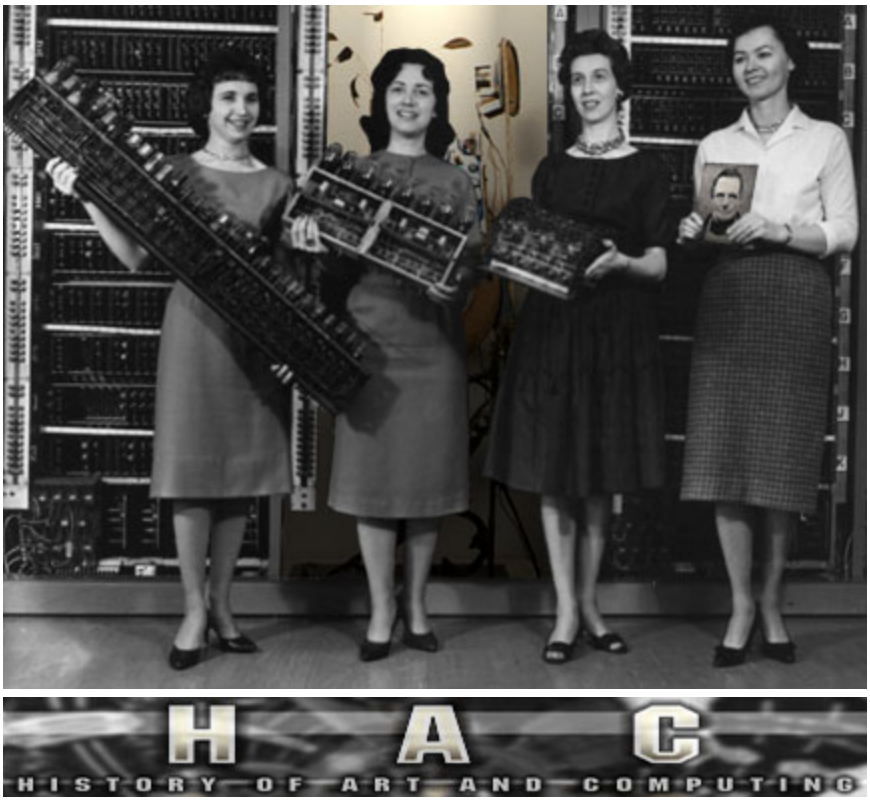
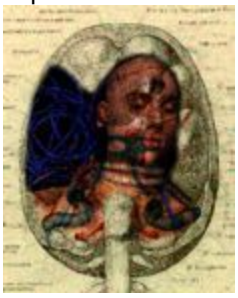


History of Art & Computing: Problems in Organisation of Logic and Memory

Victoria Vesna

Perhaps one of the most important characteristics of the rhizome is that it has multiple entryways.
(Deleuze & Guattari, 1987)

We are reaching a stage of development where each new generation is unaware of both their technological ancestry and the history of its development. The field of computer graphics in particular has attracted many artists and computer scientists who are mostly unaware of either the history of computing or the arts. Now that the two fields have fully converged, it is especially important for artists and computer scientists to be aware of the histories they build upon. History of Art & Computing (HAC) is



an outgrowth of a CD-ROM project entitled Computers and the Intuitive Edge (CIE) whose purpose was to provide undergraduate students with an introduction to computer graphics technology. The newly emerging field of digital arts — and I stress the word field — attracts students from a wide array of majors, with a broad spectrum of backgrounds. While lecturing to students in Art Studio at UCSB, I discovered that the majority of them were quite unaware of the history of the machine or of art. This lack of awareness of recorded past events is a large gap in their understanding the context they will be functioning in as artists using machines, or computer scientists collaborating with artists on projects. I began incorporating historical images of artworks and machines that preceded and anticipated the microcomputer into my lectures. As the image library grew, multiple parallels of seemingly opposite worlds started emerging, and as I made comparisons of these events, it became easier to contextualize the burgeoning work of digital media in contemporary culture.

Initially the project was planned to be published on a CD-ROM. One of the first tasks was to compile the images we were planning to use and make sure we could secure the copyrights. A company specialising in securing copyrights was contacted with the first fifty images we were planning to include.[1] The procedure of locating the owner of the copyright, establishing the price and acquiring a slide of each image proved to be frustrating, time consuming and very expensive. Most distressing was

the idea of limiting the storyline and the accompanying images according to the rights secured. This was very discouraging for the research that was yielding new results continuously, particularly on the Web.

The WWW turned out to be the richest resource for historical narratives that are largely unpublished and images that were not easily located. And most exciting of all, was the realization that the history of contemporary computing and art was writing itself ceaselessly on the networks, by many varied contributors. The links that emerged from this research became a much more compelling resource that was always in a state of flux with constant inflow of new information. Educationally, it is much more productive and exciting for students to explore their own hyper links and create a personal narrative rather than to follow a set story. Once the decision to switch from the CD-ROM authoring to the WWW was made, the project was released from constraints and pressures of devising a fixed narrative by a single author. The challenge became centered less around the narrative and the references and more around the design of the interface through which the information flowed where multiple authors may tell the story simultaneously.

