

Reprogramming Systems Aesthetics: A Strategic Historiography

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ABSTRACT

This paper offers close-readings of selected literature pertaining to Burnham's "systems esthetics," the subject of significant scholarly attention recently. It identifies, compares, and contrasts several attempts to engage Burnham's theories in contemporary art historical discourses, noting strategic and interpretive shifts in approaches and goals between 1997-2009. This research hopes to offer insight into current art historical practices and the processes by which history informs, and is transformed by, the present.

Categories and Subject Descriptors

A.0 [General Literature]: Conference Proceedings

General Terms

Theory

Keywords

Systems aesthetics, information aesthetics, cybernetics, systems theory, information theory, art, Bense, Ascott, Burnham, Bijvoet, Penny, Whitelaw, Skrebowsky, Buchloh, Haacke, Kosuth

[*Cratylus faulted*] Heraclitus for saying that it is impossible to enter the same river twice ... for he thought it could not be done even once. – Aristotle, *Metaphysics*

1. INTRODUCTION

As the cult of high modernism tumbled from its lofty throne, the scientific theories of Claude Shannon, Norbert Wiener, and Ludwig von Bertalanffy gained substantial purchase in the arts. Radically opposed to the romantic emotionality of expressionism, Abraham Moles and Max Bense's theories of "information aesthetics," Roy Ascott's cybernetic art theories, and Jack Burnham's "systems esthetics" (hereafter, systems aesthetics) became influential models for more rational approaches to making and understanding art. Losing their luster by the mid-1970s, they disappeared from art discourses for nearly two decades, apparently gathering dust but, as recent affairs suggest, also gathering steam. Historical and critical writing addressing these aesthetic theories began to emerge in the 1990s and accelerated in the 2000s, when a number of exhibitions and symposia were devoted to related themes. These include: Open Systems: Rethinking Art c. 1970 (Tate Modern, 2005); Systems Art (Whitechapel Gallery, 2007); Imaging by Numbers (Block Art

Museum, Northwestern University, 2007); and Pask Present, Atelier Farbergasse, Vienna, 2008. Specialized scholarly publications also mushroomed in the 2000s, including Roy Ascott's *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness* (Berkeley: University of California Press: 2003), Charlie Gere's *Art, Time and Technology* (2006), Francis Halsall's *Systems of Art* (2008), *White Heat Cold Logic: British Computer Art 1960-1980*, Paul Brown, Charlie Gere, Nicholas Lambert and Catherine Mason eds. (Cambridge: MIT Press, 2009), and the forthcoming *The Art of Systems*, Francis Halsall and Chris Smith, eds. Paralleling the entry of this historical recuperation into museum contexts, scholarly writing on the subject has entered into more mainstream academic discourses, as in Pamela M. Lee's *Chronophobia* (MIT Press, 2004), my own *Art and Electronic Media* (Phaidon, 2009), and in recent work by prominent art historians including Caroline A. Jones at MIT and Claus Pias at the University of Vienna. To borrow a line from Hans Haacke's proposed 1971 work ironically dedicated to Norbert Wiener, "All Systems Go!"[1]

This terrain is rife with complexity, because the aesthetic theories mentioned above were what might be called "interpretive syntheses" of ideas originally formulated in scientific domains but that became widely, if not ubiquitously applied (or misapplied) across diverse disciplines.[2] Although their particulars differ, the terms *cybernetics* and *systems theory* are often used interchangeably and both rely substantially on information theory. It is difficult, therefore, to differentiate between them, to identify their particular influences on specific aesthetic theories in the 1960s (which typically mixed and matched to suit their needs), or to track how those theories, in turn, influenced the discourses of contemporary art practice and criticism forty years later. Of the three, Burnham's "systems esthetics," has gained the most recent scholarly attention. Contemporary discourses surrounding systems aesthetics, however, tend to lack an appreciation of the alternate art histories that emerged around informational, cybernetic, and systems approaches to art. Gere identifies early conceptions of systems thinking and computation applied to art in the exhibition catalog for *This Is Tomorrow* (ICA, London, 1956) and notes John McCale's 1962 pronouncement that "the future of art seems no longer to lie with the creation of enduring masterworks but with defining alternative cultural strategies, through a series of communicative gestures in multi-media forms." [3] Roy Ascott wrote about the application of cybernetics to art in 1963, proposed human-machine symbiosis as art in 1964, anticipated remote

