The House That Jack Built:
Jack Burnham's Concept of "Software" as a Metaphor for Art

Edward A. Shanken

Department of Art & Art History,ÝDuke University
Email: giftwrap@duke.edu

Abstract: This paper identifies and analyzes the convergence of computers, experimental art practice, and structuralist theory in Jack Burnham's Software exhibition at the Jewish Museum. In contrast to the numerous art and technology exhibitions which took place between 1966-1972, and which focused on the aesthetic applications of technological apparatus, Software was predicated on theÝidea of "software" as a metaphor for art. Under this rubric, the curator explored his notion of the mythic structure of art, and its convergence with information technology, and the increasing conceptualism of art in the late 1960s. I suggest that these components represent the interlocked emergence of postmodernity at this critical art historical moment.

Like the famous cumulative story to which my title refers, this paper explores the complex, interrelated convergence of myriad elements in the exhibition *Software, Information Technology: Its New Meaning for Art*. Art historian Jack Burnham curated the show in 1970 at the Jewish Museum, then one of the premier venues for experimental art in New York. My research identifies how this "house that Jack built" was constructed of, and drew parallels between, computer information technology, conceptual art practice, and structuralist art theory, and was predicated on the idea of software as a metaphor for art. *Software* was designed to function, moreover, as a testing ground for public interaction with "information processing systems and their devices."[1] Many of the displays were indeed interactive and based on two-way communication between the viewer and the exhibit. In this and other respects, I interpret much of the work in *Software*as heralding postmodernist strategies for art-making. Finally, as will be discussed below, the architecture for the physical installation in the museum was based on the two-tiered model of Marcel Duchamp's Large Glass, which Burnham interpreted as a signpost announcing the demise of art as "a separate facet of life."[2]

Jack Burnham's first book, *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of Our Time*, 1968, established him as the pre-eminent champion of art and technology of his generation. Building on this foundation, his second book, *The Structure of Art*, 1971, developed one of the first systematic methods for applying structural analysis to the interpretation of individual artworks as well as to the canon of western art history itself. Many of his articles for *Arts* magazine from 1968-70, where he was Associate Editor (1972-76) and Artforum from 1971-3, where he was Contributing Editor (1971-2), were collected in his third

book, *The Great Western Salt Works*, 1973. These essays still remain amongst the most insightful commentaries on conceptual art, already suggesting what he now sees in retrospect as the "great hiatus between standard modernism and postmodernism."[3]

In 1970, at the invitation of Jewish Museum director, Karl Katz, Burnham curated *Software*, the only major show he has curated to date. In contrast to the numerous art and technology exhibitions which took place between 1966-1972, and which focused on the aesthetic applications of technological apparatus, *Software* was predicated on the ideas of "software" and "information technology" as metaphors for art. He conceived of "software" as parallel to the aesthetic principles, concepts, or programs that underlie the formal embodiment of the actual art objects, which in turn parallel "hardware." In this regard, he interpreted "Post-Formalist Art" (his term referring to experimental art practices including performance, interactive art, and especially conceptual art) as predominantly concerned with the software aspect of aesthetic production.

It is significant that Burnham organized *Software* while writing *The Structure of Art* and conceived of the show, in part, as a concrete realization of his structuralist art theories. Drawing on Claude Levi-Strauss's idea that cultural institutions are mythic structures that emerge differentially from universal principles, Burnham theorized that western art constituted a mythic structure. And he theorized that the primary project of conceptual art was to question and lay bare the mythic structure of art, demystifying art and revealing it for what its internal logic.[4]

Such ideas were already present in Burnham's 1970 article "Alice's Head." True to the title, he began the essay - which focused on the work of conceptual artists Joseph Kosuth, Douglas Huebler, Robert Barry, Lawrence Wiener, and Les Levine - with the following quote from Lewis Carroll's Alice in Wonderland:

> "...'Well! I've often seen a cat without a grin,' thought Alice, 'but a grin without a cat!
> It's the most curious thing I ever saw in all my life!'"[5]

