

## Software: Jack Burnham and the Medium as System

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### INTRODUCTION: TECHNOLOGY AND CONCEPTUAL ART

Curator, artist, and art historian Jack Burnham organized the exhibition *Software: Information Technology: Its New Meaning For Art* during the latter part of his tenure as fellow at MIT's Center for Advanced Visual Studies [CAVS] in 1969. [Image 1] Opening in 1970 at the Jewish Museum in New York City, *Software* did many things: it cast conceptual art in terms of technology and systems aesthetics; set forth the decline of the conventional artistic medium as a result of the union of science and art, technology and aesthetics; and was part of a broader Gestalt-based aesthetics cultivated at CAVS under the leadership of founding Director György Kepes. To begin, within a public forum it linked the dematerialization of the art object central to conceptualism to information technology, the computer, and what Frank Popper calls "virtualization."<sup>1</sup> It is only in our own contemporary moment though, after rounding out the first phase of conceptualism's historicization as primarily a matter of semiotics and Wittgensteinian language games, that we begin to understand the link between conceptualism and technology and, by connection, the utter importance of Burnham's work on art and technology, conceptualism and systems theory. From this exhibition, and his broader body of work, we begin to see in technology another pulsion instrumental in conceptualism's politics of resistance, its displacement of the aesthetic conventions associated with classical beauty and the hallowed art object. There were 26 artists or artist groups in the exhibition, many of whom would go on to become canonical conceptualists: Vito Acconci, David Antin, The Architecture Machine Group, John Baldes-

sari, Robert Barry, Scott Bradner, Paul F. Conly, Agnes Denes, Robert Duncan Enzmann, Car Fernbach-Flarsheim, Giorno Poetry Systems, John Goodyear, Hans Haacke, Douglas Huebler, Allan Kaprow, Joseph Kosuth, Les Levine, Theodor H. Nelson, Jack Nolan, R.E.S.I.S.T.O.R.S, Allen Razdow, Evander D. Schley, Sonia Sheridan, Theodosius W. Victoria, Lawrence Weiner, and Ned Woodman. While the artworks in the exhibition were diverse, there were two overarching tendencies: projects concerned with language in the form of directives or information and three-dimensional robotic objects that, though not sculptural in the conventional sense, were kinetic and electronic.

### SYSTEMS AESTHETICS, MEDIATION, AND THE DISINTEGRATION OF THE CONVENTIONAL ARTISTIC MEDIUM

With very little if any conventional forms of art, and indeed no painting to speak of, the exhibition reinforced the role technology plays in the disintegration of the traditional boundaries between artistic mediums. If for Rosalind Krauss photography was the "wrecker of unitary being" that undermined medium-specificity, for Jack Burnham it was something culturally bigger with broader effects: the medusa-like electronic coils of technology broadly conceived.<sup>2</sup> In the fashion of Marshal McLuhan's "technological extension," the diverse tools of technology, with the new medium of the computer being the most transformative, created for Burnham a distinct ontological world for art best understood according to systems aesthetics.<sup>3</sup> Having two years earlier devoted an article in *Artforum* to the subject of systems aesthetics, Burnham's ideas about the

thing and theory called “software” in the show at the Jewish Museum were informed by the writings of the scientist Ludwig Von Bertalanffy, whose *General Systems Theory: Foundations, Development, Applications* (1968) Burnham read closely as he created his own ideas about the rising new art. Emerging from biology, von Bertalanffy’s systems theory is based on an organismic holism: a malleable and changing totality materializing through the interconnection between various elements and forces.<sup>4</sup> Von Bertalanffy’s belief that “systems” are “everywhere” imbued systems theory with a sense of latitude and flexibility.<sup>5</sup> It could explain a broad variety of intellectual problematics, including urban planning, biology, physiology, economics, communications, psychiatry, psychology, and, for Burnham, art.

