**Teaching High TECHNE**
By Mark Amerika


## A. General Introduction

TECHNE is a practice-based digital arts research initiative that I founded as a newly hired artist-professor at the University of Colorado at Boulder. The TECHNE initiative develops innovative approaches to the invention of new forms of knowledge generally considered to be both artistic and scholarly. The invention of these new forms of knowledge are oftentimes manifested as digital art projects distributed over the Internet and come into being as a result of TECHNE participants interacting with emerging and converging new media technologies that are becoming more easily accessible to the public at large.

The evolving forms of digital art being investigated through the TECHNE initiative attempt to bring value-added meaning to a democratic society at once operating in a free market economy of goods, services, information and ideas. Faculty, students and research associates affiliated with TECHNE utilize both highly specialized and easily accessible hardware and software consumer applications to push the boundaries of artistic, scholarly, and scientific inquiry into areas not yet discovered.

A significant transition is underway in the culture of information. Information is now being artistically designed to transmit a more visually stimulating, interactive, and immersive experience that will port the User (consumer, reader, viewer, etc.) into a highly manipulated, digital environment that is changing so fast it requires a focused, practice-based research agenda to even begin learning the new kinds of investigative tools and conceptual frameworks required to properly analyze digital art as an emergent phenomena in the new media economy.


## B. Objective of the Study

The objective of this brief study is to develop an introduction to the conceptual framework for the TECHNE initiative and to generally outline some of the preliminary investigations already underway. These preliminary investigations are not the end-all be-all of the TECHNE initiative but rather serve as a conceptual marker pointing to the wider framework we wish to concern ourselves with.  Only after having built a coherent conceptual framework can we even begin to successfully launch the research initiative in its proper context.

The choice of research subjects, defining the questions that need to be asked, and enabling the development of methods as well as metaphors to properly address the issues that need to be analyzed within a "digital arts" conceptual framework, are all part of the TECHNE initiative as it looks toward future investigations and anticipates research results.

Setting a practice-based research agenda in the digital arts is a complex, intuitive process that depends on developing reliable methods of judging what the most valuable lines of inquiry are. The advent of the Internet as both a research and development tool and globally distributed network of digital art, has created great opportunities for artists and scholars to potentially evolve alternative lines of inquiry that will have critical ramifications in our culture, particularly in areas that investigate the way we compose, publish, exhibit, distribute and network these emerging forms of knowledge in a technologically-driven consumer culture. With this in mind, we think the following conceptual framework should

1. Create a set of parameters that enable us to both develop a long-term vision of the initiative as well as produce highly visible near-term results;
2. Provide enough flexibility so that we may invent progressive models of both digital arts practice and online publication/exhibition that highlight the ways in which the arts are now becoming more integrated into the information economy;
3.  Anticipate the utilization of cross-media platforms to embed our research findings in and in so doing change the way artistic and scholarly work is communicated and assessed in the field.

## C. Conceptual Framework and Preliminary Investigations

### 1. The Internet as Art Medium and Publication/Exhibition Context

By approaching the Internet as both a compositional and publication/exhibition medium, artist researchers in the TECHNE initiative are positioning themselves to conduct a network of digital art practices linked to other institutions who are similarly positioning themselves and their research agendas in various locations around the world. One of the main goals of TECHNE as an ongoing R&D platform focused on demonstrating the value of a practice-based research initiative is to have considerable influence on the way such initiatives and their findings are perceived and communicated as new forms of knowledge. It is generally assumed that these new forms of knowledge, packaged as interactive digital art, will alter the way we socially interact with each other as well as educate ourselves to perform in this dynamic, computer-mediated environment. The Internet is first and foremost a globally distributed network that enables various nodal points an opportunity to bring wider visibility to successful research discoveries made at various intervals throughout the creative process. These discoveries can be immediately published/exhibited on the Internet and under the right conditions, can attract a network of external links that will give the research work a more significant place in the attention-economy.

To this effect, we are positioning ourselves to take a leadership role as one of the first practice-based research initiatives at the state university level to reinvent arts education. TECHNE utilizes various new media technologies to create a more collaborative learning environment for students hoping to transfer their creative and critical skills-set into the new media economy. These students, looking to participate in a highly technologized, social process of self-motivated personal discovery and artistic invention, are now realizing that the creative process involves both online networking and real-time group collaboration.

TECHNE is being set up as a model unit to help students and other artist-researchers achieve these goals.

### 2. What Is TECHNE?

The name TECHNE comes from the Greek use of the term techne to mean both art and technology, especially as it relates to practice and application ("to make or do").TECHNE enables its faculty, students and research associates to utilize both highly specialized and easily accessible hardware and software applications to further demonstrate the value of building more interactive, digital art projects while critically analyzing their place in the world. Research projects are varied and investigate many contemporary subjects whose cultural implications bring to light the growing interdependency between the arts and sciences. The current environment of rapidly developing new media technologies enables committed researchers in both the arts and sciences to facilitate the discovery of new forms of knowledge.

