Chapter II: Interfacing New Media

Challenges for a Ubiquitous Museum: Interfacing New Media--From the White Cube to the Black Box and Beyond

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New media art has inspired dreams about our technological future, among them the dream of reconfigured of museums and art institutions. New media art seems to call for a "ubiquitous museum" or "museum without walls," a parallel, distributed, living information space that is open to artistic interference--a space for exchange, collaborative creation, and presentation that is transparent and flexible.

So far, this dream remains mostly wishful thinking, but there is no doubt that traditional art institutions must transform themselves if they want to accommodate new media art. A museum wanting to integrate new media art must "interface the digital," a process requiring the development of presentation formats and exchanges, between institutions, curators, artists, artworks, and audiences. Many curators and other practitioners in new media seek to "teleport" the art out of its ghetto and introduce it to a larger public.

Challenges of the Medium

Each of the distinguishing characteristics of the digital medium--all of them do not necessarily surface in a work and they occur in varying combinations--
seems to pose its own set of challenges. New media works are time-based and
dynamic, interactive and participatory, customizable and variable. Time-based
projects that require an extended viewing period are not necessarily medium-
specific, applying to video works and performances as well as new media works.
Performances have long been an exception, not the rule, in the mostly object-
based art world. After approximately three decades, video seems to have
established a safe place in the art world, but the museums’ relationship to
performance, sound art, or "non-material" art forms remains problematic. While
an artwork that needs to be experienced over an extended time poses a
challenge per se, the time-based nature of new media art is far more problematic
than that of film or video, which ultimately still presents itself as a linear finished
"product." New media art, however, is potentially dynamic and non-linear: even if
a project is not interactive, the viewer may look at a visualization driven by real-
time data flow from the Internet that will never repeat itself or a database-driven
project that continuously reconfigures itself over time. A viewer who spends only
a minute or two with a video in a gallery space does not have an optimal
experience, though that viewer at least glimpses and gets a brief impression of
the project. Spending the same time with a new media project often reveals
much less: the viewer might see only one configuration of an essentially
nonlinear project. The context and logic of a particular sequence remains
unclear. Every art project is embedded in a context, but viewers of new media
works depend on contextual information: about the data (in the broadest sense)
being shown, where it is coming from, and the logic by which it is configured.
Potentially interactive and participatory, new media art allows forms of navigating, assembling, or contributing to the art work that go beyond the interactive, mental event of experiencing it. Suddenly the common plea of the museum not to touch the art no longer applies, but large segments of the audience still hesitate to engage physically with the artwork in a gallery space. Moreover, most new media art requires familiarity with interfaces and navigation paradigms. Even though computers seem to have become more or less ubiquitous, one can not presume that every member of an audience will be an expert.

New media art requires platforms of exchange—between artwork and audience or the public space of a gallery and the public space of a network, for example. Practical challenges include the need for continuous maintenance and a flexible and technologically equipped exhibition environment, which museum buildings (traditionally based on the "white cube" model) cannot always provide as well as conceptual issues and a continuing need to organize educational programs for audiences to make them more familiar with this still emerging art form.

Models of Presentation: From Installation to "Mobile" Art

For a museum or new media organization, the process of installing of a work does not begin when the piece "arrives" in the gallery. The agreements and loan forms specifying what will be shipped and shown are an important first
requirement for organizing an exhibition and, in the case of new media art, have led to considerable confusion. New media installations often have physical components that need to be delivered to the museum or built on site according to specifications. Other aspects of a loan are highly negotiable: in most cases, the organizing institution supplies computers, projectors, and other technology, and artists install their software on the machines and/or configure the work; yet some artists have dedicated computers for specific works and prefer to provide the project as a whole since they have invested considerable time and energy in setting up a fool-proof system.

Many of the categories on the traditional loan form are inapplicable to software and Internet art. What are the "dimensions" of the work? Many new media artists have argued that the closest analogy to dimension is in fact the screen resolution of a work (for example, 1024 x 768 pixels). The frame (of a painting) would correspond to the size of the monitor or screen, which usually depends on the institution's budget. The same work could be shown on either a nowadays cheap 15-inch monitor or an infinitely more expensive Plasma screen with no effect on the quality of the work itself, although the Plasma screen usually makes a project look more impressive.