interdisciplinary collaborations involving artists in 1966-7, and in 1967 proclaimed, "When art is a form of behaviour, software predominates over hardware in the creative sphere. Process replaces product in importance, just as system supersedes structure." In 2003, Ascott's theoretical writings from 1964-2000 were compiled into the aforementioned *Telematic Embrace* with a lengthy scholarly introduction establishing a frame for his praxis within the context of the histories of art, cybernetics, and computer networking.[4] In *Materializing New Media* (2006), Anna Munster proposed "information aesthetics" as a "new kind of aesthetics," apparently unaware of Bense and Moles' theorizations of the late 1950s using the same term, and equally oblivious to Burnham's systems aesthetics. So, while it is important to recognize the vital contributions of Burnham's theories, it is equally important to recognize that they were not without precedent, and that those precedents contributed to the overall ecology of the discourses of which his were a part, just as the emerging literature on systems aesthetics is part of a larger ecology of historical writing on the application of scientific theories to aesthetics in the 1960s. The emerging literature has only begun to scrutinize these issues and to contend with why those aesthetic theories lost artistic currency in the 1970s, how they increasingly and differentially came to regain it beginning in the 1990s, and what their possible hermeneutic uses are today.[5] The question I propose is: How have those interpretive syntheses in the 1960s been reprogrammed by contemporary artists and writers and to what ends?

Far from comprehensive, this initial study hopes to establish a foundation for further research on two themes: 1) how scientifically-based aesthetic theories of the 1960s were received and transformed by artists and theorists in the 1990s and 2000s; and 2) how the discourses of mainstream contemporary art diverged from those of art and technology and its extensions into new media art since the 1960s. One longer-term goal is to develop a deeper understanding of how the particular, yet shifting, cultural exigencies of recent history have shaped historical narratives and current practices, or, to put it another way, how 1960s aesthetic theories have been strategically interpreted to serve contemporary concerns. A second longer-term goal is to identify parallels and forge a rapprochement between both historical and contemporary discourses of mainstream contemporary art and new media art. In this regard, the term "reprogramming," along with other metaphors of the so-called information age, have been used liberally and with high visibility by art writers and curators, such as Nicolas Bourriaud, to describe practices central to mainstream contemporary art, while failing to engage seriously with new media art or theory. Hypothetically, a hybrid discourse that joins methods, strategies, and values for artmaking and interpretation can offer nuanced insights into the shared histories of these divergent discourses and forge a common language for future production and analysis.

2. 1990s: DEFINING THE FIELD

Marga Bijvoet's *Art as Inquiry: Toward New Collaborations Between Art, Science, and Technology* (1997) is a pioneering yet under-recognized monographic study of art in the 1960s and early 1970s.[6] Despite the subtitle, Bijvoet's artistic concerns are not exclusively focused on science and technology, but rather with the "moving out' into nature or the environment and the "moving 'into technology'": twin tendencies that, in her mind, stand out amidst the pluralism of 1960s art.[7] She claims that these movements not only broke "the boundaries of art and ... the

commercial art world structure" but more importantly that environmental artists and tech artists both sought out and engaged in collaborations in which the artist "entered into a new relationship with the environment, space, public arena, onto the terrain of other sciences." Bijvoet dedicates two chapters to interdisciplinary collaboration, a theme that runs through her case-studies and is highlighted in the book's subtitle. Given recent developments, this was a prescient emphasis: indeed, collaborations between artists and scientists and engineers that emerged in the 1960s have become an increasingly common mode of contemporary art practice since in the 1990s, and the subject of a growing academic industry and scholarly literature.[8]

Bijvoet's radar for key concepts, figures, events, and monuments is equally keen. Jack Burnham, Billy Klüver and György Kepes are identified as central catalysts of the art and technology movement, and E.A.T. and the Center for Advanced Visual Studies provide case-studies of interdisciplinary collaborative projects joining art and science (including large-scale public spectacles. Other case-studies are divided into two sections, essentially of artists whose work "moves out" into nature, (including Smithson, James Turrell and Helen and Newton Harrison), and of artists whose work "moves into technology," (including Nam June Paik, Bill Viola, Paul Ryan, and Woody Vasulka and Steina.) Her conclusion weaves these strands together, suggesting that they established the foundations for what emerged in the 1990s: civic programs emphasizing Art in Public Places and the proliferation of media art – the latter particularly involving telecommunications – that enables the formation of electronic "public places" through network technologies.[9]

