2008. Moving Image Archiving and

Preservation student work, New York University. http://www.nyu.edu/tisch/preservation/program/student_work/2008fall/08f_2920_Uhrich_a1a.doc.

Ullman, Ellen. *Close to the Machine: Technophilia and Its Discontents*. San Francisco: City Lights Books, 1997.

Umoja, Akinyele Omowale. "Repression Breeds Resistance: The Black Liberation Army and the Radical Legacy of the Black Panther Party." In *Liberation, Imagination, and the Black Panther Party: A New Look at the Panthers and Their Legacy*, edited by Kathleen Cleaver and George Katsiaficas, 3–19. New York: Routledge, 2001.

U.S. National Archives and Records Administration. "OSS Personnel Files," December 23, 2010. U.S. National Archives and Records Administration. http://archives.gov/iwg/declassified-records/rg-226-oss/personnel-database.pdf.

"van den Bergh, Lily." Beeld en Geluidwiki, last modified July 26, 2013. http://beeldengeluidwiki.nl/index.php/Lily_van_den_Bergh.

Vanderbilt Television News Archive. "Programs Broadcast in March 1971." http://tvnews.vanderbilt.edu/siteindex/1971-3/.

Van Gulick, Robert. "Consciousness." In *Stanford Encyclopedia of Philosophy*. Article published January 14, 2014. http://plato.stanford.edu/entries/consciousness/.

Varney, Edwin. "Video Is As Powerful As LSD." *Radical Software* 1, no. 3 (Spring 1971): 6.

Vassi, Marco. *Lying Down: The Horizontal Worldview*. Santa Barbara: Capra/Catalyst, 1984.

———. *Mind Blower*. New York: Olympia, 1972.

———. "Rappo: Why Aren't You Fucking?" *Radical Software* 1, no. 2 (Fall 1970): 26.

———. *The Stoned Apocalypse*. New York: Trident, 1972.

———. "Zen Tubes." *Radical Software* 1, no. 1 (Summer 1970): 18.

Vaughan, Roger. "'It's a Groovy Thing to Do': The Anti-University University Is the Newest Meeting Place for Young Radicals." *Life*, May 20, 1966, 119–120.

"vcrmaschinen," "PHILIPS EL3400 (Teil1)." YouTube video, 30:45. Posted December 11, 2012. https://www.youtube.com/watch?v=8SgXQjFTC8Y.

Video Data Bank. "About VDB." http://www.vdb.org/content/about-vdb.

Videofreex. "Buzzy Linhart 'Reputation.'" Recorded December 17, 1969. YouTube video, 4:34. Posted January 10, 2009. https://www.youtube.com/watch?v=Jr0W9fuWNQk.

———. "CBS—Lily and Cleaver Tapes." Recorded March 5, 1971. Video, 23:36. Video Data Bank.

———. "Chicago Travelogue: Abbie Hoffman, Jerry Rubin and the Yippies." Recorded October 12, 1969. Video, 40:30. Video Data Bank.

———. *Cooperstown TV Is a Museum*. Lanesville, N.Y.: Maple Tree Farm, 1973.

———. "Davidson's Jail Tape." Recorded May 2, 1971. Video, 27:30. Video Data Bank.

———. "Fred Hampton: Black Panthers in Chicago." Recorded October 1969. Video, 24:00. Video Data Bank.

———. "Lanesville Overview I." Recorded 1972. Video, 32:18. Video Data Bank.

———. "Leslie [*sic*] Seale (Mrs Bobby Seale) Interview Part 1." Recorded October 1969. YouTube video, 2:11. Posted March 7, 2014. https://www.youtube.com/watch ?v=XZ9DcyCyA80.

———. *The Spaghetti City Video Manual: A Guide to Use, Repair, and Maintenance*. New York: Praeger, 1973.

———. *Subject to Change*. Recorded December 17, 1969. Video, 1:18:35. Video Data Bank.

———. *Videofreex Pirate TV Show (21st Century Re-Edit)*. New York: Videofreex, 2013. DVD.

———. "Woodstock Festival 1969—First Aid Interviews." Recorded August 1969. YouTube video, 33:35. Posted March 7, 2014. https://www.youtube.com/watch ?v=rpcdP1XfVng.

Vincent, Ricky. *Party Music: The Inside Story of the Black Panthers' Band and How Black Power Transformed Soul Music*. Chicago: Lawrence Hill Books, 2013.

Wagner, William. *Lightning Bugs and Other Reconnaissance Drones*. Fallbrook, Calif.: Armed Forces Journal International, 1982.

Walker, Daniel. *Rights in Conflict: Convention Week in Chicago, August 25–29, 1968*. New York: E. P. Dutton, 1968.

Walz, Garry R., and Joseph A. Johnston. "Counselors Look at Themselves on Video Tape." *Journal of Counseling Psychology* 10, no. 3 (1963): 232–36.

Warhol, Andy. *a: A Novel*. New York: Grove, 1968.

———. Interview. "Pop Goes the Videotape: An Underground Interview with Andy Warhol." *Tape Recording*, October 1965, 14–19.