Subjects explored in recent and current investigations in the TECHNE initiative include web publishing, digital narrative, PDA art, wireless networking, interactive cinema, artist ebooks, JAVA applet art, biotechnology art, motion picture graphics, Internet radio, data visualization, DVD with surround sound installation, online art and the exhibition context, hyperimprovisational DJ/VJ performance, parapsychological and paranormal uses of telecommunications technology, GUI art, 3-D multi-user game environments, the history of multi-media art in relation to both computer science and art practice, generative art, programming or code art, database aesthetics, and practice-based research as creative process.

Many of the digital art projects being researched at TECHNE require a team of student producers whose creative and critical skill-sets vary. By giving the students an opportunity to both share their creative and critical strengths in a collaborative work environment while simultaneously enabling them to learn new skills from their peer network, TECHNE breaks away from the "individual artist as genius" model generally associated with art and creative writing programs and focuses more on practice-based research and development skills that are more easily transferred to the rapidly transforming job market in both the high-tech industry and academia. Whereas TECHNE is not a graphic design factory that spews out scores of entry level computer design workers as a way to meet industry needs, the initiative does recognize that technically-proficient students with exceptional creative talent and critical decision making skills are likely to be more competitive once they graduate from our program. With this in mind, many of the creative research projects initiated at TECHNE are loosely tied to a collaborative, process-based learning (PBL) model that requires rigorous intellectual activity among the participants.   Some recent examples of PBL projects investigated at TECHNE include:

• how to create a multi-linear digital narrative that incorporates various media into its interactive structure (motion graphics, sound, text, advanced scripting languages, etc.)

• how to exhibit multiple works of Internet art in an online environment as well as create an educational context that focuses on the creative, theoretical, and historical relevance of the curated art works by showing how they can be related to and/or differentiated from other, more traditional media such as painting, film, or novel writing
• how to innovatively implement new media publishing and distribution technologies that challenge older economic models of print production with particular emphasis on reconfiguring our notion of the terms "writing" and "reading" as they relate to recent developments in such areas as portable Ebook readers, PDA readers, HTML, XML, PDF, Flash, Open Ebook Standard, and mp3 audio books
• how to create customized user interfaces and back-end database programs that are focused on issues such as site navigation and program functionality in relation to the digital art work as both a new form of visual art as well as a near-future model of network distributed, interactive, "edu-tainment"
• how to theoretically articulate, via both visual design skills and critical language skills, a justification for making work available online while taking into consideration the ease with which data becomes part of an open source networking environment that challenges standard notions of copyright and intellectual property
• how to experiment with the Internet as a live and online open-platform performance space for creative expression and action investigating the interrelationships between digital design literacy, multi-media narrative, performance theory, and information architecure in the context of a global webcast
• how to critically assess the new forms of knowledge being developed for the new media environment and how to begin developing robust, highly flexible, collaborative web sites that communicate our critical research findings to the Internet audience, particularly our national and international peer institutions whose evolving research agendas may complement our own


## 3. Art / Technology / Pedagogy

*"The term 'intelligence amplification' seems applicable to our goal of augmenting the human intellect in that the entity to be produced will exhibit more of what can be called intelligence than an unaided human could; we will have amplified the intelligence of the human by organizing his intellectual capabilities into higher levels of synergistic structuring."*

Douglas Engelbart, "Augmenting Human Intellect: A Conceptual Framework"


Augmenting the human intellect and its capacity to invent new forms of knowledge requires a more technologically sophisticated experiential learning environment. Part of the reason for launching the TECHNE initiative within the Department of Fine Arts at CU is to provide this technologically sophisticated learning environment for both Graduate and Undergraduate Fine Arts students so that they can participate in a computer-supported, collaborative work space that prioritizes group networking and peer evaluation as a major part of the creative process.

Creating breakthrough digital art, design and performance requires a new approach to pedagogy and TECHNE is already applying these new process-based learning methods to its curriculum. Our aim is

• to create a practice-based research initiative that augments the human intellect by providing faculty, students, and research associates with a customized learning environment equipped with the latest new media technologies
• to prioritize the use of these new media technologies as tools to assist us in the invention of new forms of knowledge manifested as digital art
• to use this customized learning environment to create innovative approaches to pedagogy
• to facilitate the development of a "best practices" model for digital arts research and development within a higher education context

The TECHNE learning environment is partly facilitated by the ongoing development of the Experiemental Digital Arts Studio (EDAS) that enables us to integrate the latest new media technology into the curriculum while foregrounding the use of easily accessible consumer hardware and software applications. The lab presently has 35 Macintosh G4 computers with 15-inch flat screen monitors, all of the latest web-based software tools, one data projector, stereo speakers and amplifier, a scanner, and a CD burner. We also recently purchased a 50" inch Plasma Screen. We have also begun building a space we call the Audio Studio which currently has two powerful personal computers, a midi-driven keyboard, a professional microphone, a Roland mixing board, and a customized software set for each computer and specificallly constructed for both beginning and advanced audio production needs.
We are presently in the process of building a new space we will call the Digital Narrative Studio.