Importantly, a key aspect of Bijvoet's framing of this terrain draws on information theory, cybernetics, and systems theory, with particular emphasis on the aesthetic theories of Jack Burnham. She discusses the application of biologist Ludwig von Bertalanffy's general systems theory in Burnham's formulation of a "systems esthetics" in his *Artforum* essay of that title and in his book, *Beyond Modern Sculpture (BMS)*, both published in 1968.[10] Moreover, she notes that Burnham illustrated his theory of systems aesthetics by referring to a wide range of artists, including Haacke, Smithson, and Oppenheim, whose work was not associated primarily with tech art but with environmental art. Though Bijvoet's treatment of Burnham's *Software* exhibition (1970) offers little interpretation of the works or overall curatorial concept, the chapter, "Hans Haacke: Systems Artist" goes into greater detail about the exchange of ideas between Haacke and Burnham, who introduced the artist to Bertalanffy's ideas around 1965-66, and the role of systems theory in Haacke's work with both environmental and social systems.

Bijvoet thus draws parallels between what are now historically authorized practices of earth art and video and the increasingly fashionable but as-yet canonically unadopted practices of art and technology. She merges blue-chip and relatively obscure artists and bridges historical practices with contemporary ones, drawing them into a more or less continuous narrative. She recuperates material buried in the rubbish heap of history, asserts its forgotten centrality during its time, draws parallels between it and the authorized mainstream of its period, and creating a historical narrative that ties the salvaged material to emerging contemporary practices. This set of operations articulates what has become a common model in the recent literature pertaining to the history of art and technology. In 1997 the historical erasure of art and

technology and the ghettoization of new media art were not as pressing issues as they seem today. As such, Bijvoet's parallels and bridges can be interpreted as intuitive gestures intended to make sense of unfamiliar material rather than as explicit strategies to suture a wound, or to revivify something that was mistakenly buried alive – strategies that characterize some of the more recent literature.

A similarly intuitive *modus operandi* characterizes my own early work. In my ISEA97 paper “Gemini Rising, Moon in Apollo,” I noted that, in presenting “such diverse artists as Joseph Kosuth, Hans Haacke, and Sonia Sheridan,” *Software* “implicitly problematized distinctions between ‘art and technology’ and other experimental art media and technological invention” including what has become known as hypertext and intelligent environments.[11] In “The House that Jack Built,” (1998), I asserted that Burnham was the “pre-eminent champion of art and technology of his generation,” and that his articles in *Arts* magazine and *Artforum* “remain amongst the strongest and most insightful commentaries on conceptual art.”[12] I called attention to Burnham’s account of working with software as a fellow at MIT, in which “a dialogue evolves between the participants – the computer program and the human subject – so that both move beyond their original state” and to the insights this observation provided into “the eventual two-way communication in art” that he anticipated. I noted that the relationship Burnham posited “between experimental art practices and ‘art and technology’ questioned conventional distinctions between them and offered important insights into the complementarity of conventional, experimental, and electronic media in the emerging cultural paradigm later theorized as postmodernity.” For example, I drew Haacke’s *Visitor’s Profile* into a theoretical alliance with Foucauldian critiques of institutional power. I also contextualized Ted Nelson’s hypertext catalog, “Labyrinth” within Barthes’ “critiques of authorship, and ‘writerly’ (as opposed to ‘readerly’) texts,” claiming that the “decentered and decentering quality of hypertext has become the subject (and method) of a growing critical post-structuralist literature, and arguably a central icon of postmodernity.” My conclusion challenged contemporary artists and critics to live up to the conceptual richness with which Burnham imbued *Software*. Both “Gemini Rising” and “The House” are battle cries for greater recognition of Burnham’s work, emphasizing the demonstrable prescience of his ideas. As Bijvoet had done, familiar and unfamiliar artists, authorized and unauthorized practices and theories, and the contemporary and historical are brought together in an effort to leverage greater credibility to the latter member of each dyad.

