

Introduction

Museums, galleries, and the art world have long been oriented mostly toward objects and have configured themselves to accommodate the presentation and preservation of such static works of art. The so-called new media art, an increasingly important part of contemporary artistic practice, challenges the traditional art world—its customary methods of presentation and documentation, as well as its approach to collection and preservation. Like other art forms before it, new media art has shifted the focus from object to process: as an inherently time-based, dynamic, interactive, collaborative, customizable, and variable art form, new media art resists “objectification” and challenges traditional notions of the art object.

The aim of this anthology is to discuss the challenges of curating and presenting new media art that have been emerging over the past decade. Including contributions by prominent practitioners in the field—institutional and independent curators, theorists, and conservators—the book provides an overview of the field and addresses the conceptual, philosophical, and practical issues of both curating and presenting new media art. Although emergent technological art forms are the focus of the essays collected here, the anthology also looks at the issues museums and contemporary art spaces face in the digital era. The ongoing

developments in digital and information technologies will affect the nature and structure of arts organizations and institutions in the coming decades and change the role of “art spaces” in the broadest sense.

As an inherently process-oriented and participatory art form, new media art has a profound influence on the roles of the curator, artist, audience, and institution. Increasingly, curators must work with the artist on development and presentation of the work. The artist often becomes a mediator and facilitator—for collaboration with other artists and for the audiences that interact with and contribute to the artwork. In new media art, the traditional roles of curators and artists are being redefined and shifted to new collaborative models of production and presentation. The public and audience often participate in the artwork—a role that runs counter to our idea of the museum as a shrine for contemplating sacred objects. All these issues require that art institutions, at least to some extent, reconfigure themselves and adapt to the demands of the art.

At this time, new media art is far from integrated into the art world and art market and exists in multiple contexts. This art form, however, owes its distributed existence not simply to its fairly recent appearance on the art world’s radar. Because new media art is deeply interwoven into our information society—the network structures and collaborative models that are creating new forms of cultural production and autonomy and profoundly shape today’s cultural climate—it will always transcend the boundaries of the museum and gallery and create new spaces for art. The larger cultural implications of new media practice and its creation of “autonomous zones” for production, dissemination, and reception will therefore also be addressed in this book.

DEFINING THE TERRITORY: WHAT IS NEW MEDIA ART?

One of the first issues that a book on new media art must consider is the meaning of “new media.” Everyone seems to agree that the term itself is unfortunate. First, it is not helpful in describing characteristics or aesthetics of the digital medium. The claim of “newness” also begs the question of what exactly is new about the medium. Some of the concepts explored in digital art date back almost a century and have previously been addressed in various traditional arts. Novelty seems to consist in the advancement of digital technology to the stage where it offers entirely new possibilities for the creation and experience of art. With changes every few months, digital technologies are developing at a speed that forces the new media field to redefine itself continuously.

The terminology for technological art forms has always been variable, and digital art has already undergone several name changes. Once predominantly referred to as computer art and then multimedia art, it became “new media” at the end of the twentieth century, co-opting the term that had been used mostly for film/video, sound art, and various hybrid forms. New media thus made a fluid transition from the analog to the digital.

We need to distinguish between digital technologies as a tool and as a medium in discussing digital or new media art. Artists now commonly employ digital technology as a tool either to produce a more traditional art form (such as a sculpture or a print) or to store and deliver works (a digitized version of a painting on the Internet or a video on a DVD). While we need to investigate how the digital medium has affected the aesthetics of digital prints, photography, and sculpture, the latter largely represent the object-oriented work museums are equipped for and do not necessarily redefine models of presentation, curating, collection, and preservation. This is not to say that these artworks are either inferior or superior to art that uses the technologies as a medium. They are not the focus of this book, however, which addresses the changes induced by art that uses the inherent possibilities of the digital medium and is produced, stored, and presented in digital format.

A definition of new media art, although the focus of many discussions in physical and virtual space, is an elusive goal, since the technological and conceptual territory occupied by this art form is constantly being reconfigured. The successful evasion of definitions is one of new media art’s greatest assets and a main reason why so many artists, curators, and practitioners in general are attracted to this art form. It seems impossible to pin it down and safely categorize, institutionalize, and commodify it; at times, new media art seems more alive than its practitioners want it to be.

It is always dangerous to categorize an artistic practice, since to do so sets boundaries, smoothes out rough areas, and includes a certain amount of generalization. At the same time, taxonomies provide an orientation. The characteristics and forms of new media outlined here and discussed throughout the book can be considered a preliminary and flexible construct for mapping a constantly changing territory.

