

TOWARD COMPUTER ART

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I wish to thank the editors of Art Papers for allowing me to initiate their new "Art and Technology" section. In this vein (that of an initiation) I list below several questions I believe both artists and critics must ask of computer-based artwork, and of themselves. Following each question is a short text arguing the question's importance. Perhaps future columns will help provide answers to these questions--or better, show how they are misconceived.

1. WHAT CRITICAL STRATEGIES WILL BEST SERVE COMPUTER-BASED ART?

Eisenstein attacked Malevich for applying painterly aesthetics to film(1), rather than developing a new approach to deal with it (which Eisenstein did with his concept of collision montage). Critics of computer art work must first develop discourses which are sensitive to the medium. Criticism will not get anywhere until it is informed by the strategies inherent in the programming. Trying to end-run the intensive study needed to create such a sensitive discourse results in conceptual twaddle.

Describing computer graphics in terms of line and form can miss essential characteristics of the medium. For instance, quite often objects or entire scenes are programmed in a full three dimensions, with a particular graphic image simply being one perspectival view of the constructed space.

Applying montage principles to computer animation is again a deceiving strategy. Because what a computer can offer that a film or videotape alone can't is interactivity; the adaptation of the medium to the viewer/participant. The computer always presents the top of an iceberg, with most of an artist's work lying dormant at any given time. To treat such a presentation as if it were a linear film is again to miss inherent differences between the media.

So does this mean the critic must be a programmer? It means that the critic must at least have programmed at bit, but it doesn't mean that the best programmers will make the most sensitive critics.

An expert programmer will look for such things as how compact the code is (how economically it is written). Such criticism can be likened to someone examining Citizen Kane to see how evenly the glue was applied to the splices. It's possible, and can be used to create a symbolic discourse that may be stimulating in itself, a' la deconstructivist text.

But I posit that our problem is not like that of deconstruction, which seeks to point out the hidden confusion in a historical area (writing) that took its viability for granted. In the area of computer art, we need instead to create some useful tools for elucidating what is going on in a medium which does not yet have a corresponding critical strategy, much less critical strategies. And since we have a need to inform our programs with the results of using these critical tools, the process should not stop with the discourse(2). In no medium more than in computer programming do language and action need to inform each other.

An obvious object for a critical discourse of programs can be a program's algorithm. This can be a flow chart, or decision-diagram, that shows (in general) how a program works. An algorithm demonstrates what a program is doing, and reference to one can quickly clarify an artist's strategies.

Problems inherent in this approach include the following: (a) A decision must be made as to how detailed an algorithm one wants to create: too much detail leads one again to examining splices, and too little detail might miss the most interesting aspect of an artist's work. (b) The algorithm is not the experience of the program, just its logic. The algorithm may inform one's experience, even help a viewer leap from experience to perception; but it certainly does not replace that experience. It is A tool, not THE tool.

2. CAN WE DIVIDE PROGRAMMERS INTO THOSE WHO ARE ARTISTS, AND THOSE WHO ARE NOT? HOW ABOUT DIVIDING THE PROGRAMS INTO THOSE WHICH ARE ARTWORKS, AND THOSE WHICH ARE NOT?

Many readers will be familiar with a range of personal computer programs. Such programs include: space-war games; construction sets; adventure games; simulators; utilities; animation, music, and paint programs. Are the programmers who have created new utility programs, or construction sets, or animation programs computer artists (as suggested by a massive advertising campaign by Electronic Arts, a program development company); or are these folks working as technicians, with the users of these programs creating the artwork. Or again, will we find the artist in the person who specifically programs works of art?

Such questions are not currently in vogue; however, when considering computer art, pursuing them may clarify some of the mystical nature of the hacker, the person who builds computers in his or her garage, and the dabbler who weaves a mystical web of technological breakthroughs into a text about a simple program. Not every programmer is a Cassandra. Not every program presents a breakthrough. Not every program is a work of art.

3. WHEN WE EXAMINE A COMPUTER-BASED ARTWORK, WE SHOULD ASK "WHICH ATTRIBUTES OF THE WORK WERE ASSIGNED OR MANIPULATED BY THE ARTIST, AND WHICH WERE DETERMINED BY THE HARDWARE AND SOFTWARE HE OR SHE USED?"

There are many elements that contribute to the final look of an image produced on a personal computer: the computer itself, the imaging hardware (printer, monitor, plotter etc.), the language used to program the computer (assembly, BASIC, PASCAL, FORTH, LISP etc.), any pre-written subroutines or programs used by the artist (subroutines to produce circles or ovals, menu structures, handle input-output functions, etc.). All of these materials contribute to the appearance and behavior of an artist's work, yet, for a naive eye, cannot be separated from the manipulation actually programmed by the artist. The problem is one of knowing what someone is actually manipulating, and to distinguish that from what someone is appropriating. This distinction informs you about the piece, and can go a long way to both demystify the artist, and to answer the question "What is the artist doing?"

4. A QUESTION SIMILAR TO NUMBER THREE IS, "WHAT WAS THE SENSUAL INVOLVEMENT OF THE ARTIST?"

Contemporary artist Christo exemplifies the artist-as-manager. He himself does not create art objects, rather he manages projects that lead to their creation. This is as opposed to an artist who manipulates materials him or her self, like mixing up puddles of paint. This distinction, which seemed unimportant to me while attending art school in New York in the '70's, has come to be more important as I've held both producer and manager's roles in business. The manager's role is more abstract, more conceptual than the producer's, and it is much more involved in social and political networking than in any direct exploration of media.

