HISTORICIZING ART AND TECHNOLOGY:
FORGING A METHOD AND FIRING A CANON

Dr. Edward A. Shanken
Professor of Art History
Savannah College of Art & Design

About a decade ago I discovered a couple books on art and technology that changed my life: Jack Burnham's *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of This Century* (Braziller, 1968) and Douglas Davis' *Art and the Future: A History/Prophecy of Collaboration between Science, Technology and Art* (New York: Praeger, 1973). It was 1993 and the rush of the 21st century as the very near future simultaneously bore down and uplifted me with great intensity. Recent developments in consumer technologies, including relatively powerful personal computers, user-friendly software, and interactive media, including CD-ROM and perhaps more significantly, Mosaic (the first GUI web browser), which seemed to open up a new future of creative expression and exchange in which everyone could be a content-provider and thus break free from the tyranny of the culture industry. Of course, it quickly became clear that such utopianism was realistic only as a commercial marketing tool. Nonetheless, I began to think more and more about what effects science and technology was having on contemporary art and about how artists might use technology to envision and create aesthetic models of the future. Very quickly I realized that I had to study the history of art and technology in order to have a clue about what was happening at the moment, much less what its future might bring.

I would like to discuss a set of problems concerning the history of art and technology with respect to the larger canon of western art history. This paper constitutes a report from the trenches and a call-to-arms of sorts. I have forsaken subtlety in order to provoke, so there are some rough edges, if not exaggerations. My focus is on method and canonicity and my aim is to begin a discussion of long-range goals for critics, curators, art historians, and other cultural workers whose research focuses on the nexus of art, science, and technology, which I'll simply refer to as art and technology. Here I am most interested in artists who seek out or create technologies as the media through which they pursue their work, and especially those who use technology as a means to either envision alternative futures or to provide a meta-critique of technology itself and its relation to culture and society. Although the distinction between science and technology is important, in order to simplify my argument I will not

differentiate between them here, so please bear with that simplification.

Although there has been important scholarship on art and technology, there is no comprehensive technological history of art, as there are feminist and Marxist histories of art, for example. What similarities and differences, continuities and discontinuities, can be mapped onto the use of technology for artistic purposes throughout the history of art? Why are there periods of fervent activity and others of apparent dormancy? Much of the best historical, critical, and theoretical English language literature in the field has thus far been written by artists: Jack Burnham, Douglas Davis, Roy Ascott, and Eduardo Kac, to name just a few. *Leonardo*, the primary journal in the field has historically focused on writings by artists and scientists. When it is not being written by the artists themselves, the preponderance of current literature on contemporary art involving technology is being written in other disciplines, such as comparative literature, film history, and cultural studies. So this leads me to ask: What is the voice of art history with respect to the technological art of our time? What unique and valuable contributions has my discipline made; and what contributions can it make now and in the future historicize the subject both in art history as well as in a broader cultural framework? Although I don't have the answers to these questions, it seems about time that someone ask them. And I hope that these provocations will spur debate and dialogue so that artists and art historians, collectively, can more clearly define the problems of our specialized field and begin to address them, if not in a systematic and concerted way, then at least in an effort that has explicit methods and goals.

I'll begin from the somewhat over-determined premise that the development and use of emerging technologies by artists always has been, and always will be, an integral part of the art-making process as we know it. Yet, the canon of western art history failed to recognize the centrality of technology as an artistic medium and theme or as a hermeneutic tool for critics and historians. In the absence of an established methodology and comprehensive history that would help clarify the interrelatedness of art and technology and compel revision, this oversight will persist. As a result, many of the artists, artworks, aesthetic theories, institutions, and events that might be established as the keystones and monuments of this historical narrative will remain relatively unknown to general audiences.