When Internet art is being shown as part of an online exhibition, the traditional agreement seems even more outdated: the "loan" ultimately consists in the permission to establish a link to the artist's web site. The ephemeral nature of this transaction has occasionally led institutions to assume that they need no permission at all to include an online art project, because linking to someone's
web site is common practice and one of the inherent features and purposes of the WWW. In some cases, artists have learned of their inclusion in a show when a search of their name on the Internet revealed it. The practice on the institution’s part is highly dubious and unethical. There is a profound difference between individuals who feature links to their favorite art projects on their web site (in the "cool sites" section) and thus make a recommendation by sharing a personal selection; and an institution that includes a work of Internet art in an online exhibition based on a curatorial selection process and thus officially contextualizes it. One could argue, if in strictly legal terms, that online art projects are in the "public domain" and thus do not enjoy extensive protection, nonetheless organizing an exhibition without obtaining artists’ permission to include their work demonstrates no great respect for either the artworks or their creators.

*Installation Models*

Presenting new media art in the museum or gallery space always recontextualizes it and often reconfigures it. Installations of digital art already create a distinct presence in physical space and sometimes need to be installed according to specified measurements (of height, width, lighting, etc.) The variability and modularity inherent to the medium, however, often mean that a work can be reconfigured for a space and shown in very different ways. Variability enables a fluent transition between the different manifestations a "virtual object" can take: the same work might be presented, for example, as an
installation or projection, or in a kiosk. Ultimately, the physical environment should be defined by what an artwork requires. It is important to establish a connection between the physical and virtual space.

Digital technologies make us reconsider our traditional notions of space and architecture, and many efforts are currently being made to translate the characteristics of virtual spaces and information architecture into physical space. In an art exhibition, the connections established between virtual and physical space, which ultimately affect the aesthetics of the work, should be decided collaboratively by the curator and artist(s).

Traditional presentation museum spaces create presentation models that are not particularly appropriate for new media art. The white cube creates a "sacred" space and a blank slate for contemplating objects. Most new media art is inherently performative and contextual--networked and connected to the "outside"--and often feels decontextualized in a white space. The black box, the preferred space for film / video projections and installations does not necessarily provide better conditions. Unless new media works depend on specific lighting conditions--because they incorporate light sensors or create an immersive space--they do not require darkness. Pieces can be shown just as well in a lighted gallery space, though that may require extremely strong projectors, which are too expensive for many institutions. Developments in exhibition technology--holographic screens, laser-readable glass plates, and so forth--have broadened the options for presenting new media art, and these presentation mechanisms become more affordable in the near future.¹
Allocating a separate space for new media art with computers and screens, a practice often criticized, can be explained by technical requirements (a dark space for projections; the availability or lack of network connections, etc.).

The major disadvantage of this presentation model is that new media art, when not experienced in the context of works in other media, becomes marginalized from the "(hi)story of art" unfolding in the other galleries. At the same time, the separate setup invites to spend more time with an artwork than the average museum visitor is willing to invest. While the "ghetto" of the new media area is commonly considered the epitome of the uneasy relationship of institutions with new media at this time, some curators have pointed to its "political" advantages.

If museums have designated (sometimes sponsored) spaces for new media art, they are also obliged to offer continuous programming for these galleries, guaranteeing the art form a regular exposure.

The presentation of Internet art in the museum or gallery space is one of the most problematic scenarios. Net art has been created to be seen by anyone (who has access to the network), anywhere, anytime, and does not necessarily need a museum. Although net art exists in a (virtual) public space, it seems to be one that is difficult to "connect" to the public space of a gallery. The multiple approaches to showing this art from all have advantages and disadvantages. Some works of net art lend themselves to presentation in an installation and / or physical interface because they address notions of space. Others work well as a projection—works, especially, that have not been created for a browser window and beg to get out of it. Still others need to maintain their inherent "netness" and
require one-on-one interaction by way of a computer with monitor.

The least appropriate model for including net art in the gallery space gives visitors one computer on which all the net art projects in the exhibition can be explored, one viewer at a time. While this is precisely how one would experience the art in one's own home, this setup runs counter to the very notion of a public space--as if ten paintings were hung one over the other and viewers had to remove them one by one to contemplate each work. A public space asks for better access than that.