By selecting for his preamble Alice's curiosity over a disembodied presence, Burnham suggested that, like a grin without a cat, a work of conceptual art is all but devoid of the material trappings of paint or marble traditionally associated with art objects. Similarly, he explained *Software* as "an attempt to produce aesthetic sensations without the intervening 'object;' in fact, to exacerbate the conflict or sense of aesthetic tension by placing works in mundane, non-art formats."[6]

Burnham directly interacted with computer software when he was a Fellow at the Center for Advanced Visual Studies under Gyorgy Kepes at MIT during the 1968-9 academic year. Having received his MFA from Yale in 1961, he was invited, as an artist, "to learn to use the time- sharing computer system at MIT's Lincoln Laboratories." In a paper entitled "The Aesthetics of Intelligent Systems" delivered at the Guggenheim Museum in 1969, Burnham discussed this experience of working with computers, comparing the brain and the computer as information processing systems, and drawing further parallels between information processing and conceptual art. He stated, moreover, that "the aesthetic implications of a technology become manifest only when it becomes pervasively, if not subconsciously, present in the life-style of a culture," and claimed that "present social circumstances point in that direction."[7]

As Burnham explained in the paper, given the artistic limits of the computer system at his disposal, he focused on the "challenge of ... discovering a program's memory, interactive ability, and logic functions," and on " gradually... conceptualiz[ing] an entirely abstract model of the program." In this regard, he was especially interested in how "a dialogue evolves between the

participants - the computer program and the human subject - so that both move beyond their original state." Clearly he recognized how his interaction with software altered his own consciousness, which in turn simultaneously altered the program. Finally, he drew a parallel between this sort of two-way communication, and the "eventual two-way communication in art." In 1969, he wrote,

> The computer's most profound aesthetic implication is that we are being forced to dismiss the classical view of art and reality which insists that man stand outside of reality in order to observe it, and, in art, requires the presence of the picture frame and the sculpture pedestal. The notion that art can be separated from its everyday environment is a cultural fixation [in other words, a mythic structure] as is the ideal of objectivity in science. It may be that the computer will negate the need for such an illusion by fusing both observer and observed, "inside" and "outside." It has already been observed that the everyday world is rapidly assuming identity with the condition of art.[8]

The metaphorical premise of *Software* permitted Burnham to explore convergences between his notion of the mythic structure of art, emerging information technology, and the increasing conceptualism characteristic of much experimental art in the late 1960's. These components were conjoined in works that emulated the sort of two-way communication he experienced with computer programs and which he advocated in art. The catalog emphasized the importance of creating a context in which "the public can personally respond to programmatic situations structured by artists," and explicitly stated that the show "makes no distinctions between art and non-art."

Burnham was careful to select works of art that demonstrated his theories. I contend that many of these works anticipated and participated in important trends in subsequent intellectual and cultural history. In this sense they contributed to the transformation of consciousness. Quoting McLuhan, Burnham identified this shift from the "isolation and domination of society by the visual sense" defined and limited by one-point perspective, to a way of thinking about the world based on the interactive feedback of information amongst systems and their components in global fields, in which there is "no logical separation between the mind of the perceiver and the environment."[10]

For example, in the hypertext system, "Labyrinth," a collaboration between Xanadu creator Ted Nelson and programmer Ned Woodman, users could obtain information from an "interactive catalog" of the exhibition by choosing their own narrative paths through an interlinked database of texts, then receive a print-out of their particular "user history." The self-constructed, non-linear unfolding of Labyrinth shares affinities with structuralist critiques of authorship, narrative structure, and "writerly" (as opposed to "readerly") texts, made by Barthes. Needless to say, with the advent of powerful Internet browsers like Netscape, and the proliferation of CD-ROM technology, 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. It should be noted that this first public exhibition of a hypertext system occurred, and this was perhaps not just a coincidence, in the context of experimental art.

Hans Haacke's "Visitor's Profile" encouraged visitors to interact with a computer by inputting personal information, which was then tabulated to output statistical data on the exhibition's audience. Such demographic research - as art - opened up a critical discourse, following Foucault and others, on the exclusivity of cultural institutions and their patrons, revealing the myth of public service as a thin veneer justifying the hierarchical values that reify extant social relations.