Moving to the problem of historicizing contemporary art involving contemporary technology, one can see that the task is bound up in at least two other issues: 1) the problem of defining a

method for interpreting artworks on the basis of technology and creating a comprehensive history of art and technology; and 2) the problem of gaining canonical recognition that technology always has and always will play an integral role in art-making. Indeed, only when such recognition and inclusion are achieved for the historical embeddedness of technological innovation in and for artistic production can the critical historicization of digital, biotech, and other emerging artistic media take an authorized place in the larger history of art. I should mention that I see the evolution of methodology and historical narrative as a mutual and reciprocal process, in which each functions for the other as both the cart and the horse that pulls it. Using Jack Burnham as my foil, I'll begin by reviewing some of the historiography of art and technology in order to simultaneously support and problematize my position. Next, I'll give a few examples and discuss some of the difficulties I've encountered in my own attempts to historicize cybernetic, telematic, and electronic art within a larger art historical context. The three illustrations are Powerpoint slides from my talk at the MediaArtHistory meeting in May 2004 and relate to Section III, part 2 below, which outlines some concerns I addressed in a related series of articles published between 1998 and 2001, "Gemini Rising, Moon in Apollo: Art and Technology in the US, 1966-71" <http://artexetra.com/Gemini.html>, "The House That Jack Built: Jack Burnhams' Concept of Software as a Metaphor for Art" <http://www.artexetra.com/House.html>, and "Art in the Information Age: Technology and Conceptual Art" <http://www.artexetra.com/InfoAge.pdf>.

Jack Burnham, in his essay "Art and Technology: The Panacea that Failed" (1980), argued that the union of art and technology had nothing to offer to the unfolding of western art history since the Renaissance. This position appeared to constitute a bold about-face from Burnham's earlier championing of art and technology in his classic monograph *Beyond Modern Sculpture: The Effects of Science and Technology on the Sculpture of This Century,* 1968. In this work, his method was teleological in nature. Tracing a history of art and technology, he argued that technology was playing an important role in the 20th century by helping art increasingly embody the vitality of life, including such functions as metabolism, motility, intelligence, and interaction. As a fellow at the Center for Advanced Visual Studies at MIT in 1968-69, Burnham had the opportunity to work with computers first hand. His essay, "The Aesthetics of Intelligent Systems" (1969) discussed that experience and drew parallels between art and information processing. These ideas were later manifested in the exhibition, *Software: Information Technology – Its New Meaning for Art* (1970)*,* when as

curator, Burnham used the *metaphor of art as software* to explore and integrate his structuralist theories about the mythic structure of art, the increasing conceptualism of art in the late 1960s, and the latter's convergence with information technology. Again, his method was teleological. Following Hegel and Kosuth, he prognosticated that art was becoming philosophy, or "art as idea as *idea*." In *Software*, as in his book *The Structure of Art* (1971), Burnham argued that the internal logic of art's history could be understood as a progressive stripping away of the invisible, naturalized, and unchallenged rules that define the discipline's mythic structure. He interpreted Conceptual Art as leading the charge (after Duchamp) and that art was "dissolving into comprehension," as Willoughby Sharp put it in a 1970 interview.

Beyond Modern Sculpture remains, in my mind, the most comprehensive account of the history of art and technology. Yet, for all his brilliance and erudition, Burnham's methods obscured his ability to understand the broader implications of technology as an integral part of art-making. Technology was, for him, merely a means to a pre-determined end that had nothing to do with technology, per se. By stripping away surface layers he believed he could uncover a grand scheme that explained why art unfolded and evolved as it did and would continue to do so. In *Beyond Modern Sculpture*, beneath the surface he found life. In *Software* and *The Structure of Art*, he attempted to uncover the ineluctable structural foundations of art as a social institution. This self-reflexive methodological approach may be likened to an advanced stage of Post-Greenbergian formalism taken to a meta-level of analysis.