Another model for presenting net art is the "online only" exhibition. This approach preserves the original context of the art but provides limited control over the viewer's experience of it and marginalizes the work. The numerous requirements of net art projects range from browser versions to plug-ins, minimum resolution, window size, and so forth. The museum can accommodate some of these requirements, but most of them have to be fulfilled on the viewers' end. Although this requirement applies to net art in general--for example, a home or office computer--inaccessibility becomes more of an issue if the work is presented as part of a curated exhibition on a museum web site. Viewers may be more annoyed by their inability to view a work (because their computer, monitor, or connection does not support its technical requirements) if they took the time to "visit" an exhibition organized by a museum, which they hold responsible for the quality of their experience of art.

An issue in both installations and net art is whether a piece was created for multiple participants or a single user. Multi-user projects work better in public
space whereas watching someone else navigate a work may be frustrating (like giving someone control over a TV’s remote control and watching them surf channels). Some people, however, who would have been hesitant to take over the input device--mouse, joystick, keyboard, or something else--to explore a work can be engaged as they watch others people and learn to use the interface.

In 2001, I curated an exhibition titled *Data Dynamics* for the Whitney Museum of American Art, which consisted of five projects of net art (and networked art), all shown as installations or projections. The *Data Dynamics* projects provided visual models for representing a continuously changing flow of data. Each of the works focused on different dynamics of data in mapping language, stories, memories, or traffic in physical and virtual spaces. The decision to show these projects as installations was driven not by a wish to make it "easier" for the visitor, but by the explicit comment of all the works on notions of (physical) space.

The artworks in this exhibition took different approaches to linking physical and virtual space. *DissemiNET* (by Sawad Brooks and Beth Stryker), for example, had been conceived as both a web site and a physical interface of telematic instruments (two interactive tables) that are supposed to connect the public space of the Web and the public space of the museum. The project consists of a database of people’s stories about their experiences with homelessness and dispersal and uses Internet technologies to give a visual form to the deposits and retrievals through which people experience memory. While one of the telematic tables "collected" and filtered of the stories in the database,
the other ones allowed people to "recollect" and shuffle images and text from the database by moving their hands over light sensors. Most people knew the project only as a web site and had never seen it the way it was conceived. Adrianne Wortzel's *Camouflage Town* was explicitly focused on establishing a connection between physical and virtual space in the context of identity. Its main character was a robot that "lived" in the museum space and could be controlled locally and over the Internet--a creature that was both "here" and "there." Mark Napier's *Point to Point* also was conceived for the museum space: visitors created the artwork with their movement in the space, which a video camera "read" and displayed as lines of texts projected on a wall behind them. The text and statements people drew across the wall contributed to the project web site. The work was transparent in that people at the web site could see the movement in the physical space.

Maciej Wisniewski's *netomat™* and Martin Wattenberg and Marek Walczak’s *Apartment* were the two pieces that originally existed as web projects only. *Netomat™* is a meta-browser that--in response to words and phrases typed in by the viewer--retrieves text, images, and audio from the Internet and flows them onto the screen without regard to the original display design of the data (such as a web page). Because the project presents the Internet as an infinite, limitless datascape, it lends itself to a large-scale projection. The software is very flexible and can be adapted to various interfaces (a phone or multiple user stations). Wattenberg's and Walczak's *Apartment*, inspired by the concept of the Memory Palace / Theater, consists of a 2-D component, where viewers type in
words and texts, creating a two-dimensional floor plan of rooms, similar to a blueprint. The architecture is based on analyzing the semantics of the viewers' words and reorganizing them to reflect the themes they express. This structure is then translated into navigable three-dimensional dwellings composed of images that appear as a projection on the wall. The images are the results of Internet searches run for the words typed in by the viewer. Projecting the 3-D interface onto the museum wall established the connection to the memory palace (mentally inscribing words onto a wall) as an original source of inspiration. The projection/installation also gave visitors an opportunity to experience the 2-D/3-D simultaneously, which is not possible at the web site. [Fig. 3.1]

The selection of works introduced various possibilities of data flow models, for example, mapping the data flow on the Internet (netomat™); mapping a database of stories (DissemiNET); mapping language and thought (Apartment); mapping movements in physical/virtual space (Point to Point and Camouflage Town). To establish connections between virtual and physical space in a more "ubiquitous" scenario, it also seemed important that visitors to the museum space be aware of the presence of virtual users. This awareness was already embedded in some of the artworks. In the case of Camouflage Town [Fig. 3.2], for example, it was obvious to visitors that people might be controlling the robot over the Internet. But, they could not be sure whether the movements or speech of the robot as controlled by a virtual visitor or someone in the museum (inducing that uncertainty was one of the points of the project). Visitors to the web site
could see people in the space through the robot's eyes and surveillance cameras. (The artists frequently used the robot from their homes to learn whether their pieces were working properly.) In *Point to Point*, online visitors reveal their presence by means of the text they donate at the site. Conceptually, the piece blurs the boundaries between visitors online and in the physical space who all create an artwork together. Both of the pieces had a built-in "awareness component" of presence in physical and virtual space. If an artwork has not been conceived to establish this connection, adding this component changes the piece. Such a change may be appropriate only if the artwork conceptually benefits from it.