Our primary aim in building this technologically sophisticated creative lab space is to create a state-of-the-art R&D digital arts lab that will help us fulfill our research goals mentioned above as well as enable our best students to begin developing a digital arts practice that will serve them

well in all of their future pursuits, whether they be artistic, scientific, academic, commercial or purely technical. The standard loadset of software tools used to create work made to be distributed over the Internet are available in the main lab area on all of the individual workstations. The skills acquired when using the set of new media tools available in the TECHNE experimental teaching lab are easily transferable to the marketplace and set our students up for the career path of their choice.


4. Histories of Internet Art: Fictions and Factions

In the History and Theory of Digital Art course that I teach at the University of Colorado, students explore the early developments in computer-based art making that have enabled forward-thinking and experimental artists to create works of art previously unimagined. Issues and topics explored in this course include:

• the evolution of the computer as an artistic tool
• how to use the Internet as a research and development tool as well as a compositional/publication medium
• where to locate web-specific works of art and how to effectively critique these works of art
• how to curate an online exhibition
• how to respond to the contemporary state of the digital divide
• the history and practice of hypertext before and after the World Wide Web
• the gender/technology interface
• the growing debate revolving around intellectual property, copyright, peer-to-peer networking, and an online creative commons
• how other artistic media, especially painting, photography, video, and literature, as well as the work of contemporary media theorists, enable us to place the emerging forms of digital art in their proper historical and aesthetic context

Students in the History and Theory of Digital Art course have built their own large-scale, database-driven, website called "Histories of Internet Art: Fictions and Factions" (HIAFF) which is presently located at http://art.colorado.edu/hiaff. This enormously successful web site has now been adopted by a number of professors in various institutions around the world as a key online art history resource. The site features

• student conducted video and email interviews with some of the most important digital art practitioners working today
• a student-curated exhibition of Internet art
• a student-developed section devoted to new media theory
• an area featuring new art work produced by the students themselves

In my introduction to the site as faculty diector, I described the site as an "ongoing exhibition showcas[ing] a student-designed web interface that takes readers to online art work created by both internationally celebrated and emerging Internet artists. The site also provides much-needed original content to help contextualize the sudden rise of Internet art into the mainstream art world." One of the key components to an activist, networked pedagogy, is that students are able to immediately participate in the attention economy provided by what Castells calls the networked "space of flows." There is no longer a linear progression or top-down hierarchy that separates a distant and canonical art history from the student-observer. Instead, *the student is encouraged to create an alterantive history-in-the-making by engaging contemporary practitioners of net art in a discourse about the qualities of the medium itself while using this very same medium that the artists work in to facilitate the dialogue of research and discovery*. In an interview with German media theorist Roberto Simanowski for his book *Interfictions: Vom Schreiben im Netz* (Edition Suhrkamp), Simonowski asked me "How is it when a net artist becomes a professor of net art?", I responded

"The very notion of an engaged net art practice focused on digital narrative and theory in cross-media platforms challenges our conventional assessment of what a certain kind of work or cultural production actually is. This kind of practice is very conceptual and interdisciplinary and requires a flexible approach to being a teacher or, as the case may be, "academic." I'm not a typical academic in the true sense of the word, but then again, many artists who are Professors are not true academics. What we share with the academic and scientific communities is changing, though. The more collaborative, computer-supported work environments that were known to be available only to computer science and engineering students are now the very models that I, as a Professor of Digital Art, am exploring in my new role [...]"

I went on to say that I think it's quite important for students to feel like they have a certain amount of control over the distribution of their work. Traditionally, students have a rough time finding exhibition contexts for their work and it is often not taken seriously. Part of the problem is the lack of physical space or just finding a proper venue. But with digital art, they are finding that they can immediately exhibit or publish their work online and that there are potential audiences out there that may be willing to engage with their work.

The realization that comes with this eureka moment of discovery for the student is crucial because it forces the them to rethink their role as artist in culture. For example, just because you can put anything online, does that mean you should put all of your work up there? What is the context for your work when it goes live on the web? And then there are issues of copyright and participating in an attention-economy where the pay off may not necessarily be money since most things put on the web are given away for free.

The HIAFF site grows exponentially because all of your student colleagues are doing the same thing, but with different people, different artists or theorists, and these threads start overlapping, intersecting, playing off of each other. A network is born -- or emerges -- or converges, and it feels like art history is not so much a thing of the past but a thing in-the-making. Soon, you have an instantaneously delivered multi-linear thread of narrative-potential being practiced as a form of social networking or online dialectical materialism. It's much more valuable than just earning three credits toward your diploma.

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