The exhibition *Software* proved that art was a system as such. For Burnham, the logic of the art in *Software* was relational, a matter of people interacting with information, be it other living creatures, commands written on the wall, printed teletexts, or various kinds of machines. Before launching into his explanation of the terms “software” and “hardware” in the catalog essay for the show, Burnham made clear that an ecological paradigm had superseded the traditional understanding of the ontologically freestanding and disparate art object made according to the conventionally bound and separate medium:

In just the past few years, the movement away from art objects has been precipitated by concerns with natural and man-made systems, processes, ecological relationships, and the philosophical-linguistic involvement of Conceptual Art. All of these interests deal with art which is transactional.<sup>6</sup>

As transactional work, the art of *Software* mediated ideas and interaction between artist, viewer, and world. Intimating the coming rise of the personal computer, for example, Ned Woodman and Theodor H. Nelson’s “Labyrinth: An Interactive Catalogue” was a participatory text retrieval system. It had a round keyscope for a screen and an F-key and R-key for visitors to move text forward and backward. Reflecting the ever-increasing importance of demographic information, Hans Haacke’s “Visitor Profile” required museumgoers to answer questions about themselves and their beliefs in the creation of a statistical database. Bringing the transactional action into the public realm of the city and mass media, Joseph Kosuth’s “The Seventh Investigation (Art as Idea as Idea) Proposition One”

was made up of four ambiguous texts placed in different public contexts: a billboard in Chinese and English in the Chinatown neighborhood of New York City; an advertisement in *The Daily World*; a banner in Italian in Turin; and a text in the exhibition *Information* at the Museum of Modern Art in New York. The constant movement of information – ideas flowing through various conduits and modes of mediation – was more important than any single, separate object. Artwork in this instance becomes catalyst and connector. Thinking art through systems theories further dislodged its form and matter from market-created hierarchies of value. Burnham explained that the art in the show dealt with:

underlying structures of communication or energy... for this reason most of *Software* is *aniconic*; its images are usually secondary or instructional while its information takes the form of printed materials.<sup>7</sup>

In giving life to the terms “software” and “hardware,” Burnham carefully treaded Cartesian waters, explaining, “our bodies are hardware and our behaviour software.”<sup>8</sup> Tempering the Cartesianism, though, the inculcation of systems theory would transform this would-be binary into a rhizomatic reticulation of hazy bodily interconnection. In a sharp fit of iconoclasm, Burnham explained, “*Software* is about experiencing without mental cues of art history. Instead it is saying: ‘sense your responses when you perceive in a new way or interact with something or someone in an unusual situation.’”<sup>9</sup> Burnham’s *Software* sheds light not only on the major role of technology in the emergence and making of conceptual art but also, and more precisely, conceptual art’s function as a creator of a unique embodied experience. In short, Burnham reveals the phenomenological side of conceptual art. Here the dematerialization of the art object is not so much a matter of quiet, theoretical lucubration subconsciously premised on a mind/body separation. Rather, the art object gives way to relations, which connect viewer to object and a world driven by a political economy of war and extortion. In many ways, the exhibition was premised on a phenomenology of aesthetics and politics combined. In this context, the art object is not downgraded into an actual absence, but rather it is part of a matrix of sensual and political connections. The “art object” functions “as a fraction of the entire communication structure surrounding any art.”<sup>10</sup>

Burnham’s essay from 1968, “Systems Esthetics,” in many ways gives ballast to the ideas and art-

work that constituted *Software*. Once again describing the new ontological climate of conceptual art, Burnham claimed, "We are now in transition from an *object-oriented* to a *systems-oriented culture*. Here change emanates not from things, but from *the way things are done*."<sup>11</sup> Burnham's ideas of relationality and systems-oriented functionalism offer a steppingstone to philosopher Stanley Cavell's later take on the medium as an automatism, for like Burnham's active and filtering work of art, Cavell proffers an idea of the artistic medium that is less about containing form and more about actively disseminating it outward. Though separated by artistic practice and scholarly discipline, Burnham and Cavell are concerned with new ontologies of art and viewing precipitated by technologically generated practices. For Burnham these shifts in art cascaded out from the then new tools of digital technology, in particular the computer; for Cavell the cinema and film. Connecting digital to analogue, they share a similar perspective on the effects of technology on the conventional sense of the artistic medium.