Fig. 3.2 near here

Many new media projects are ultimately "enabled" by audience input. While the artists still maintain an often substantial amount of control over the visual display, works such as Mark Napier's *P-Soup* and Andy Deck's *Open Studio* initially consist of a blank screen and require the audience to engage with them to "produce" visuals. In a gallery context, however, most visitors automatically assume that the blank screen means the piece does not work. Such works may require a "visual attractor" that invites viewers to approach, though this device also destroys a fundamental part of the projects' concept. Figure 3.3 here

The new media art that seems to engage the audience most easily is "reactive art." While most digital art projects may be "reactive" (even if those consisting of non-interactive software elements that respond to each other), this
term is commonly applied to projects that require no direct interaction but instead "read" the viewers' presence or movements--primarily through video recognition software--and react to it. Examples include Mark Napier's *Point to Point*, Camille Utterback's *Untitled 5* [Fig. 3.3], a software-driven generative composition of painting and drawing that enables the audience to participate by leaving an "impression" on the "canvas" (projection screen); and Scott Snibbe's *Screen Series* [Fig. 3.4a and 3.4b], an exploration of the screen as surface and its relationship to the audience's shadows, which are either recorded and played back or transform the screen itself. Snibbe's pieces, in particular, tend to develop into performative events when viewers stage impromptu shadow plays, some of them extremely creative.

One of the greatest challenges of curating and presenting new media art to a traditional art audience is to balance the demands of the art and of visitors. Non-interactive and reactive pieces tend to be more "successful" in engaging a museum audience, but easy accessibility does not equal good art. Some of the best new media art projects are highly involved explorations of navigation paradigms, networked systems, or the encoded agenda (commercial or social) of software and therefore difficult for an audience that unfamiliar with the characteristics and nature of the medium to understand. Any curator of new media art can probably imagine a selection of very good works that would alienate many museum visitors. Those visitors familiar with a medium and its history (from painting to photography) generally have a "richer" experience of art,
but many media require no expertise for those wanting to "access" the work.

The form of new media art that is both most alien to the museum context and best exemplifies the idea of the museum without walls is mobile or locative media art--art that has been created for networked devices such as cell phones and Palm Pilots; or incorporates "wearables," such as clothing or accessories equipped with sensors or microprocessors; or makes use of the Global Positioning System (GPS) and wireless networks to deliver content specific to a location. All these forms of "ubiquitous computing" transcend the physical boundaries and walls of the museum. In the case of mobile devices that the audience brings to a museum (such as cell phones or Palm Pilots), the institution becomes an access point or node in the network--for example by setting up a beaming station. To communicate the concept of these projects, it can make sense to establish a larger network for the artwork by collaborating with other organizations that could serve as additional nodes.

Mobile media works, which tend to be performative, often require the organization of an ongoing event. Exhibiting projects that incorporate wearable computing in a glass case with a label decontextualizes them and turns them into dead artifacts. Because only a limited number of people can actually use the projects at any time, these works require the presence of the artist(s) or of a team that can assist the audience. One option for showing wearables is to schedule "performances" during which the audience can experience the project. It is also crucial to provide documentation that translates the project to the audience during the times when the piece cannot be actively used.
Decisions about presenting of a new media work within a gallery have to be made case by case. There are no methods for installing the different new media that automatically ensure a successful presentation. The modularity of the digital medium definitely offers an advantage in configuring a work for physical space. It also means that an installation becomes just one possible version of a piece—a version that might never be reinstalled elsewhere. Because new media art is more process-oriented than object-oriented, it is important to convey the underlying concept of this process to the audience.

