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lmost from the very first moment Lthat images went out over the Web, artists began to look at the Web as a space that could be colonized for art. The infinite real estate of the Web has been swiftly invaded, initially by artists carving out personal "galleries" for their still images, but increasingly by individual and collaborative works made specifically for the Web. This rapid migration of artists and their artwork onto the Web calls to mind images of the land rush in the old West and those old movie panoramas of wagons lined up at the starting line, the sound of the gun, and then the mad dash to stake out territory. Or as the late free jazz artist Sun Ra might

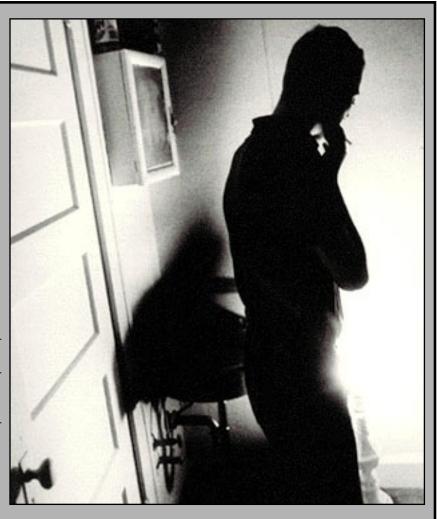
have said, "Webspace is the art place."

For many artists, the Web is not just a vehicle for viewing or distributing existing art —like other kinds of Web commerce, art collecting via the Web is more wishful thinking than reality—but a viable art mechanism with particularly distinct characteristics. The shift from making artwork available on the Web to utilizing the Web as a dynamic artform is evident, as the "gallery" metaphor is extended by a variety of approaches that exploit the inherent characteristics of Web-based communication. Web-specific artwork and art sites have fostered a seamless environment in which the boundary between the artwork itself and the

AD319

The Web projects of ad319, a collaborative art research group based at the University of Illinois at Urbana-Champaign, include a spectrum of activity related to digital tolls and their impact on making, viewing, and distributing art. The group's concerns led to the development of one of the first "curated" Web art galleries, "@art gallery." This gallery is maintained by Nan Goggin and Joseph Squier at www.art. uiuc.edu/ad319.

Being trained in traditional mediums, the members of ad319 attempt to embrace new digital technologies. The idea of working as a collective seemed an effective way to pool knowledge, and an efficient means of addressing the issues we face as contemporary artists, designers, and educators. @art gallery is one outgrowth of this collaborative approach. This project creates a moderated virtual gallery space on the Web that focuses on work created specifically for



Art from the "Raised by Wolves" exhibit

the medium and tries to determine whether experiencing art on the Web is emotionally and intellectually fulfilling.

The current exhibition is Jim Goldberg's "Raised by Wolves," which is being presented in conjunction with the recent exhibition of the same name at the San Francisco Museum of Modern Art. While the museum exhibition includes video and installation elements, the Web portion was drawn predominantly from the book version of the project. For 10 years Goldberg spent countless days and nights with teenage runaways in San Francisco and Hollywood. "Raised By Wolves" is the powerful and poignant story of those years with searing dialogue and images that capture a world in which "things aren't always what they seem, and history is, in the end, just a bag of tricks."

space it inhabits vanishes. In examining some of the inherent elements of Web-based artwork, it appears that though individual works of art may be very disparate, some recurrent threads emerge. Among these are the dissolution of boundaries and the spatial envelope surrounding a work, the tension between image and text, a heightened sense of audience, and a lively exploitation of Web design and networking mechanisms turned back on themselves and into art. This article describes these con-

ventions, and the accompanying sidebars present some Web sites and projects.

Some Web Mechanisms

Web art is different. Almost as different from interactive art on CD-ROM or other screen-based media as it is from still image, installation, or video. The essence of this difference resides in the mutability of these works, the absence of discrete boundaries between parts of a work or among works, and the

alteration of the work through the actions of author or viewer. The actual process of transmitting information, and the exploitation of interface and browser operability are factors as well.

Compared to the fixed quality of a sculptural object, or data trapped on a CD-ROM, Web-based art is tremendously fluid. There is little sense of central focus. Instead, pieces appear as aggregates of autonomous segments with little hierarchy. Pages may be fixed or spontaneously generated, viewed in varying sequences, or served up in response to filling out a form, so that the piece is created or modified by a viewer's interaction with the site. Each participant may see a different work; there may be no definitive version of an artwork, just many open-ended ones. Duration is also affected, and given the constraints of attention span and bandwidth, an interaction may be measured in seconds, minutes or (much more rarely) hours.

Web-based artwork need no longer have discrete borders. A viewer can enter or click away at any point, so that external links—even completely extraneous ones—can become part of the experience. The envelope of space separating one work of art from another or from a discourse on art or from an online ad for a travel agent is shattered; another entity or experience is just a click away. The shedding of the object and the perception of boundlessness not only dissolves the margins of virtual real estate, globally and locally, but it also erodes the margins between widely different kinds of net real estate—art venues, research resources, games, online magazines, or corporate sites all begin to share some of the same attributes. The perimeter between art, entertainment and commerce is permeable.