In Cavell's filmic paradigm of automatism, the medium of an artwork gives way to an evanescent temporality triggered by a mechanical series of movements much like the creation and movement of film. In fact, one experiences the work of art as a finite temporal event bearing resonances out into the world. The automatism of a work of art "generates new instances: not merely makes them possible, but calls for them, as if to attest that what has been discovered is indeed something more than a single work could convey."<sup>12</sup> Think here of film and its creation of new ideas – fashion, art, and political behavior. A more literal example might be Google.com, its algorithms of infinite and ever changing possibility. Cavell's choice of the word "automatism" further parallels Burnham's technologically generated vocabulary of ideas. It is a technological term, mechanical to be precise, which, like Burnham's "software," "information," "systems esthetics," displaces essentialist definitions of authorship and the work of art. Though the intricacies of technology are more central to Burnham's polemic, both thinkers home in on the critical space of deferral created in technological mediation. An iconic example of technologically generated critical distance for Burnham was, for example, Moholy-Nagy's telephone paintings, which the artist made by calling in the orders to a manufacturer of enamel signs.<sup>13</sup> A similar tropological space is opened by McLuhan's maxim "the medium is the

message." In like terms, Cavell's "automatism" further resonates with McLuhan's ideas on reciprocally active technology: that is, machines that we activate, which in turn act on us, as with the feedback loop created by Moholy-Nagy, the phone, and the sign manufacturer. The medium as automatism gives lie to a new world in which the viewing experience is no longer defined or held together by the simple understanding of a passive and inert viewer casting her gaze upon a passive and inert object. Rather, the medium as automatism suggests a new connective, ecological skin for art and its world of actors (artists, critics, collectors, institutions, and viewers). It is a porous and polymorphic landscape-like integument connecting force to force, vector to vector, always changing according to the sensuous experience that is art writ large. Explaining the multiplicity that is Cavell's idea of automatism, D. N. Rodowick says, "the medium of an art form combines multiple elements or components that can be material, instrumental, and/or formal."<sup>14</sup> What keeps the artwork as automatism from being a matter of radical relativity is that it functions in a specific way. In a pullulation of singularities, the artwork as flexible automatism performs and does something precise, producing ideas, creating new sensibilities, and opening possible lines of flight for political renewal. Capturing the verbal action of Cavell's automatism, Rodowick turns to the word "mediate," thus making connections between Cavell and new media theory as well as Jack Burnham's systems aesthetics.<sup>15</sup> Rodowick explains, "a medium is also that which *mediates* – its stands between us and the world as representation (*Vorstellung*), or it confronts us in a way that returns our perceptions to us in the form of thoughtfulness."<sup>16</sup> The traditional crafting of a medium gives way to choosing how and what a form will do – how and what it will mediate. For Burnham this is a matter of decision-making. *Homo Faber* had given way to "*Homo Arbitrator Formae*," and "his prime role becomes that of man the maker of esthetic decisions."<sup>17</sup>

### **SYSTEMS AESTHETICS, GESTALT PSYCHOLOGY, AND THE HAPTIC UNCONSCIOUS**

In Burnham's systems aesthetics the artwork is part of an open-ended gestaltism: a holism that consists of a precise set of elements and circumstances that are changeful and in flux. In keeping with the definition of Gestalt psychology, the aesthetic system of which art is a component must