Platforms of Exchange

In new media exhibitions, various exchanges occur between the institution, curator, artist(s), and audience and create a highly complex matrix of relationships. New media art requires a close collaboration between the artists and curators and a continuous discussion about the presentation of a work. The role of a new media curator is increasingly less that of "caretaker" of objects (as the original meaning of the word “curator” suggests) and more that of a mediator and interpreter or even producer. A curator often mediates between the artist and the institution, which must often create formats and procedures to accommodate new media art; between the artwork and the general audience unfamiliar with new media art and in need of guidance and explanation; and between the artwork and the press. With a continuing shortage of new media experts at traditional newspapers and art magazines, curators must often furnish detailed explanations of the work.
The development of the work and its presentation in a physical space require close collaboration between curators and artists (sometimes several artists for a single work). The collaborative model is also crucial to the artistic process itself. Besides the often complex collaboration of new media, artists, programmers, researchers, and scientists (whose role may range from consultant to full collaborator), some works begin with the artist's establishing a framework in which other artists create original works. Lisa Jevbratt's *Mapping the Web* and Alex Galloway and the Radical Software Group's *Carnivore* are perfect examples. In each case, artists set parameters by means of software or a server and invite other artists to create "clients," which in and of themselves again constitute artworks. The initiating artist plays a role similar to that of a curator, and the collaboration often results from extensive discussions (sometimes on mailing lists established for the purpose). Showing these works in a museum context may lead to yet another level of curatorial "intervention."

Collaboration and exchange are also inherent in the broader culture of the networked digital medium and an important element in multi-user environments—for example, 3-D worlds that rely on their inhabitants to extend the world and create dwellings—and gaming.

**Engaging the Audience**

An important step in getting new media art out of its ghetto and integrating it into the art world is to broaden its audience. That is feasible only if institutions and curators facilitate exchanges with and about the artwork.
Visitors to an exhibition in a traditional art institution cannot be described accurately as the audience, a label that suggests a unified, homogenized group of people and neglects their diverse backgrounds and social contexts. The online, "virtual" audience for software, Internet, and game art mostly consists of self-organizing communities of interest that are embedded in different "networked cultures," each with its own emphasis--on art, social systems, activism, programming, gaming, and so forth. Most of those who attend new media festivals are knowledgeable about the field and not especially diverse. Once new media art is introduced into the more traditional museum or gallery space, it is exposed to a more diverse audience that does not consist predominantly of experts and perceives this art form largely as something radically new. They play the most important role in integrating new media art into the museum gallery.

The museum / gallery audience for new media art might me divided roughly into the following categories: the "experts" who are familiar with the art form; the fairly small group of those who claim a "natural" aversion to computers and technology and refuse to look at anything presented by means of them; a relatively young audience segment that is highly familiar with virtual worlds, interfaces, and navigation paradigms but not necessarily accustomed to art that involves these aspects; and those who are open to and interested in the art but need assistance using it and navigating it.

"Getting it right" for all of these groups is challenging if not impossible. New media curators working in an institutional context encounter recurring criticisms--voiced by audience members, art critics, or the institution itself--that
usually contain at least a kernel of truth. These complaints, some of which are discussed in the following, are a helpful "reality check" for the reception of new media art. Moreover, they effectively highlight some of the art's distinguishing characteristics.

"It's all about technology"

New media art, to greater or lesser extent, is "about technology." No object or art form (painting, sculpture, or photography) can be separated from its own materiality, and one could argue that every painting also is "about" painting and comments on its own medium--although self-reflexivity substantially varies from one work to another.

In most cases, the above complaint about technology expresses frustration with its gratuitous use--showcasing technology for its own sake. Applied to new media art, this critique is linked to a person's familiarity with the medium. Gratuitous use of technology can only produce bad art. Technology is a medium, like paint or clay, for most new media artists. Having worked with it for one, if not several decades, they take it for granted. This is not to say that these artists are uninterested in or do not closely follow the "latest" technologies. Because the medium often lags behind the concepts that artists try to communicate, they must often push the boundaries or develop technologies to express their ideas.

If a museum visitor is unfamiliar with a specific technology or interface, it automatically becomes the focus of attention—an effect unintended by the artist.
For the expert audience, in contrast, the technology is transparent and thus moves to the background and becomes mostly a vehicle for content. Unfortunately, such variations of focus and perception cannot easily be addressed. Art audiences and museum visitors have looked at paintings for centuries, and for many the medium of paint is neither a surprise nor an obstacle. But the cultural heritage that has "trained" us in approaching certain art forms, such as painting, has not necessarily provided us with a vocabulary to understand others, such as new media.