If fluidity and boundlessness provide the excitement of openness and expansion, the characteristi-

Adaweb

One example of a Web site that specializes in presenting artwork made specifically for online viewing is adaweb (adaweb.com). Adaweb defines artists whose work may be extended online in an interesting way, commissions new artwork, conceptualizes new online projects with artists and often insists with the implementation on the site. John Simon, an artist with an extensive background exploring and utilizing new technologies, is one such artist.

From Simon's perspective, a Web-based artwork can present more than a hyperlinked document by creatively extending the mechanisms that structure participation in a client/server environment. To this end, the various mechanisms that could be used are: the creation of original content through submission of information, initiating and documenting ongoing dialog both on and off the Web, and creating images and new links based on navigational decisions.

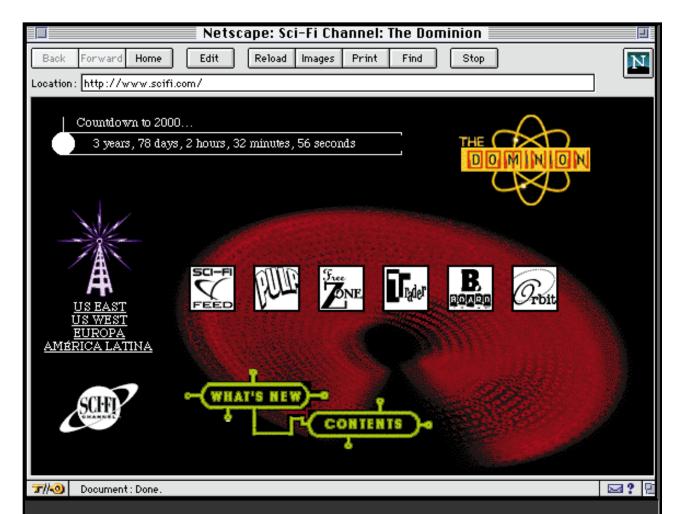
Simon's recent project, "Every Icon," is an automatic image generator that uses a simple set of instructions. Given: a 32-by-32 grid; allowed: any element of the grid to be black or white. Every Icon progresses by counting. Starting with an image where every grid element is white, the software displays combinations of black and white elements, proceeding toward an image where every element is black.

Owner: Stadium Edition Number: Web Site Installation Starting Time: March 1, 1997, 1:00:00

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"Every Icon," in progress at www.stadiumweb.com

Within these simple constraints, can a machine produce every possible image? What are the limits of this kind of automation? Is it possible to practice image making by exploring all of image-space using a computer rather than by recording from the world around us? What does it mean that one may discover visual imagery so detached from "nature"? In contrast to presenting a single image as an intentional sign, Every Icon presents all possibilities, yet the contrast between the rapidly changing image and the unimaginable passage of time before all possible images could be created (several hundred trillion years) is stunning.



Sci-Fi Channels' Dominion site

The Dominion

The Dominion (www.scifi.com), the award-winning Web site of the Sci-Fi Channel, has become the venue for everything from science fiction news to collaborative narratives and interactive, multi-user games. Designed by Sharleen Smith, new technology director of USA Networks and executive producer of "The Prisoner Online," an experiment in interactive TV (ITV) programming where viewers teleneted into Echo BBS "chats" which in turn were incorporated into the broadcast, has led the Sci-Fi channel to develop additional experiments in ITV. The Dominion occupies a unique position between art and commercial sites. Given the rising complexity and cost associated with development of compelling Web sites, the Dominion is perhaps unsurprising in that commercial sites have become the essential point of reference for the cutting edge. For now, corporate America is in a unique leadership position. This role is not easy, especially in an arena where marketing and promotion often conflict with the promise of interactivity and user empowerment. The most popular commercial sites are those with content particular to this medium that offer users unique experiences not possible elsewhere.

The synergy between form and content is where the real experimentation lies. It is the symbiotic efforts of the commercial with artists in cross-disciplines that will bring about the revolution in communication this medium promises. The elements that ensure a successful commercial site are those with flexibility, interactivity and great user input . . . very different approaches from traditional media.

The META Animation Project

The METAnimation Project (www.thing.net/ clay) is an extensive, fast-moving, interactive Web "poem" designed by Clay Debvoise, an artist most known for his images made of words. His work expresses human spirit and intelligence through "digital" communications, if not always with digital means.

The MetaAnimation Project consists of calligraphic images made of words anchoring 45 animations (about 10 pages each) that use the HTML meta/refresh tag to automatically go to another page after a proscribed pause. The animated pages



A frame from the MetaAnimation Project

consist of words from the image on which they are based, and use the colors of that image. If a viewer just lets an animation play, it leads to the image on which it is based. But several words on most pages are linked to pages in other animations (about 1,000 links), so a viewer can try to click on a link before its page flips by and so follow variable pathways among the 450 animated pages, each a "concrete poem."