To my knowledge only two other publications from the 1990s directly addressed Burnham’s concept of systems esthetics: Mitchell Whitelaw’s “1968/1998: rethinking a systems aesthetic” (1998) and Simon Penny’s “Systems Aesthetics and Cyborg Art: The Legacy of Jack Burnham (1999).”[13] Whitelaw’s short essay emphasized Burnham’s “anticipation of contemporary concerns”, such as the “cybernetic organism”, “self-organising systems in relation to sculpture”, and “an art embracing ‘realtime information processing.’” Similarly, he noted, the re-entry of terms like cybernetics and systems into the critical vocabulary of cultural discourse give new relevance to Burnham’s systems aesthetics. For Whitelaw, the 1960s work Burnham interpreted through the systems lens “provok[ed] an awareness of the real as an extensive, relational, dynamic network of processes.” By contrast, Whitelaw claimed that 1990s “virtuality amounts to a kind of anti-systems

practice... [that forgets] the system, the concrete infrastructure, for a frantically overproduced internal space.” He attributes this “turning inwards”, this “armoring of the subject” to a “desire for a safe haven.” A systems approach, he argued, “demands a turn outwards.... [that] raises questions about the intervention of art in the world... of agency.... [that] threatens to spill out into everyday life, beyond culturally sanctioned and government funded forms, and so to evaporate completely, or rather to become imperceptible.” Given the quandaries posed by contemporary technologies, Whitelaw asserted the need for an art practice that has the “expansiveness and embodiment of the systems experiments of thirty years ago, with an equal amount of late-nineties critical hip.” It is worth noting that Whitelaw and I independently played the prescience card and that Burnham served us both as the gauntlet we threw down to contemporary artists and curators.

Penny states that he gravitated to Burnham’s “visionary and pioneering” writing as a sculpture student in the late 1970s, and that it influenced his pursuit of interactive art practice as well as his own theoretical work. He describes “Systems Aesthetics” as a “radical and under-acknowledged text offering a new approach to installation and event art....” Of Burnham’s “remarkably prescient” 1968 predictions about the future of sculpture in *BMS*, Penny cites “the art of cybernetic organisms” and “artforms that manifest true intelligence, but perhaps more meaningfully, with a capacity for reciprocal relationships with human beings (in this case the word viewer seems quite antiquated.” He observes that, thirty years later “most practitioners in these fields refer to the ‘user’ or the ‘visitor’ as opposed to ‘viewer’, the experience is no longer of passive contemplation but of engagement and ongoing interaction with quasi-intelligent systems through time.”

Although it is common to read that “the impact of Burnham’s work was limited,”[14] Penny’s case indicates that its impact was perhaps much greater among artists than among critics and historians. Following Whitelaw’s contention that a systems approach “threatens ... culturally sanctioned and government funded forms,” it stands to reason that Burnham’s theories were most threatening to historians. The oft-noted “visionary” quality of Burnham’s writing and his futuristic prognostications likely would have been more appealing to artists than to historians, particularly at the time of their publication. Indeed, the influence of *Beyond Modern Sculpture (BMS)* and the important essays in *Arts* and *Artforum* therefore cannot be measured in footnotes. It is probably safe to say, however, that a significant proportion of Anglophone artists who came of age during the span of *BMS*’s five editions, printed between 1968 – 1978, knew about Burnham and his theories. Four decades after its publication, Burnham’s work is suitably historical, and its prescience sufficiently verifiable. As a result, his aesthetic theories are now much more palatable to contemporary art historians, especially those whose research focuses on art that strives to offer what Burnham referred to as a “psychic dress-rehearsal for the future.”

3. 2000s

By 1999, it had become increasingly apparent that the “wound” of exclusion and ghettoization confronting the historiography of art and technology and the practice and criticism of new media art required an explicit suturing strategy. In “Art in the Information Age” (2001) I argued that by “interpreting conceptual art and art-and-technology as reflections and constituents of broad cultural