An additional factor that needs to be considered here is that every emerging medium explores its own characteristics as a necessary and an important step in shaping artistic practice. Many of Nam June Paik's works--such as *Magnet TV* and *TV Crown*--investigated the "materiality" of television and video.

Moreover, new media art often critically investigates its underlying technologies and their encoded cultural and commercial agenda, automatically, as a result shifting focus to the medium itself. Not until new media art makes regular appearances in the art world will its technologies be taken for granted rather than understood a fixation.

"It doesn't work"

Critics and public had a field day at the engineers' expense... Anything that was assumed to have gone wrong (whether it actually did or not) was
attributed to technical malfunctions.⁸

Billy Klüver

Billy Klüver’s comment, which described the reaction to E.A.T.’s famous performance exhibition 9 Evenings: Theatre and Engineering in 1966, captures one popular strategy of critics: if you cannot denounce the art—–for lack of understanding or arguments—–attack the technology.

But in fact complaints about non-working technological art are all too often justified. Unless a venue specializing in this art form organizes the exhibition, new media art is often shown without sufficient or properly maintained technical support. Consequently the art is undercut and audiences frustrated. It can be difficult for an audience to distinguish what has failed, the art or the technology.

Institutions must ensure that new media works are adequately supported, but technical malfunctions may simply be a fact of life in new media art that has to be accepted. Only consider how often office and home computers crash and it is clear that technology is not infallible. While the industry strives to make its products more stable, digital technologies are developing at a speed that virtually guarantees continuing bugs and glitches. Rather than blame the art, one probably needs to understand technological shortcomings as an integral to its content.

"It belongs into a science museum"

As established boundaries and categories between an art and a science museum erode, the potential for new media art to find a place and relevance in
both institutions might come to seem as a strength rather than a shortcoming.

In the digital era, the technologies of representation in art and science converge constantly. Even if they differ in focus, both art and science now have to address issues of communication, representation, and simulation in (three-dimensional) networked spaces; information and data management; issues of interfacing as well as ethical implications of their exploration (particularly in biotechnology and genetic engineering). Science more and more relies on simulation in its use of 3-D worlds, Virtual Reality, and immersive environments. Art is exploring the same environments--often using scientific data--in an attempt to construct realities and ways of communicating.

An information-based, networked society emphasizes relationships between bodies of knowledge and necessitates a collaboration of human minds and networks to establish these relationships. Information networks require an interdisciplinary approach, and artists are constantly playing with, appropriating, and exploring scientific findings and data.

Although collaborations between artists and scientists play a major role in new media art and discourse, these explorations are not necessarily met with enthusiasm by either the scientific community or the art world, which seldom acknowledges them (the 1986 Venice Biennale was devoted to the relationship between art and science). Art and science can benefit tremendously from each others' approaches, however. As art, science has created its own language and metaphors and could profit from artistic projects that explore these aspects of representation. In its many crossovers into other disciplines--among them various
sciences--new media art could support a more holistic approach to culture and help us bridge the gap between "the two cultures" of the sciences and the humanities that C. P. Snow famously outlined in 1959.

Art and science have always been closely linked, and their relationship has invariably been a complex and often uneasy one that has shifted and developed, so that art and science have become attached at certain points and have grown apart at others. Both Raphael, in his use of perspective, and Leonardo da Vinci are said to have married art and science. The showing of Leonardo's *Leicester Codex* at both the Museum of Natural History in New York and, later, at the Metropolitan Museum of Art (January 22 through March 30, 2003) across Central Park seems to testify to that marriage. Leonardo seems to have faced some of the criticisms voiced today about new media art. One of his drawings exhibited at the Met included the handwritten note of a "critic" who suggested that Leonardo was neglecting art because of his preoccupation with technology. The digital age has the potential to bridge gaps between art and science and, at least theoretically, bring them closer.

Developments in art and science have always affected our understanding of reality. We attempt to locate and quantify our awareness of both internal processes and external objects, states, or facts through systems and representations. Artistic and scientific technologies of representation both reflect and structure our awareness of the culture we are embedded in. Observing and representing used to be primarily object-oriented--what is represented is seen. Developments in theoretical science (from quantum physics to chaos theory and
fuzzy logic), as well as in digital art (interactive, networked projects, virtual reality, etc.) suggest a shift from the object as a form of truth to conditions of possibility. These developments were to some extent mirrored in the critical theory of poststructuralism and postmodernism.