Because words (themes) recur and links in the animations are based on such repetitions, the transition between animations often seems seamless and the whole space may be experienced as an extended, interactive poem. Once engaged in the "game" of catching links there is a tendency to get caught up in it: aggressive clicking catches a player in "whirlpools" of repeating page sequences (some of the animations are also scripted to cycle until the viewer clicks an available link). Such a journey is occasionally punctuated by arrival at a page with one of the 45 images. Here you can click on a pop-up menu below the image to see a list of the words in it (and in its animation). Or click on the image, itself, to enter or re-enter the METAnimation space.

cally brief, sporadic, and interrupted nature of viewing Web-based work contributes to the quality of fragmentation that emanates from many of these projects. These elements radically alter our perception of an artwork into something more plastic, less closely defined, more open to varied interpretations, but perhaps constrained by shorter attention spans and the seductive magnetism of the next site.

In traditional art, one looks at the interrelationship of form and content; in multimedia art the interface usually cues you to the content of the piece. On the Web, interface does not act as a facade or a portal to the content, but may directly determine the structure and character of a piece. The logical structures of HTML—whether as tables, forms, frames, animated gifs, multi-user software or mechanisms not yet invented—each with their own eccentricities of loading and transmission, dictate look and timing, and influence interaction.

In this interface-driven environment, the process

of transmission becomes part of the artwork. Watching and waiting while images load and suffering the constraints of bandwidth makes the flow of information tangible; some artists make this ostensible disadvantage part of their work. David Rothenberg, editor of *Terra Nova*, wrote about leveraging this slowness [2]. Why not use it to foster meditative practice, instead of cursing the bandwidth and feeling as if you're on hold?

One effect of bandwidth constraints has been to foster text-based work. While the rush to Web space was spurred by the seduction of transmitting images, the frustrating slowness of image, sound, and video delivery has lead some artists to text and data-driven artwork and resulted in an new interest in narrative and storytelling pieces. From hypertext novels to personal narratives to language-generating automatica to fragmentary word pictures, online narrative and storytelling play to one of the Web's inherent strengths—a special connection between artist and audience.

Audience

While an aspect of Web art spaces is the keen sense information is being pushed or pulled through space to the viewer, as an artist one has an almost palpable sense of the presence of audience. A painting or sculpture, as an object, has independent physical existence, but files on a Web server wait to be called into being. The Web offers experience, not object, and the viewer is the participant in that experience. William Gibson said that the Web reminded him of fishing, not of conversation [1]. Yet this metaphor is open to an alternative interpretation. Is the viewer a fisher casting a line into virtual space, then reeling in some bit of information, or a fish, being hooked and pulled into a special space?

Undoubtedly, part of the appeal of the Web as a site for art has been the opportunity for direct contact with a viewer, the lack of mediation by established art venues, and the serendipitous promise of real interaction and feedback. For many artists, the move to Web space has meant a chance to circumvent established gallery venues and formats and establish a connection with a new, broadly based audience. For many artists exhibiting in traditional venues, feedback on the work comes from an art world circle of friends, colleagues, critics and collectors. Much contemporary art activity is narrowcast, with small communities with similar interests highly defined within the (slightly) larger context of the art world. Unlike the self-referential dialogues of much contemporary art, the response to work on the Web typically includes a wide range of communications from strangers that brings in an extraordinary breadth of experience and ideology. This response is different in both quantity and quality. The "inadvertent" audience for art on the Web is eager to connect with the work and exchange comments and personal narratives. This kind of connection to a new and engaged audience has a rebounding effect on the making of art. The imaginary viewer—the cyberspace version of the author's "ideal reader" becomes a presence in the creation process and a kind of partner.

Some Reservations

The presence of art on the Web has opened up some unique possibilities for art, yet many questions remain. What kind of work successfully exploits the decentering and fragmentation of this form? What is the effect on work with a high degree of abstraction, private language or symbolism? Is there room for work that is "slow" and takes time

to "read" or decode? How can a complex work effectively "cue" the viewer to emotionally deep involvement in such a rapid-fire medium? Will the Web be inviting to profound and meditative works or a space for quick hits and one-liners? These questions are still to be answered.

Although many questions are still unanswered, the scope and variety of work continues to broaden. With the integration of VRML plug-ins into the popular browsers, projects that examine 3D spaces are coming online, and the increasing use of streaming sound and video and remote interaction are transforming the level of Web-based interaction. As the sites become more complex and demanding of both bandwidth and user interactive and time, one almost has to say, "So many Web sites, so little time!" The necessity of filtering through the competing demands of so many voices will be likely to lead us back into a gallery-like hierarchy of sites ordered by ideology or interest, and some of the serendipitous discovery will be

This is a time of tremendous activity and fermention for Web-based art. Within this fast-growing venue for new art, an active laboratory for narratives, graphics, and media integration is being shaped. The evolving environment of the Web provides a unique challenge for artists to explore these conjunctions of cyberspace, media, and audience feedback. The speed of development, the accelerating complexity of the development environment, and the interaction among fine art and commercial site developers and their audience(s) has resulted in a complex synergy with echoes far beyond the boundaries of the art world.

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