transformations during the information age,” categorical distinctions can be relaxed, allowing parallels to be drawn between seemingly diverse practices, offering new insight into contemporary art.[15] Informed by Burnham’s theory of systems aesthetics and his notion of software as a metaphor for art, my analysis of works by Levine, Haacke, and Kosuth in *Software* led to the conclusion that in the information age, “meaning and value are not embedded in objects, institutions, or individuals so much as they are abstracted in the production, manipulation and distribution of signs and information.” (436) Confronting art historian and Art & Language member Charles Harrison’s dismissal of art and technology, I interpreted the group’s *Index 01* (1972) as a “manual hypertext system that allows for the interactive associative linking of ideas, connecting this important icon of conceptual art with a central technological icon of the late-1990s. I pointed out that Harrison’s early 1980s description of *Index 01* explicitly referred to “artificial intelligence,... neurophilosophy, with strong overtones of cybernetics and systems theory.” (437) I claimed that an account of Art & Language limited to addressing “the group’s challenges to the aesthetic discourses of modernism is unnecessarily narrow in its implications because it fails to address the relationship of late-20th-century experimental art to the information age of post-industrial production.” (437) This critique was reinforced by Warren Sack’s 2007 reinterpretation of *Index 01* within the context of “database aesthetics.” More generally, I asserted that a “comprehensive account of post-World War II art must also take into consideration the specific scientific and technological theories and developments that contributed to larger social formations that impacted all aspects of material culture.” (437-38) Finally, I implicitly applied Burnham’s systems approach to analyze the system by which art history is written. Using Haacke and Ascott as examples, I claimed that the historicization of an artist’s work as conceptual art or art and technology “says less about their work than it does about the institutional mechanisms that have created and reinforced categorical distinctions ... at the expense of identifying continuities between them.” (438)

On top of these early art historical forays into systems aesthetics, after the English publication of Niklas Luhmann’s *Art as Social System* in 2000, Burnham’s brilliant oddball 1960s theory gained high-powered company. Anglophone art historians have increasingly accepted systems theoretical approaches to aesthetic questions, often drawing parallels between Burnham’s and Luhmann’s formulations.[16] A staggering number of publications addressing Burnham’s “systems aesthetics” were produced in the 2000s by both humanist scholars and artists. This research tends to be more highly focused and detailed than the work generated in the 1990s, while at the same time it makes much broader claims for the significance of a systems theoretical approach to art historical methodology. Although Whitelaw, Penny, and I are closely associated with the new media art community, much of the 2000s writing has been done by more mainstream scholars of art history, aesthetics, and visual culture, including Pamela M. Lee and Caroline A. Jones.[17] This point is important because, as Charlie Gere has noted, a “problem facing discourse concerning so-called new media art was how it had been contextualized and historicized.... ‘not that there was no critical discourse, but rather that it remains the preserve of those involved with little or no connection or engagement with outsiders.’”[18]

In general, there is growing agreement in the 2000s that Burnham’s contributions to art historiography deserve

substantially greater recognition and that his theory of systems aesthetics offers significant potential for the analysis of both historical and contemporary art. Matthew Rampley argues that Burnham “deserves greater credit for opening up a line of inquiry that has been scandalously neglected.” Lee embraces Burnham’s theory of systems aesthetics, asserting that, “the impact of systems discourse within both the sciences and humanities is immeasurable. My argument is that its rhetoric informs and certainly facilitates a new understanding of many of the artistic practices of the 1960s.”[19] Jones uses systems theory as a primary theoretical source in a recent discussion of contemporary art and bureaucracy, applying a systems approach to her analysis of Hans Haacke in the 1960s and Olafur Eliasson and others in the 1990s and 2000s. She refers to the author of “Systems Esthetics” as the “astonishingly prophetic” and “unreasonably obscure Jack Burnham.”[20]

As in “Art in the Information Age,” many of these art historical recuperations directly confront discourses and critics that spurned or ignored Burnham’s theories. Similarly, they draw parallels between systems aesthetics and other, more authorized methods in order to identify continuities and erode categorical distinctions between the historical and current discourses of new media and mainstream contemporary art. For example, Francis Halsall (2008) has engaged Burnham’s systems aesthetics in a discourse with Luhmann, Arthur Danto, Rosalind Krauss, Nicolas Bourriaud and other leading theorists, proposing an elaborate systems theoretical method for art historical interpretation.[16] The following discussion analyzes Luke Skrebowski’s application of Burnham’s theory to critically engage with authorized discourses, in particular to challenge Benjamin Buchloh’s dismissal of Haacke’s early work, and to develop Skrebowski’s holistic understanding of the role of systemic thinking for the artist.