The spaces between the actual and the virtual worlds and realities, the gaps and overlaps between these different spaces and states, including subjectivity and objectivity, constitute an underlying concern of both art and science. "Virtual reality" (in the broadest sense) is not simply a useful method of simulation; it is a platform for exploring our "being" in different worlds, virtual and actual.

The networking of science, technology, and aesthetics often ends up in a simple visualization of abstract data represented in a diagrammatic structure. What is lacking are insights about the connection between reality and the autonomy of images, since three-dimensional visuals tend to be identified with a representation of "real" objects. Many new media art projects have investigated the question how scientific knowledge may be translated into aesthetics, and whether there are possibilities for new visuals without simple visualization. The achievement of these projects consists in creating a dialogue on the interaction between the actual, the virtual, and the hypothetical--which potentially is of great benefit to both the arts and sciences. Defining precise contexts in which new media art should or should not exist runs counter to both the intrinsic qualities of the art itself and the stage our culture finds itself in today.
"I work on a computer all day, I don't want to see art on it in my free time"

"Computer art" is embedded in our daily lives more than most other art forms--more than video and photography. This is simultaneously a great asset and a great obstacle. On the one hand, the link between computers and the economic, social, and cultural fabric of our media-saturated lives gives new media art relevance and urgency; on the other hand, new media's potential audience may not want to reflect critically on or engage creatively with the medium that also is a major tool in the work environment.

One would expect that video--in its close connection to television, a delivery mechanism for anything ranging from the daily news to "pure" entertainment and an epitome of consumer culture--should provoke some of the same reactions. It may owe its acceptance as a medium for art to its strong connection to home entertainment (rather than to work) and the presentation strategies employed for showing it in a gallery. Video art is now presented less frequently and is more often shown as projections or even elaborate installations, automatically shifting the context. Exhibiting new media art in an environment that suggests an office (computers and monitors on desks) may sometimes be the best option but inevitably create certain reception problems.

"I want to look at art, not interact with it"

Art audiences around the world have long played the role of "art consumers"--a role accommodated by an excessively consumer-oriented culture. Granted, art movements such as the Situationists, Fluxus, or conceptual art also
relied on audience participation but they remained exceptions to the rule. Most
visitors to a museum or gallery go with the expectation of seeing a "selection" of
high-quality art for contemplation. At the same time, we always interact with art--
engaging with it or even "completing" it. This interaction, however, remains a
highly personal affair, and traditional art objects require no active, physical
engagement to reveal themselves. Art that breaks with the conventions of
contemplation and purely private engagement shock the average museumgoer,
disrupting the mindset that art institutions so carefully cultivated. Most individuals
experience their most direct involvement with art and its tools in school; in
museums, participatory art-related "activities" are confined mostly to workshops
and tours for children and families. In general, "creativity" in art is nurtured
primarily in children and young adults.

Ideally, new media artworks themselves should inspire interaction but
given the context of traditional museum culture, institutions may need to take the
initiative to overcome the reluctance of the public to engage with the art.
Exchange--encouraged and made appealing through docents, instructions, and
an inviting setup of artwork--has to become part of the curatorial concept.

Interaction alone does not take art to a higher level or constitute quality in
and of itself. It is simply a reality of contemporary artistic practice. As the artist
David Rokeby puts it,

Interaction is banal. We talk to each other on the street. We breathe in air,
modify it chemically, then breathe it back out to be breathed in by others.
We drive cars. We make love. We walk through a forest and scare a
squirrel. I am looking forward to a time where interaction in art becomes as banal and unremarkable... merely another tool in the artistic palette, to be used when appropriate.⁹

"Where are the special effects?"

The frustration with the perceived gratuitous use of technology in new media art is counter-balanced by the common criticism that new media art does not live up to the visual standards set by digital entertainment. The digital entertainment industry, which has become important to cultural life, has also led to a profound misunderstanding of what new media art might or should be. According to Norman Klein, in his essay "Inside the Stomach of The Dragon: The Victory of the Entertainment Economy," terms like consumerism and mass culture seem naive now. We all essentially live inside the stomach of the 'entertainment' dragon. As a result, it would be near impossible to generate an avant-garde strategy in a world that feels increasingly like an outdoor shopping mall, what I call a scripted space."¹⁰ Klein refers to our era as that of the "Electronic Baroque," a term Angela Ndalianis also uses in the title of her book Neo-Baroque Aesthetics and Contemporary Entertainment, in which the neo-baroque is a model for understanding today's films, computer games, and theme park attractions.¹¹

The neo-baroque digital entertainment industry, with its ever bigger, better, and more sophisticated special effects, has helped to create a society of the digital spectacle that needs to satisfy its consumers' unending demand for the
next level of attractions. New media art, with its link to digital technologies is often subjected to similar demands. If it does not dazzle with the latest effects, it is considered "lame." Art resides in the realm of sculpture and painting; new media needs to entertain.