BACKGROUND

1996 marks the 50th anniversary of the public revelation of the ENIAC.[2] Within those years the computer field has not only developed, but has added to it new ideas and concepts that have transformed it into an almost unrecognisable entity. Yet, it is most remarkable that the basic logical structure of the computer has pretty much remained unaltered since its inception. The enormous changes have come about from the realisation that computers processed information, not just numbers, and the inexpensive hardware that has made it accessible to the public at large. As Timothy Druckrey writes: "In a culture in which the logic of information has shattered any comforting notion of order, emerging non-linear signifiers become the ideology of an already operating transposition of epistemology. In this environment information comes as an array - it is no longer a sign of "schizophrenic" experience or expression, but rendering of an experience within a social logic of contingency." (1996)

The greatest challenge we encountered while developing the project was how to design the interface so that the user may navigate through historic narratives and compile their own version of historical data. [3]

The history of computing has a span lasting fifty years with a number of major events contributing to it's development that happened in the prior century. Personalities such as Charles Babbage and Ada Lovelace played a crucial role in the narrative. But, the story really accelerates, which may be the case for all fields, in the late sixties and early seventies. By 1969, it was generally recognized in the electronics industry that it was theoretically possible to use the new metalon-silicon (MOS) semiconductor manufacturing technology to put all of the function of a calculator on a single chip. There had been a few attempts to build such a chip. At Rockwell, a team under Michael Ebertin had constructed a primitive processor. So too had Fairchild (the company Noyce and Moore had left to found Intel), where a brilliant semiconductor scientist named Frederico Faggin had invented a new kind of MOS process called silicon gate technology. Intel quickly adopted silicon gate MOS and perfected it, a skill that would play a crucial role in the company's success. By February 1971, Fredercio Faggin had successfully designed the 4004 microprocessor, the world's first "computer on a chip", that ushered in a new age of integrated electronics. Meanwhile, think about the events taking place culturally — particularly in the arts. By then, artists have already spent a decade of experimenting with media, moving toward a dematerialized view of art that refused the object. Pop artists adopted the technology of mass media, most notably Warhol's use of the impersonality of mass-media techniques, video artists such as Nam Jun Paik experimented with the possibility of manipulating images in real time...think of the experimental sound work of John Cage, happenings and performances by artists like Carolee Schneemann and Kaprow, Roy Ascot's inspired writings of cybernetics and art and so on. In fact so many different ideas and mediums started taking place that it became almost impossible to create a linear timeline. Even the fashion dress codes (for women in particular) were scrambled. It could very well be said that with the advent of television, the general public's perception of historical events taking on a linear storyline was starting to get undermined, and with computers our world had revealed itself in it's full complexity as the quantum physicists had explained it a decade earlier. In the early sixties French structuralist and Post structuralist theorists such as Foucalt, Barthes and Lyotard anticipated this change in philosophical works that attacked the very concept of fixed meaning and feminists and cultural critics began to deconstruct the narratives of Western thought. At this time, McLuhan coined the "global village"...

In 1968, Pontus Hulten curated an exhibition at the Museum of Modern Art in New York that showed not only artwork that commented on technology but previewed computer and video as new media that would shake the exclusionary foundation the traditional art world was built on. That same year MIT established the Center for Advanced Visual Studies. It could be said that Artists and scientists, working in parallel until that point, connected and started collaborating. EAT was established by artists Robert Rauchenberg and scientist Billy Kluver and arranged for a competition for collaborations between artists and engineers. Artists started seeking ways to access equipment which was still very expensive and complicated to use. David Em was an artists-in-residents at the

California Institute of Technology's Jet Propulsion Laboratory, gaining access to software programs developed to create computer-graphic simulations of NASA missions in outer space. At the same time, many exciting events in the arts were happening largely without reference or knowledge of the technological revolution happening in parallel. Important activities by groups such as Fluxus would address all the issues that the microchip would bring to the forefront a decade later when the computer becomes an accessible tool to artists and part of every aspect of our lives. The late sixties and early 70's mark a point when the arts and sciences converge conceptually, and from that point on, these worlds come closer and closer together as the computer technology becomes more available.

Even with all the artistic and philosophical work deconstructing the idea of a single or unified story, in retelling historical narratives remain linear and fixed, regardless of the medium they take shape in. Any causal scheme applied to history is apt to have a large element of personal bias, and understanding of history has to be viewed as an effort of a mind conditioned by present culture. Even the most open-ended system reflects a certain point of view and philosophy about gathering data and how that information is then further disseminated. In the introduction of the widely used art history book, Art Through the Ages (Gardner, 1976)the bases of art history are explained by organisation into chronology, purpose, place of origin, artist, iconography, historical context. The book is concerned with plastic arts and completely omits the temporal arts — music, dance, poetry — while only briefly discussing performance, video, happenings, computers and many other innovative and important artists and events. Thus video art is reduced to few male artists and only a handful of women artists are mentioned, no doubt under pressure of feminist activists. This is a clear example of how linear history story-telling omits many branches of the narrative that usually end up forgotten if not erased from memory.

A major problem we encountered while brainstorming about the layout of HAC was how to integrate the existing historical narratives and create a structure that allows for comparative analyses. The recorded history of art in the last fifty years is filled with various movements that many times happened at the same time. On the other hand, the recorded history of the machine is relatively straightforward and linear. We may never know how many inventors in both arts and sciences never ended up recorded, and unfortunately we have to learn the story that has been established. It is well known that only a handful of women have been mentioned in the narratives until very recent records of extraordinary creative activities — there is no way we may resurrect them. But, we may be able to prevent the his-story being repeated by creating an infrastructure that allows for multiple stories to be told with multiple personalities highlighted and endless number possible links being drawn.

NOTES:

1. Note: Jane Dini, a Ph.D. candidate in Art History was working on securing copyrights with a company in New York. She also did a significant amount of image gathering in libraries.
Kenneth Fields, a graduate student from the Music department was responsible for researching the history of music and computing which became an important component of the interface. — Back

2. I am collaborating with Robert Nideffer on conceptualizing an interface that would allow for building a library while at the same time creating a structure for users to composite events. — Back

3. ENIAC — Electronic Numerical Integrator and calculator — developed at the University of Pennsylvania. — Back

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