———. *Outer and Inner Space*. Film, 1965.

———. *The Philosophy of Andy Warhol (From A to B and Back Again)*. New York: Harcourt, 1975.

———, and Pat Hackett. *Popism: The Warhol '60s*. New York: Harcourt, 1980.

Wasser, Frederick. *Veni, Vidi, Video: The Hollywood Empire and the VCR*. Austin: University of Texas Press, 2001.

Wasson, R. Gordon. "Seeking the Magic Mushroom." *Life*, May 13, 1957, 100–120.

Wedel, Hasso von. *Die Propagandatruppen der deutschen Wehrmacht*. Neckargemünd, Germany: Vowinckel, 1962.

Weimer, Paul K. Interview by Mark Heyer and Al Pinsky, July 8, 1975. IEEE Global History Network, last modified April 8, 2015. http://ieeeghn.org/wiki/index.php /Oral-History:Paul_K._Weimer.

Weimer, Paul K., Stanley V. Forgue, and Robert R. Goodrich. "The Vidicon: Photoconductive Camera Tube." *Electronics*, May 1950, 70–73.

———. "The Vidicon: Photoconductive Camera Tube." *RCA Review* 12, no. 3 (September 1951): 306–13.

Weinstein, Deborah. *The Pathological Family: Postwar America and the Rise of Family Therapy*. Ithaca, N.Y.: Cornell University Press, 2013.

Wertheim, Margaret. *The Pearly Gates of Cyberspace: A History of Space from Dante to the Internet*. New York: W. W. Norton, 1999.

West, Don. "How the New Age of Television Began 44 Years Ago." *We're All Videofreex* (blog), March 26, 2013. http://videofreex.tumblr.com/post/46345557537 /don-west-how-the-new-age-of-television-began-44.

———, Ray Mungo, Nancy Cain, and Parry Teasdale. "'Subject to Change': Challenging Media." Panel discussion recorded April 5, 2013 at the School of Visual Arts. Video, 1:12:58. https://itunes.apple.com/us/itunes-u/events-discussions/id635330930.

Willener, Alfred, Guy Milliard, and Alex Ganty. *Videology and Utopia: Explorations in a New Medium*. Edited and translated by Diana Burfield. London: Routledge and Kegan Paul, 1976.

Wilmer, Harry A. "Television: Technical and Artistic Aspects of Videotape in Psychiatric Teaching." *Journal of Nervous and Mental Disease* 144, no. 3 (March 1967): 207–33.

———. "Television: Technical and Artistic Aspects of Videotape in Psychiatric Teaching." In *Videotape Techniques in Psychiatric Training and Treatment*, edited by Milton M. Berger, 211–32. New York: Brunner/Mazel, 1970.

Winner, Langdon. "Do Artifacts Have Politics?" *Daedalus* 109, no. 1 (Winter 1980): 121–36.

Winn, Marie. *The Plug-In Drug*. New York: Viking, 1977.

Winter, Alison. *Memory: Fragments of a Modern History*. Chicago: University of Chicago Press, 2012.

———. *Mesmerized: Powers of Mind in Victorian Britain*. Chicago: University of Chicago Press, 1998.

Wood, Linda Sargent. *A More Perfect Union: Holistic Worldviews and the Transformation of American Culture after World War II*. Oxford: Oxford University Press, 2010.

Yalkut, Jud. "Electronic Zen: The Alternate Video Generation," 1984. Vasulka Archive, last modified June 2, 2012. http://vasulka.org/archive/Artists10/Yalkut,Jud /ElectronicZen.pdf.

———. "TV as a Creative Medium." *Arts Magazine*, October 1969, 18–22.

Yans-McLaughlin, Virginia. "Science, Democracy, and Ethics: Mobilizing Culture and Personality for World War II." In *Malinowski, Rivers, Benedict and Others: Essays on Culture and Personality*, 184–217. Madison: University of Wisconsin Press, 1986.

Yoder, Andrew. *Pirate Radio: The Incredible Saga of America's Underground, Illegal Broadcasters*. Solana Beach, Calif.: HighText, 1996.

Youngblood, Gene. "A Medium Matures: Video and the Cinematic Enterprise." In *The Second Link: Viewpoints on Video in the Eighties*, 9–13. Banff, Alberta: Walter Phillips Gallery, 1983.

———. *Expanded Cinema*. New York: Dutton, 1970.

Zaloga, Steve. Letter to the editor. *Defense Weekly*, May 13, 2013, 20.

Zimmerman, Paul A. *Magnetic Tapes, Magnetic Powders, Electrodes: New Communication Media*. Ludwigshafen am Rhein, Germany: Badische Anilin- & Soda-Fabrik AG, 1969.

Zippay, Lori, ed. *Artists' Video: An International Guide*. New York: Cross River, 1991.

Zwerin, Michael. "Revolutionary Bust (3)." *Village Voice*. February 11, 1971.

Zworykin, V. K., and G. A. Morton. *Television: The Electronics of Image Transmission in Color and Monochrome*. 2nd ed. New York: John Wiley and Sons, 1954.