In “All Systems Go: Recovering Hans Haacke’s Systems Art” (2008), Skrebowski takes on renowned art historian Benjamin Buchloh, whom the author refers to as the “most significant interpreter” of Haacke since Burnham. The pairing of Burnham and Buchloh is poignant to say the least. Despite his renown as a critic and art historian, Burnham was a trained artist (MFA, Yale) and art professor at Northwestern University in suburban Chicago. As such, he was an intellectual outsider to New York’s academic art history establishment and a geographical outsider to its artworld. Buchloh, a European intellectual with advanced degrees in Germany (University of Berlin) and the US (Ph.D., CUNY Graduate Center), a chaired Professor of Art History at Barnard College and Columbia University from 1994-2005, subsequently at Harvard, and an editor of *October* magazine, has, for many years, resided in and constituted the inner-sanctum of academic discourses in the history and criticism of contemporary art, centered in New York but exerting unparalleled influence internationally.

In this David and Goliath scenario, Skrebowski effectively uses Burnham’s “Systems Aesthetics” to attack Buchloh’s strict division of Haacke’s work into two camps, before and after the influence of systems aesthetics: “those earlier projects that emphasized ‘physiological, physical, and biological processes’” and the “‘mature – i.e., political – works.’”[21] While Buchloh dates Haacke’s departure from “‘the limitations of a systems-aesthetic approach’” to 1969, beginning with his *Polls*, Skrebowski counters that Haacke continued exploring biological and ecological systems in works including *Chickens Hatching*

(1969) and *Rhine Water Purification Plant* (1972).[22] Beyond simple chronological blurring, Skrebowski claims that Buchloh's antipathy toward systems aesthetics blinded him from registering Haacke's ongoing concern with systemic approaches to art that provide continuity between his biological and political works: "Recovering the influence of Burnham's systems aesthetics on Haacke encourages us to understand his practice holistically, revealing a fundamental consistency underlying its stylistic diversity." [23] Although not mentioned by Skrebowski, the titles of some of Haacke's political works, e.g., *Shapolsky et al. Manhattan Real Estate Holdings, a Real-Time Social System, as of May 1, 1971* (1971) are explicitly defined by the artist as systems, and even more specifically as real-time systems, a term that had been publicized in art discourses via Burnham's *Artforum* essay, "Real-Time Systems" (1969).[24] Given such evidence, Buchloh's failure to acknowledge the ongoing influence of Burnham's theories regarding systems in Haacke's is all the more puzzling.

Buchloh's stated objections to systems aesthetics offer insights into the art historical establishment's ongoing resistance to Burnham's theories and into the prejudices with which those advocating a systems theoretical approach to art practice and historical writing must contend. Similarly, Skrebowski's counterarguments provide an important defense of and justification for systems theoretical approaches to art and art history. He notes that for Buchloh, Burnham's systems aesthetics were "techno-scientific reductivism governed by the logic of rationalist instrumentality" and the "repression of historical memory." [25] His counter-argument notes that Bertalanffy situated his formulation of general systems theory within a long intellectual history "from Vico through Hegel to Marx" and that Burnham himself placed a shelf-life on systems aesthetics, claiming that it "will become the dominant approach to a maze of socio-technical conditions rooted only in the present. New circumstances will with time generate other major paradigms for the arts." Although not mentioned by Skrebowski, it must be noted that in the second paragraph of "Systems Aesthetics" Burnham discussed Thomas Kuhn's *Structure of Scientific Revolutions* (1962), explicitly acknowledging the historical procession of "major paradigms." Contrary to Buchloh, Skrebowski characterizes systems theoretical approaches to temporality as "nonlinear, recursive, and multidimensional," which he interprets as "instantiat[ing] a new form of historical consciousness rather than constituting the repression of historical memory." [26] Perhaps the essay's most potent argument against the dismissal of Haacke's earlier work by Buchloh is the claim that his position is founded on a binary opposition between nature and society. Turning Buchloh's own words against him, Skrebowski points out that, "for Buchloh, Haacke's art cannot be political until he 'transfers his interests from biological and physical systems to social systems.'" Following Bruno Latour, he deconstructs this mythic division and concludes that,

Systems theory offers a way to think the natural and social analogically, and Haacke's art, via his engagement with Burnham's systems aesthetics, makes use of it to do exactly that. We can now see once more that Haacke's critical artistic interventions build on an unbroken, ascending scale of systemic complexity – from organic elements, through plants, animals, and finally up to human beings.[27]

Burnham likely would agree with this sort of systemic interpretation. Its recognition of the recapitulation of fundamental orders, relations and structures at various levels of organization parallels alchemy, structuralism and kabbalah, all highly refined theories of systemic relationships that fascinated him. At the same time, he would have recognized that the mortal dagger in Buchloh's argument is drawn not from systems theory proper but from Latour's radical critique of modernism's dualistic epistemology. Nonetheless, within the emerging historiography of systems aesthetics, Skrebowski's interpretation of Haacke and his decisive dismantling of Buchloh's position demonstrate the hermeneutic potential of the systems approach, particularly when combined with other methods and applied to the work of an artist explicitly employing systems theory.