The role of a television artist is much more conceptual and political than that of a video artist; that of a Hollywood filmmaker much more so than a personal filmmaker. The same holds true in computing. As the scale of a medium reaches beyond that of the individual, sensual, immediate encounters with the medium are supplanted by encounters with financing, government, and society. Something is lost when something is gained. A move to larger scale doesn't simply extend the domain of the artist: it also amputates a realm of his or her experience.

Programmers who work in large groups to produce giant programs--such as those at Lucas films, or several others mentioned in my previous article(3)--are not involved with a personal medium. This is truly corporate art, and just as Hollywood directors were not capable of exploring the medium the way experimental filmmakers were, these people cannot create programs with the integrity of an individual programmer. They will do other things. These will be important things. But when personal computing is developed on the scale and depth of the work of a Stan Brakhage or Michael Snow, of a Nam June Paik or a Bill Viola, these people will not provide its source.

5. WHAT AREAS IS COMPUTER ART EXPLORING, AND WHAT AREAS WILL IT EXPLORE IN THE FUTURE?

We will need to tentatively answer question #2 before we tackle #5. On the other hand, some people receive grants because they are computer artists, or otherwise refer to

themselves as computer artists, so that we can begin to answer such a question, even if a final answer is delayed (I find it difficult to imagine what reaching a final answer to this would mean).

There are plenty of articles that posit what tomorrow's art will be like. I would like to mention two related areas: those of AI (Artificial Intelligence) and human-computer interaction.

Two things that have held back the development of the area of Artificial Intelligence: the lack of a visually-oriented, well-implemented AI language on a personally-priced computer, and the memory/disk capacity of the personally-priced computer. Artists will produce programs that will adapt to the knowledge, attitude, cognitive strategies, or personal behaviors of the viewer/participants. AI promises programs that will inform themselves both of the nature of the individual and the changing nature of the culture, and change their own code in order to adapt. Of course, what will actually mature will be our model of adaptation used to structure the program.

The human-computer interaction has been a major area of exploration for the last five to ten years (4). Scientists at Xerox PARC and MIT have developed hardware and software systems that extend the tools for such interactions far beyond the ASCII keyboard, or the mouse with pull-down menus currently popular on the Apple Macintosh. These new tools include context-sensitive voice recognition devices; systems that track a person's gestures and eye movements as indicators of meaning; methods for encoding information spatially to allow for ease of comprehension; and electronic books that instantly conform to the user's reading style and needs. The technology will redefine the concepts of both text and reading. And it will destroy old models of the self, as it melds the person's senses with those of the computer.

6. ONE LAST QUESTION: IS THERE ANY IMPORTANCE TO ONE'S CHOICE OF ART MEDIA, IS THERE ANY BASIS FOR SPENDING OUR TIME WITH COMPUTERS RATHER THAN PAINT?

Cognitive psychologists suggest that we act on our models of the world, as opposed to the world itself. This modeling is imbedded in the words which gave rise to the word aesthetics:

"Writers since Baumgarten have traced the historical development of aesthetics from its pre-Socratic origins to the present century, but it is rare to find etymological references. Actually, Barrett provides a partial explanation. 'Theatre' and 'theory' are derived from the root THEOREIN, however, Barrett does not mention the Greek verb, AIO (10th century B.C.), which refers to feeling. It is from AIO that the terms AISTHESIS and AISTHETIKOS developed. AISTHETIKOS - I feel by means of my senses; I understand; I recognize, I comprehend(5).

Two obvious components of AISTHETIKOS are the self (I) and the other (theory or theatre). It is exactly the distinction between these two concepts that computers are

blurring. In today's world, computers are much more responsible than paint, clay, or even print for destroying the relevance of our models of self, as well as our models of the world. The people who are producing the hardware and software that are destroying these models are not necessarily the people who will produce new ones. That is left up to the artist, and the critic. Without such models, we are reacting to ghosts, caught in a shower of experience uninformed by perception. We need to reinvent the critic, and we need to reinvent the artist--because technology has, and always has, destroyed our selves.

(1) Sergei Eisenstein, *Film Form*, translated and edited by Jay Leda. New York, Harcourt, Brace & World, Inc., 1949. *Methods of Montage*, p. 79.

(2) Linda Andre's article, "The Politics of Postmodern Photography" suggests that deconstructivist criticism, while effective when dealing with language, has been misapplied when turned to such media as photography. Is the problem that deconstructivist writing cannot take anything but language as its object, or has an attempt to do that simply not yet succeeded? Andre, Linda. "The Politics of Postmodern Photography." *Afterimage*, Volume 13, Number 3, October 1985, p. 14-17.

(3) Edgar, Robert; "Art and Technology," *Art Papers*, Volume 9, Number 5. September/October 1985, p.38.

(4) Two excellent texts in this area are *Searching for Information in a Dynamic Book*, by Stephen A. Weyer, and *The Human Interface*, by Richard A. Bolt. Both are heavily influenced by Smalltalk designer Alan Kay. These books summarize attempts to engineer computer systems around the perceptual and cognitive facilities of the user.

(5) Giordano, O. Charles, "After Art Education: Sources for Synaesthetic Education." in *Synaesthetic Education*, page 18. Syracuse University, 1971.