Even a sophisticated art audience sometimes switches to new criteria in evaluating new media art, measuring the design of an art project's virtual world by the standards of commercial games with million-dollar budgets and a design team of dozens of people. The art project may be a complex and advanced investigation of the navigation paradigms of its commercial counterpart, but the art audience's desire for visual effects is sometimes stronger than its interest in a critical exploration of human-computer interaction or paradigms of agency and control. New media art's proximity to the entertainment industry can also prove highly problematic in its integration into the art world. One might argue that this is ultimately a non-issue since art institutions--with stores selling coffee mugs, posters, and T-shirts embellished by art--already reside "in the stomach of the dragon."

The criticisms I have discussed above offer a glimpse of the relatively "unsafe" place new media occupy in relation to the art world at large. It is essential that both curators and institutions be aware of new media's precarious position and open up spaces where it can be discussed. This means a diversified approach to platforms of exchange and "interface" with the audience. These attempts at interfacing must not, however, become overly didactic, making art only a vehicle for educating the public.
The digital medium, with its flexibility and amenability to customization, allow a more active involvement by the audience in the curatorial process. One can find quite a few examples in the online art world of essentially "self-organizing" portals and repositories that allow the public to participate in a curatorial process of selecting, evaluating, and featuring art works. Art institutions, however, neglect the audience, failing to involve it in the curatorial process. The idea of "public curation" currently is in the experimental stage but there seems to be a growing effort to develop models for such collaboration--both through web sites and in the gallery space.

In 2001, the Massachusetts Museum of Contemporary Art (MASS MoCA\textsuperscript{12}) invited gallery visitors to use a curatorial software program to project their selections from over one hundred digital images of twentieth-century works of art from the museum's collection onto the walls of the gallery. The project, called \textit{Your Show Here}, was created by Tara McDowell and Letha Wilson (project coordinators), Chris Pennock (software design), Nina Dinoff, (graphic design) and Scott Paterson (information architecture). Visitors could browse through the database of images, filtering works according to artist name, medium, date, and keyword; choose up to five; write a statement about their choices; and title the show. By just clicking a button, visitors could project digital images at the scale of the originals. The virtual exhibition remained in the gallery only until the next participant "installed" new choices, but a printout of each person's curatorial decisions could be posted on the bulletin board near the gallery entrance.

The project used instant recycling, reproduction, and archiving, all
facilitated by the digital medium, to propose an alternative model for presenting and viewing art that moves away from more traditional approaches. The art can take on new meanings in multiple reconfigurations. While this model of "public curation" still begins with a specific archive of images, it blurs the boundaries between the public and the curator, allowing an exhibition model that might more directly reflect the demands, tastes, and approaches of an audience. Some will resist the reconfiguration of roles--curator, artist, audience, and museum--brought about by new media. And although the new model may need time to develop fully, it suggests the potential of digital technologies themselves as an open-source model for creating and presenting art.

One of the challenges that digital interfacing poses for museums is to balance the needs of both traditional art objects and process-oriented (new media) art. There have always been and always will be art objects. Today these are supported by a cultural "system" of presentation and preservation that includes museums, galleries, collectors, and conservators. New media art does not threaten these objects. It now has a place in multiple contexts and will continue to have one even if it should be fully integrated into the art world. The intrinsic features of new media art ultimately protect it from being co-opted by the art establishment. Nevertheless, its integration is in museums' own best interest: new media art constitutes a contemporary artistic practice that institutions cannot afford to ignore. It can also expand the notion of what art is and can be. Picking up where previous art forms--from kinetic to conceptual art--left off, new media art has the potential to broaden and question our understanding of the history of
art.

Notes:


3 The memory palace is an old mnemonic device and strategy that is based on the connection between physical and mental space. In the second century BCE, the Roman orator Cicero imagined inscribing the themes of a speech on a suite of rooms in a villa, and then delivering that speech by mentally walking from space to space. Also see "The Art of Memory," http://cotati.sjsu.edu/spoetry/folder6/ng621.html


12 http://www.massmoca.org