4. CONCLUDING SYSTEMIC (SELF) OBSERVATIONS

This brief and admittedly unbalanced odyssey through the emerging historiography of Burnham's systems aesthetics has demonstrated some of the ways in which the theory has been received, interpreted, and applied over the last decade or so. One of the strengths of systems theory is its general applicability across the sciences, social sciences, arts, and humanities. However, as Bertalanffy noted in "An Outline of General Systems Theory" (1950), the complexity of open social systems is far greater than in closed physical systems, which makes their analysis more difficult. The success of any systems theoretical analysis will depend on the sophistication of both the tools and methods of observation. Moreover, the insights of second-order cybernetics, which were integrated into general systems theory, demand self-reflexive acknowledgment by the analyst that s/he is inextricably implicated as a participant in the system and cannot stand outside of it. What are the stakes when a scholar of systems aesthetics analyzes and comments on the historiography of systems aesthetics literature, including his own contributions to it, from a systems theoretical perspective?

In "Art After Philosophy," Joseph Kosuth stated that, "Art 'lives' through influencing other art, not by existing as the physical residue of an artist's ideas. The reason why different artists from the past are 'brought alive' again is because some aspect of their work became 'usable' by living artists" [28] (and the same can be said of art historical interpretations.) Kosuth's biological metaphor is itself insightful, not just because of system theory's roots in the biological sciences, but because it suggests his recognition of art as a quasi-living organism, an open system whose elements have relevance only when they participate in the current functioning of the organism. The same claim could be made of art historical interpretations. Were I not so sensitive to that issue perhaps fewer words would have been dedicated to an inevitably self-promotional recitation of my own writing. I know that by commenting on my contributions and inserting them into a living discourse I revitalize them. I equally know that my interpretations of others' comments also bring them alive. But these interpretations also transform the meanings of earlier works (including my own) making them resonate in tune with my own current values and commitments. Skrebowski may have little or no interest in "suturing the wound" that I experience from the omission of science, technology, and new media from mainstream contemporary art discourses. He may not have targeted the work of a high profile art historian for the strategic purpose of stirring that debate. But systems theory would suggest that, within the

framework of the artworld's discursive system, his work may have that effect. Moreover, it may be more likely to have that effect now that it has been interpreted in that light.

5. ACKNOWLEDGMENTS

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- [3] Gere, C. 2006. *Art, Time and Technology*, Oxford: Berg, 117, 120.
- [4] Ascott, R. 2003. *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*, E. Shanken, Ed. Berkeley: University of California Press. Man-machine symbiosis, 129; remote collaboration 146; quote 157.
- [5] For more on cybernetics and art, see Ascott 2003. For information aesthetics, see Pias, C. 2007. "Hollerith 'Feathered Crystal'": Art, Science, and Computing in the Era of Cybernetics, *Grey Room* 28 (Winter, 2007), 110-33. For systems theory and art, see Halsall F. 2008. *Systems of Art: Art, History, and Systems Theory*. Bern: Peter Lang.
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- [7] Bijvoet, 3. Following quotes from pages 3 and 4 respectively.
- [8] See, for example, Pearce C., Diamond S., and Beam M. 2003. BRIDGES I: Interdisciplinary Collaboration as Practice, *Leonardo* 36:2 and E. Shanken, Series Ed., 2005. *Artists in Industry and the Academy: Interdisciplinary Research Collaborations*, *Leonardo* 38:4 and 38:5.
- [9] As examples of the latter, she identifies Kit Galloway and Sherry Rabinowicz's *Electronic Café* (1984), which, quoting Steven Durland, she notes, "linked MOCA (Museum of Contemporary Art) and five ethnically diverse communities of Los Angeles through a state-of-the-art telecommunications computer database and dial-up bank designed as a cross-cultural, multilingual network of 'creative conversation.'" Durland, S. 1987. defining the image as place - a conversation with kit galloway, sherrie rabinowitz & gene youngblood, *High Performance* 37, p 57. Bijvoet, 234.
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