A lowest common denominator for defining new media art seems to be that it is computational and based on algorithms. However, “new media” occasionally is used for art exploring biotechnology and genetic engineering, which often incorporates digital technology in certain stages of its

production or for its presentation. New media art is often characterized as process-oriented, time-based, dynamic, and real-time; participatory, collaborative, and performative; modular, variable, generative, and customizable. These features need not all surface in a particular artwork but can appear in varying combinations. The curator and theorist Beryl Graham has compiled and compared the taxonomies developed by new media theorists and practitioners such as Lev Manovich and Steve Dietz and has made the results available online.¹

Features and characteristics aside, art using digital technologies as a medium can manifest itself in various forms and explores a broad range of topics. It can manifest itself as installation with or without network components; as virtual reality project that uses devices such as headsets and data gloves to immerse viewers/participants in a virtual world; as art created for and distributed on the Internet (browser-based or not); as software art that has been coded by the artist(s); as mobile or locative media art that makes use of “nomadic” devices (mobile phones, Game Boys, and PalmPilots or wearables with embedded microprocessors), the Global Positioning System (GPS), or wireless networks. Software art is one of the bluriest classifications in this list, since it is a filter that can be applied to new media practice rather than a defined category. Any digital artwork, whether it is an installation or a wearable piece, ultimately relies on software. The term “software art” is used predominantly for pieces that have been “hand-coded” by the artist and are generative and largely independent of a specific platform—that is, they might be distributed over the Internet or shown on a monitor in a gallery. Now media art in all these forms can address themes ranging from telepresence, artificial life and intelligence, and hypertextual narrative to gaming and other topics.

PRESENTING NEW MEDIA: DIAGRAMS OF THE TERRITORY

If the territory itself cannot be clearly defined, it becomes impossible to draw an accurate map of it. The five parts of this book therefore provide a diagrammatic structure to outline the “territory” of presenting new media—with many “links” connecting the chapters.

POSITIONING NEW MEDIA ART AND CURATORIAL MODELS

The first part gives an overview of historical precedents for what is now called new media art and curatorial approaches to this art form. Artists

started working with digital technology in the 1960s (or even earlier), although it was not until the 1970s that this practice became more widespread. As Gloria Sutton has pointed out, many of the issues raised by today’s new media art are far from new:

In the 1960s–1970s artists interested in issues of media, computation, social networks, and communication theories used to be in active dialogue with their contemporaries probing other issues under the general guise of “conceptual art.” . . . Of course back then the issue wasn’t about NEW media art, but the introduction of media art within established venues for contemporary art and the exponentially increasing impact of media and computer technology on the arts writ large. Questions commonly asked included: what exactly was the role of the arts in a technologically driven society? Are computers, consumer electronics and communication theory transforming art production or simply obscuring it? What was technology’s relevance to art, if any, and did art operate under a technological imperative? Sound familiar? While these questions could have come from any one of the many new media art discussion lists, they were questions posed by Philip Leider, a founding editor of *Artforum*, as well as by other critics and artists in the pages of art journals and exhibition catalogs between 1962 and 1972.²

Sutton’s comment does not explain why the issues she names are mostly (re)discussed on mailing lists today and not in the pages of *Artforum* and similar magazines. Some possible answers might be found in this volume’s essay by Charlie Gere, who surveys the historical background of new media art and analyzes the failures and successes of previous connected art forms and movements. Gere also points to the roots of new media in the military-industrial-academic complex (one could also add entertainment to the hyphenated term), which certainly complicates the reception of new media. Art forms and movements are embedded in larger cultural contexts, but new media could never be understood from a strictly art-historical perspective: the history of technology and media sciences plays an equally important role in this art’s formation and reception. New media art requires media literacy.

Gere also discusses how new media art conceptually affects the role of museums, particularly with regard to the notion of “real time.” If the museum functions, among other things, as an archive and “cultural memory,” how is this memory influenced by the acceleration of real-time processing? What might the archive of the future be?

Sarah Cook picks up on the history of curating and new media art exhibitions surveyed in Gere’s essay and analyzes different models for curating new media—iterative, modular, distributive—as well as

metaphors for understanding new media exhibitions: as software program, trade show, or broadcast.

INTERFACING NEW MEDIA

New media exhibitions in the gallery require what Steve Dietz has called “interfacing the digital.”³ This process relates not only to delivery mechanisms but also to exchanges between the curator, artwork, and audience. The second part of this book is devoted to different strategies for presenting new media art in the gallery space, as well as the creation of platforms for exchanges.

One of the most problematic forms of new media art to present in a gallery is net art. Steve Dietz addresses the difficulties, both practical and philosophical, in his “field guide” to curating net art. As he points out, a primary argument against net art in the institution is that it is not presented there in its “natural” state. Dietz answers the objection in a “natural history of net art,” discussing taxonomies, the net art vivarium, and possibilities of habitat enhancements for the art form.