be looked upon in its morphing totality, as but one force within a field of interconnected movements.<sup>18</sup> There are clear resonances here between the holism of von Bertalanffy's systems theory, Burnham's systems aesthetics, Gestalt psychology, and the ideas of György Kepes, the Director of CAVS during Burnham's fellowship.<sup>19</sup> Reinhold Martin cites the important role of Gestalt psychology in Kepes's work, in particular the six anthologies that make up his *Vision + Value* book series, and by connection the cultivation of a greater nation-encompassing "organizational complex" emerging after World War II.<sup>20</sup> The holism of Gestalt psychology worked in conjunction with Norbert Wiener's theories of cybernetics, Gregory Bateson's ecology of mind, and Bertalanffy's systems theories in the creation of a postwar information-based functionalism. Martin argues, Kepes's "pattern-seeing" was a unifying mechanism that prioritized the organismic image. Following this argument, the systems related movement in the sciences gave primacy to the sense of sight, as scientists understood "the study of organizational processes in life at all scales was largely figured as a problem of *visualization*."<sup>21</sup>

Martin's take on Kepes's appraisal of vision reduces the sense to a monologic in the service of Gestalt psychology and organization systems: that is, vision as a tool in the instrumentalization of humans. When scrutinizing Kepes's anthologies, however, one finds a strain of vision systematically connected to the other senses. In short, the visualization at the center of pattern-seeing is embodied: it is part of a phenomenological experience connecting sight, sound, hearing, touch, and taste to the world. In this respect, Kepes's "image" seems generated from the German "Bild" and the related "bilden:" picture, image, form, metaphor, and *to form* or *to figure*. Image is at once noun and verb, thing and thinging, image and imaging. As Kepes explains in the *Preface to The New Landscape in Art and Science* (1956):

Image making – the integration of sense data into a coherent experience of something – is thinking and feeling on the most elementary level. Through images we participate in the world, responding emotionally to its sensible qualities and rhythms. We mobilize ourselves to recreate its felt patterns.<sup>22</sup>

To parse the specific nature of Kepes's take on the Gestalt is to stipulate that the Gestalt image is, beyond being solely a concern of the visual, a matter of the whole body moving through the world. At

the same time it is to further clarify the specific nature of the aesthetic theories – here Burnham's systems aesthetics – emerging from CAVS in the years that Kepes was there. What I am arguing for is a notion of a technologically based aesthetic experience – often present in conceptual art – that connects body to world, perception in the gallery to a greater political economy, some fundamental elements of which emerge from Gestalt psychology. This Gestalt generated polymorphically perverse sense of the image courses through Kepes's *Vision + Value* book series, as evidenced in the diverse array of contributors, including Naum Gabo, Richard Neutra, Fernand Leger, Walter Gropius, Jan Arp, Norbert Wiener, Leo Marx, Kevin Lynch, the avant-garde new media art group Pulsa, Richard Smithson, and over course Kepes himself. In the work of Kevin Lynch, MIT Professor of Urban Planning and Design who was supported and coached by Kepes, for example, a similar sense of the sticky, thorny, experiential picture is present as an "image of the city." For Lynch, making such an image was a concern of the full body, something comprehended through patterns felt and discerned while walking and driving through various urban spaces.<sup>23</sup> The haptic Gestalt-image offers an idea of interrelationality that approximates contemporary theories of "embodiment," or as Anna Munster describes, an understanding of "technologies as concrete actualizations of the virtual capacities both of the digital and of human bodies."<sup>24</sup> The artistic medium understood, rather, as a matter of mediation and embodiment catalyzes a fundamental rethinking of classical humanist values: as we take in the technologized world through embodiment, "it is possible to move out of the quagmire of virtual/real, mind/body and informatic/material."<sup>25</sup>

In the work of Jack Burnham, I would like to refer to this Gestalt-cum-systems aesthetic experience in terms of the "haptic unconscious." The interpretative rubric is based on Walter Benjamin's reference to the camera's creation of an "optical unconscious," the way in which the photograph captures things – events, objects, and passing moments – along the periphery of vision that otherwise go unnoticed.<sup>26</sup> "The camera," Benjamin explains, "introduces us to unconscious optics as does psychoanalysis to unconscious impulses."<sup>27</sup> In coupling the two words "unconscious optics," Benjamin articulates the underbelly of the eyes and Freudian unconscious of the visual experience. Rosalind Krauss connects