While vitalism and structuralism may remain important philosophical models, their limits in explaining the grand scheme of art's history hardly need to be rehearsed. Indeed, one of the important lessons of post-structuralism has been a suspicion, if not outright rejection, of the very idea of master narratives, a deconstruction of what Burnham himself might have described as the mythic structure of western epistemology. Interestingly, Burnham's own method was prepared for such an interpretation and his own conclusions were but one order of analysis removed – that crucial level that distinguishes structuralism from post-structuralism. Despite this and other shortcomings, *The Structure of Art* remains a fascinating if abstruse text that begs critical reappraisal as part of a larger reconsideration of Burnham's important contributions to art history.

OK, so let's say we strip away vitalism and self-revelation and any other master narrative from Burnham's histories of art… what are we're left with? Technology.

Without making any grand-scheme claim, I would like suggest that from the invention of one-point perspective and the creation of oil paint to the development of interactive virtual reality environments and telematic art, **technical innovation and the use of emerging technologies as artistic media and themes have substantial continuity throughout the history of western art**. This is at once not saying very much while also making a significant claim. For one could just as easily and correctly state that various forms of sociology, economics, psychology, philosophy, along with other concerns and analytic and creative tools have been consistently employed in artistic practice and art historical interpretation throughout history. **What makes my claim significant is that the discipline of art history has embraced biography, feminism, Marxism, psychoanalysis, aesthetics, and various post-isms as bona fide methodologies.** This leads me to ask, **How can this field develop a more comprehensive understanding of art and technology without a method designed to bring it into relief?** What would such a method even be comprised of? What insights might emerge into the relationship between art and technology, especially during periods when they seem relatively unrelated?

Just as the field has failed to incorporate the study of technology (both as history and applied science) as a basic method, so the canon of art history similarly reflects an impoverished understanding of the role of technology in the history of art-making and the contributions of artists who have been important innovators in that regard.
As you may have already sensed, this is a slippery slope. For on the one hand, I am theoretically committed to challenging master narratives. At the same time I am also committed to rewriting the canon – that grand scheme of our collective field - to reflect the importance of technology throughout the history of art, thereby forcing a critical reconsideration and recontextualization of artists, artworks, art-making practices, and historical narratives that previously have been excluded, marginalized, or not understood to their fullest potential.

In confronting this dilemma, I have more questions than answers, but I hope that the following considerations will at least help demarcate some of the critical issues that surround this problematic enterprise, with respect to both the particularities of contemporary art

involving emerging technologies and the more general concern of including the study of technology as central to the history of art. I'll begin by sharing some of my thoughts on these questions with respect to art and art history after 1900, which I shall expand with more detailed examples drawn from my own work in the field.

I. How can artists, critics, curators, and historians begin to demonstrate, exhibit, and write the neglected history of art with respect to technology?

Although we may agree to differing degrees about the extent to which the history of art involving emerging technology has been neglected, and may disagree on our definitions of "art" and "technology" for that matter, it will be important that the extant literature on the subject, broadly construed, be the subject of systematic historiographical study. Only by taking account of the field such as it exists can we comprehend our own foundations, understand the reception of its scholarship at various places and moments, and gain perspective on its place within larger historiographical concerns. I believe that rediscovering and reinserting the best examples of the literature in our field into larger critical discourses (and closely examining its detractors) will lend credibility to our enterprise.

II. Why exactly would we want to?

Although challenges to master-narratives and grand schemes constitute a valuable corrective to naturalized discursive strategies and methodological models, the problem of defining a data-set remains. Discourse depends on and necessitates that we agree that we have something to talk about. We may disagree vehemently about certain objects, methods, and goals but there must be some common ground. Canons provide precisely that common ground, a shared database of generally accepted objects, actors, and moments that cohere by virtue of their participation in the construction of an evolving discourse. In order to be part of the discussion, those objects, actors, and moments must be admitted to the canon by its gatekeepers. The primary gatekeepers are art critics, art historians, curators, dealers, and collectors and the institutions they represent: e.g. journals, the academy, museums, commercial galleries, auction houses, and private and institutional investors. Practically speaking, a canon can be only so large, so for each work newly admitted to it, another must be removed. These sorts of judgments cannot be separated from ideological agendas, professional ambitions, and financial investments. Support for and acceptance of them

requires strenuous and subtle negotiation in order to make a case that compels other gatekeepers to concur. For the more gates an object, actor, or moment succeeds in passing through, the more canonical it becomes.