Similarly, "Interactive Paper Systems" by Sonia Sheridan, engaged museum- goers in a creative exchange with the artist and 3M's first commercially available color photocopying machine, dissolving conventional artist-viewer-object relations. In "The Seventh Investigation (Art as Idea as Idea)" Joseph Kosuth utilized multiple forms of mass media and distribution (a billboard, an newspaper advertisement, a banner, and a museum installation) to question the conceptual and contextual boundaries between art, philosophy, commerce, pictures, and texts.

In works such as these, the relationship Burnham intuited between experimental art practices and "art and technology" problematized 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. In this regard, Levi- Strauss's models from structural anthropology, along with Thomas Kuhn's critique of the history of science, led Burnham to question what he saw as the structural foundations of art history's narrative of progressive and discrete movements, a critique he elaborated in The Structure of Art.

As a final example, Nicholas Negroponte and the Architecture Machine Group (precursor to the MIT Media Lab, which Negroponte now directs) submitted "Seek," a computer-controlled robotic environment that, at least in theory, cybernetically reconfigured itself in response to the behavior of the gerbils that inhabited it. I interpret Seek as an early example of "intelligent architecture," a growing concern of the design community internationally.[11] By synthesizing cybernetics, aesthetics, phenomenology, and semiotics, *Software* emphasized the process of audience interaction with "control and communication techniques," encouraging the "public" to "personally respond" and ascribe meaning to experience. In so doing, *Software* questioned the intrinsic significance of objects and implied that meaning emerges from perception in what Burnham (quoting Barthes) later identified as "syntagmatic" and "systematic" contexts.[12]

A further abiding metaphor in Burnham's concept for *Software* was Marcel Duchamp's Large Glass, 1915-22, which served as an architectural model for the actual installation. Burnham described the relationship of *Software* to Duchamp's magnum opus in a 1970 interview with Willoughby Sharp. Iconographically, he explained, the Large Glass,

> has a lot of machines in the lower section - scissors, grinders, gliders, etc... it represents the patriarchal element, the elements of reason, progress, male dominance. The top of [it] is the female component: intuition, love, internal consistency, art, beauty, and myth itself.[13]

Burnham claimed that "Duchamp was trying to establish that artists, in their lust to produce art, to ravish art, are going to slowly undress [it] until there's nothing left, and then art is over."

He then went on to reveal *Software*'s organizational logic:

> As a kind of personal joke... I tried to recreate the same relationships in *Software*. I've produced two floors of computers and experiments. Then upstairs on the third floor, conceptual art with Burgy, Huebler, Kosuth, and others, which to my mind represents the last intelligent gasp of the art impulse.

Burnham's point, following his interpretation of Duchamp, was not that art was dead, or dying, or about to dissolve into nothingness. Rather, he believed that art was "dissolving into comprehension." He claimed that conceptual art was playing an important role in that process, by "feeding off the logical structure of art itself..., taking a piece of information and reproducing it as

both a signified and a signifier." In other words, such work explicitly identified the signifying codes which define the mythic structure of art. Instead of simply obeying or transgressing those codes, it appropriated them as motifs, as signifiers, thereby demystifying the protocols by which meaning and value have conventionally been produced in art.

In this regard, Burnham became very critical of the role of emerging technology in art.[14] Having lost faith in its ability to contribute in a meaningful way to the signifying system that he believed to mediate the mythic structure of western art, in *Software* he purposely joined the nearly absent forms of conceptual art with the mechanical forms of technological non-art to "exacerbate the conflict or sense of aesthetic tension" between them.[15] Given his interpretation of Duchamp, such a gesture also can be seen as an attempt to deconstruct the categorical oppositions of art and non-art by revealing their semiotic similarity as information processing systems.