Benjamin's designation of a mechanized enlargement of vision to Freud's citation of "technological advances...as a set of 'prosthetic limbs' that expand the power of the individual," which he outlined in *Civilization and Its Discontents*.<sup>28</sup> In reading Benjamin and Freud closely together, Krauss devises an alternative category of modern art, one not so much rooted in the imagination as a prosthetic, but rather in which the certitudes of sight – truth, clarity, and autonomous form – are set into grave doubt. If for Krauss, the phrase "optical unconscious" refers to artists who worked out an alternative path within modernism, one in which the truth of clear vision was not its earmark, then the haptic unconscious refers to artists in the postwar period who deploy a panoply of technological tools in order to extend the body – from the skin to senses to world – as a means of inscribing another subject position in which language and ideology function along side of technology as forces of a priori formation. The haptic unconscious is the intuitive knowing through technological proprioception that connects person to global political economy by way of a work of art.

The idea further tweaks and transforms the forceful link between technology and the mass audience that is central to Benjamin's essay. While for Benjamin, the celluloid technologies of the photograph and film bear the potential for political emancipation, the broader technological basis inclusive of digital media catalyzing the haptic unconscious tells only of our harnessing to the world by technology. There is no promise of freedom or redemption – albeit of the individual or in terms of the promise of avant-garde art – from the haptic unconscious. In fact, it tells of the opposite: the way in which technology – from the car to the computer – ties citizens evermore tightly into the biopolitical matrices of global capitalism. We find this critical-minded polyversant sense of aesthetic experience, that art is headily sensual and political in its technological extensions, in Burnham's "Systems Esthetics." There in his expatiation on the new "unobjects" of the art world he mentions a variety of voices and ideas – Thomas Kuhn's paradigm shift, von Bertalanffy's systems theory, John Kenneth Galbraith's *The New Industrial State*, and Michael Fried's accusations of theatricality – which together inscribe "haptic" as a matter of a tactile body *and* mind. Fusing body, mind, and socius, touching the world through ideas as art is a mental exercise. The haptic unconscious of systems aesthetics is based on

an idea of perceptual experience that comes with political costs. Unlike Cavell's automatism, Burnham's systems aesthetics comes with a certain strain of technologically generated political existentialism. The dissolution of the boundaries between the conventional artistic mediums originates in greater cultural transformations that are both technological and political. When we take this assertion to be part of an open feedback loop, we understand that the dissolution of the boundaries between the conventional mediums is *itself* a matter of greater political ties. The absence of boundaries between the mediums symptomatizes something radically different not so much about the political import of art but humans in the world, their agency inside and outside the gallery. Burnham states this dialectic clearly in his catalog essay for *Software*:

Thus the history of computer technology may be interpreted as progress in making communication between men and machines more natural and complete. This remains an ideal definition however, because quite often in industry human beings have been adapted to inhuman machine schedules, rather than the other way around. What is less realized is that most businesses of any size have had to adapt themselves, more or less traumatically, to radically different patterns of administration and organization as the result of information structures made possible by computer systems. So in part *Software* addresses itself to the personal and social sensibilities altered by this revolution.<sup>29</sup>