The canon of art history has been shaken up dramatically over the last forty years, particularly by reconstructions mounted in the names of Marxism, feminism, multiculturalism, and post-structuralism. When I was in college, for example, the then-current edition of Janson's *History of Art* still did not include any women. But the canon has proven to be extremely flexible and resilient. Its existence and status do not appear seriously threatened, in part because challenges to it primarily have focused on remedying exclusions rather than on dismantling the fundamental structures of power endemic to it. In other words, canon-busting may have an important place in art historiography, but while Donald Preziosi and others figure out just what that means for the rest of us, I'm going to take the attitude of: if you can't beat 'em, join 'em. In order for the historical role of technology in art-making to be recognized by the field, its monuments must be admitted to the canon and the study of technology as a hermeneutic method must be acknowledged along with our standard methodological tool-kit. There is so much basic research to be done in our field that getting hung up on issues of canonical deconstruction would be counter-productive. As artists and intellectuals working in this area we have a responsibility to our subject to become involved in the process of negotiation and gatekeeping that will enable our specialized field to gain canonical status, or whatever will replace it. Clearly if we don't do it, no one will.

III. Methodological Examples in My Own Work

1. Telematic Embrace

In my introduction (ninety-four pages) to *Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness*, a collection of essays from 1965-2000 by Roy Ascott, I attempted to contextualize the artist's work as a practitioner, theorist, and teacher within the history of art, the history of technology, and intellectual history. It was of primary importance to me that my text be fundamentally grounded in the history of art in order to locate Ascott's work within a continuity of aesthetic strategies employed in experimental art in the 20th century. For example, I framed Ascott's cybernetic work from the 1960s in the context of expressionistic tendencies ranging from Cezanne to Jackson Pollock, vitalist and constructivist tendencies in British artists from Moore to Pasmore and Nicholson, the use of

alleatory techniques and a process-oriented approach to art-making by Arp, Duchamp, and Cage, and the interactive aspects of kinetic art and happenings. I considered Ascott's work with telematic art in the context of these constituents of cybernetic art, plus mail art, situationism, performance, artists' use of telecommunications, interactive video, and other experimental streams.

It was also important to me to stress that the historicization of ideas often fails to credit artistic developments because the languages of art are neither as literal nor widely spoken as the languages of science or literature. My research made clear that ideas emerge simultaneously in various fields. And the cross-fertilization of these ideas demands that an underlying context already exist in order for seeds from one field to germinate in another. In the case of Ascott's work, cybernetics could be applied to the problems of art only because there already was a significant history of artistic experimentation with process, systems, and interactive forms. Cybernetics then, provided a formalized, scientific method to approach what artists (and others) had already been doing. As an example, I showed how Ascott's *Change Painting*, 1959 could be interpreted on the basis of cybernetic principles, yet its creation predated his awareness of cybernetics.

Related to the question of how ideas become historicized is the role of artists' writings in theorizing a field. In this regard, Ascott's writings exemplify how innovative artists often establish the theoretical foundations of their practice long before critics, curators, and historians begin to incorporate those artists' artwork (and rarely with acknowledgment of their writing) into their own discursive contexts. Over and above that claim, it was important to emphasize that Ascott's writings, like those of artists associated with conceptual art, such as Joseph Kosuth and Art & Language, not only theorized his practice, but were an integral part of it.

[Note: the following is in outline form and shall be more fully developed in subsequent drafts of this paper.]

2. Art in the Information Age: Reading and Interpreting Exhibitions and Literature

- Gemini Rising, Moon in Apollo… *(ISEA*, 1997)
    - "9 evenings," "Machine," "Cybernetic Serendipity," "A&T," "Software"
    - Why intense dedication of resources to joining *at this time*?