I would be remiss if I did not mention that in many respects *Software* was a disaster. The DEC PDP-8 Time Share Computer that controlled many of the works did not function for the first month of the exhibition due to problems with, ironically enough, the software. The gerbils in SEEK attacked each other, a film was destroyed by its editors, and several aspects of the exhibition - including the catalog - were censored by the Board of Trustees of the museum. The show went greatly over budget which put the Jewish Museum in a precarious position financially. The Jewish Theological Seminary bailed it out, but dictated a radical shift in the museum's mission, which precipitated Karl Katz's dismissal as its director and its demise as a leading exhibition space for experimental art. The show was scheduled to travel to the Smithsonian Institution, but that venue was canceled.Ý Many other controversies plagued Burnhamís ill-fated exhibition.[16] Nonetheless, *Software* remains the most conceptually and - when it worked - technologically sophisticated art and technology of the period.

Software was founded on a structuralist analysis of art in which unfolding of the history of western art evolved exclusively by a process of demythification.Ý Technology in art, for Burnham, was meaningful only to the extent it contributed to stripping away signifiers to reveal the mythic structure of art.Ý Perhaps we a getting close to a moment in which the deconstruction of artís mythic structure is approaching completion.Ý And perhaps information technology has become, as Burnhamís own theory demanded, "pervasively, if not subconsciously present in the lifestyle of [our] culture," such that its aesthetic implications are sufficiently manifest to play a constructive role in proposing new artistic paradigms.Ý The problem now confronting artists and curators involved with technology is not so much getting the machines andsoftware to work, but living up to the conceptual richness of the house that Jack built.
Ý

Notes:

[1] Burnham, J. 1970. Notes on Art and Information Processing. In *Software Information Technology: Its New Meaning for Art*. New York: Jewish Museum, p. 10
[2] Burnham, J. 1972. Duchamp's Bride Stripped Bare: The Meaning of the Large Glass. In Jack Burnham, *Great Western Salt Works: Essays on the Meaning of Post-Formalist Art*, (New York: George Braziller, 1973):Ý 116.
[3] Burnham, J. 1998.Ý Personal correspondence with the author, April 23.
[4] Burnham, J. 1973.Ý The Structure of Art.Ý New York:Ý George Braziller.
[5] Burnham J. 1973.Ý Alice's Head in *Great Western Salt Works*, p.Ý47.
[6] Burnham, J. 1998. Personal correspondence with the author, April 23
[7] Burnham, J. 1969. The Aesthetics of Intelligent Systems. In Fry, E. F. ed. 1970. *On the Future*

of Art. New York: The Viking Press, p. 119. The three subsequent quotes come from same page. The "present social circumstances" to which Burnham refers here can only be the increasing pervasiveness of computer information-processing systems, which he described in the Software catalog as "the fastest growing area in this culture."

[8] Ibid, p. 103

[9] Burnham, 1970. Notes on Art and Information Processing, p. 10

[10] Burnham, 1970. Alice's Head, p. 47.

[11] See, Gerbel K. and Weibel P. eds. 1994. *Intelligente Ambiente* (Ars Electronica 994 catalogue). Vienna: PVS Verleger.

[12] Burnham, 1971. *The Structure of Art*, pp. 19-27.

[13] Sharp, W. 1970. Willoughby Sharp Interviews Jack Burnham. In *Arts* 45:2 (November) p. 23. All subsequent quotations are from this page.

[14] While Burnhamís loss of faith in art and technology can already be seen in his 1969 article "The Aesthetics of Intelligent Systems," op cit., his most explicit and antagonistic pronouncement against it is in Jack Burnham, "Art and Technology:Ý The Panacea that Failed" in *Myths of Information:Ý Technology and Postindustrial Culture*, Kathleen Woodward, ed., (Madison:Ý Coda Press, 1980); reprinted in *Video Culture*, John Hanhardt, ed. (New York: Visual Studies Workshop Press, 1986):Ý 232-48.

[15] Burnham, J. 1998. Personal correspondence with the author, April 23

[16] Shanken, E., 1998.Ý "Gemini Rising, Moon in Apollo:Ý Art and Technology in the US, 1966-71," in *ISEA97:Ý Proceedings of the Seventh International Symposium on Electronic Art*.Chicago:Ý ISEA97, 1998.

Ý

© Edward A. Shanken
[Return to Edward A. Shanken's homepage](#)

Ý