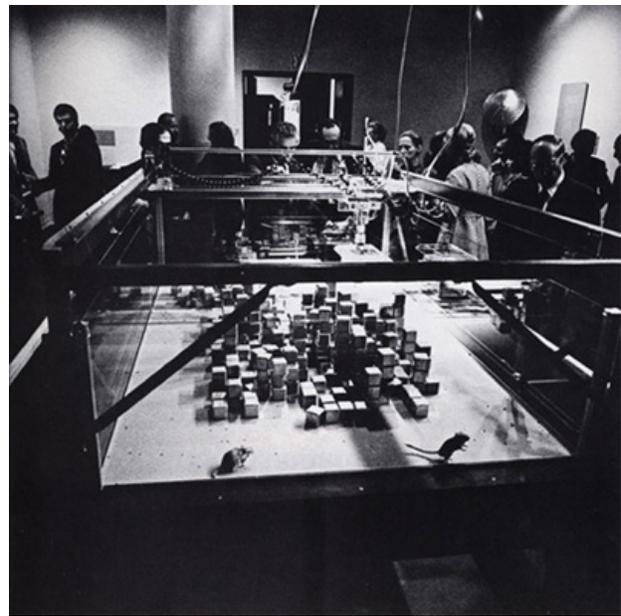
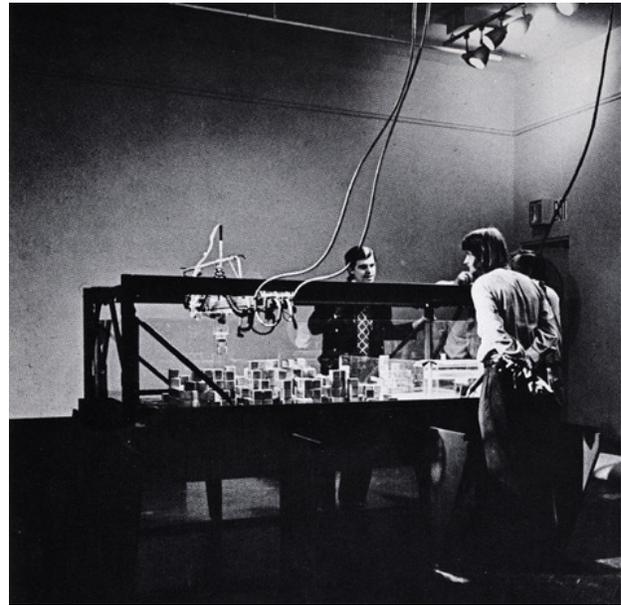
Technology frees humans only inasmuch as they operate within the confines of an overlord arriving in the form of the global corporation.

The biopolitical ramifications of science and technology – mechanical and digital – within art were poignantly present in one project in particular in Burnham's *Software*, The Architecture Machine Group, MIT's "Seek." [Images 2 and 3] At the center of The Architecture Machine Group, soon to become MIT's Media Lab, was a coalition of students and faculty from Architecture and Planning and Electrical Engineering. Sometimes referred to as "Blocksworld," the experimental artwork consisted of a sensing/effecting device controlled by a small computer and a 5'x8' foot superstructure supporting a transparent box. Gerbils roved around inside the box, clumsily knocking and displacing shiny metallic toy blocks. Creating another instance of an open feedback loop, the robotic arm periodically rearranged the blocks, recalibrating the urban pattern in miniature according to the arbitrary movements of the gerbils. "Seek"



Figure 1. Agnes Denes programmed her computer display with the assistance of Theodor H. Nelson and The R.E.S.I.S.T.O.R.S., from *Software* catalogue

underscored not only the existential political import of art in the early age of digital media, but also, and more precisely, the existential freedom of technology within the constraints of an ever-expanding biopolitical order. In contrast to liberal democratic freedom, which is energized fundamentally by manifest destiny, the existential freedom bound up with the phenomenology of technology is one of hindrance and death. Technologically generated existential freedom is largely defined by limits. It is only when we are authentic – when we admit to ourselves the limits of technology and our mortal coil – that we are free. For Sartre, in death lay freedom. The aesthetic experience of “Seek” – the underworld of bodily drives that is the haptic unconscious – bodies forth this understanding of freedom as limitation and boundary, generating a knowing to which we interchangeably admit and are oblivious. From this advantage point, as artistic boundaries have given way to the broad and multiple processes of mediation,



Figures 2-3. The Architecture Machine Group, MIT, *Seek*, 1969-70s

technological and otherwise, the boundaries of existential freedom – the freedom to know the depths of cynicism and unfreedom – continue to define our world and daily experiences. The shift from medium to mediation marks the removal of limits in fields of creative action while only serving to reinforce the a priori limits of the biomatter that is being human.

## ENDNOTES

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