- Tech out of control; military-industrial complex;
  - Ideology "create more human environ," war, ecology, space race, PR
- The House That Jack Built..(*Consc. Reframed*, 1998)
  - Software as metaphor for art, "grin without the cat," demat, info proc., conceptual art
- Art in the Information Age (1999, SIGGRAPH)
  - Why rigid cat. distinctions betw art & tech and conceptual art?
    - Formally dissimilar (?) but many ideational similarities, esp. systems, info
    - ex. Burnham, *Software* drew parallel; "Index" as manual hypertext system
  - Why artists corralled, excluded? Ex. Haacke, Ascott
  - Why art & tech shunned? conceptual art valorized? $, fashion, social
  - Why Burnham ignored by Harrison, Krauss, etc.:
  - Indeed, Burnham was light-years ahead of Charles Harrison who, in the mid-1960s was writing about dreary British formalist sculpture and Rosalind Krauss who, at that time, was writing about Cubism. Their studious omissions of Burnham's work in their later reflections on conceptual art, modern sculpture, and art historical methodology is itself worthy of serious study, but I'm digressing…

Methodological Conclusion:
Correspondences shared by two tendencies offer grounds for rethinking their relationship as part of larger social transformations from machine age to information age of post-industrial society.
→ Only by attending to specific characteristics of technological changes can such insights emerge.

3. Art and Electronic Media

My current book project, an illustrated survey of electronic art, has raised a number of difficult questions about how to historicize the use of electronic media in and as art, which I'll attempt to address more or less sequentially.

1. How might various subgenres and modes of art inquiry within art and electronic media be classified and categorized?

2. What role do particular media or technical innovations play in defining these histories, as opposed to aesthetic or art historical continuities?

3. How effective are still images at conveying works of art in a field that is marked by time-based, interactive, and collaborative media?

In conceptualizing this volume, I could have elected to organize material chronologically or by specific medium. I was opposed to a chronology because it will fail to show how similar media and/or similar concepts have been used at varied moments. I was opposed to a medium-based scheme for a few reasons: 1) it would foreground technological apparatus as the driving force behind the work, a message I definitely did not want the book to convey; and 2) it would fail to show how related conceptual and thematic issues have been addressed

by artists using varied media. The ability to show these sorts of continuities was my top priority, so I elected to organize the book thematically, despite the difficulty of defining themes that are internally coherent and meaningful. As thematic categories do not admit of hard and fast distinctions, there are many works that could have fit comfortably in two or more sections, though ideally, in the end, the contents of each section will create a unity that makes sense together. Another difficulty has been selecting works that fairly represent the diversity of the field by decade, gender, nationality, and so on. Given limitations on space and number of illustrations, I also had to confront the difficult choice of determining how many works fairly represent the work of a pioneer, like Paik, with a career spanning five decades, compared to an artist working with electronics for under ten years. As mentioned earlier in my discussion of canonical revision, for each additional illustration allotted to a pioneer, one less artist could be included in the volume. On the subject of illustrations, it is clear that static media are extremely limited in their ability to represent the significant durational and interactive transformations that characterize time-based art, which comprises a substantial portion of the program. To address this issue, some recent volumes, including *New Screen Media*, include a CD or DVD containing multimedia content that offers readers a better sense of these dimensions. I decided that long after the CD's and DVD's wear out and/or become obsolete, the color plates will keep on working. I applaud those who secure funding, procure, organize, and execute multimedia resources but I wonder what percentage of CDS and DVDS actually ever see the inside of a drive – and for those that do, for how long?

Finally, I would like to ask:
IV. What might a new canon that takes this as a central concern consist of?

I am deeply interested in discussing this issue, however, given its speculative nature, the question must remain a rhetorical one for the moment. This sort of quandary may be more efficiently addressed by a group than by a single individual. Collectively, our efforts will hopefully constitute the answer. But I think we need to first determine what our goals are. I hope that the questions I've raised and my preliminary reflections on them will help set the stage for further discussion.