FROM OBJECT TO PROCESS AND SYSTEM

That new media art constitutes a shift from object to process affects both the curatorial process and the documentation of these artworks, which mutate from one version to the next. Joasia Krysa, in her essay, uses Maurizio Lazzarato’s concept of “immaterial labor”—labor that produces the informational content of a commodity—to redefine the curatorial process. If the move toward immaterial labor results partly from computer technologies, which have changed modes of production, it also influences forms of creative “labor,” such as curating. Like Steve Dietz, Krysa uses the software repository Runme.org as a case study for process-oriented curating and the creation of a self-organizing system. Krysa also discusses new media art (and curating) as a self-replicating system, using the show *I Love You*—an exhibition of computer viruses at the Museum of Applied Arts in Frankfurt, Germany—as an example.

The nature of new media projects and the collaborative processes employed in their creation, curating, and presentation make it evident that writing a history of new media and preserving the art itself will require new models and criteria for documenting and preserving process and instability. Both in Europe and in the United States, numerous preservation initiatives are setting out standards for preserving

media works. Among them are the Variable Media Network and the International Network for the Conservation of Contemporary Art (INCCA).⁴ These initiatives must develop a vocabulary for catalogue records; standards that enable exchanges of metadata gathered for catalogue records by institutions; and tools (such as database systems) for the cataloguing of “unstable” and process-oriented art.

As Jon Ippolito points out, any new media art has to multiply and mutate in order to survive, and a work often undergoes changes in personnel, equipment, and scale from one venue to the next. In his essay, “Death by Wall Label,” he uses the art institution’s standard method for “defining” a work—the wall label—as a starting point for exploring the documentation problems posed by new media art’s variable authors, titles, and media. Adopting the vocabulary of the Guggenheim’s “Variable Media Questionnaire”—an interactive questionnaire that enables artists and museum and media consultants to define how artworks behave independent of media and to identify artist-approved strategies for preserving artwork—Ippolito proposes an alternative to the standard wall label. In addition, he discusses documentation tools that accommodate the various mutations new media art undergoes.

AUTONOMOUS CULTURAL ZONES

One of the narrative strands of this book is the “cultural autonomy” created by collaborative models and network structures. Sara Diamond, picking up on Krysa’s ideas regarding cultural production and Ippolito’s exploration of variable authorship, investigates the consequences of collaborative exchange for curatorial practice. Her essay, “Participation, Flow, and the Redistribution of Authorship,” explores collaborative exchanges in relation to artistic and cultural production, shifts in the understanding of authorship, and the cultural contexts of communities. Diamond discusses the potential of networking technologies for marginalized and Aboriginal groups and pursues the questions these technologies raise for the cultural heritage and identity of these groups.

As I have noted, new media art could never be confined to the museum or the art world as its only platform for distribution. Net art, in particular, has always had its own (potentially) worldwide distribution system. There is an online art world—consisting of artists, critics, curators, theorists, and other practitioners—that developed in tandem with the art outside of institutions. Patrick Lichy, in his essay “Reconfiguring Curation,” looks closely at this “online only” curatorial practice, its

strategies and intersections with the institution. He asks whether Hakim Bey's concept of the Temporary Autonomous Zone (created by mini-societies that live outside social conventions) can be translated into "Cultural Autonomous Zones"—as online spaces of creative practice where established cultural and institutional contracts do not apply.

CASE STUDIES

The final part of this book consists of case studies of curatorial approaches and the specifics of four exhibitions. The shows discussed differ substantially from one another and took place at diverse venues, and thus required different curatorial processes. Beryl Graham's *Serious Games* was a relatively early new media exhibition of installations, which was presented at traditional art venues, the Laing Art Gallery in Newcastle (UK) and the Barbican Art Gallery in London. Although the featured artworks were not computer games, Graham chose a title for the show suggesting the intrinsic connections between new media art and games that would become a prominent topic a few years later.

Patrick Lichy's *(re)distributions*, on the other hand, was an independently curated online-only exhibition that investigated PDAs and nomadic devices as a form of cultural intervention. Because the show was organized at a time when "mobile art" was emerging, it had a highly experimental character. A show dedicated to an artistic practice in its developmental stages would be difficult to realize in a traditional arts institution.

While the exhibition *Seeing Double*—organized by Jon Ippolito, Caitlin Jones, and Carol Stringari—was presented at one of the most prominent art institutions, the Guggenheim Museum in New York, it could still be understood as experimental because of the unusual topic it addressed: the challenges of new media preservation or, more specifically, emulation in theory and practice. The exhibition gave its audience a unique opportunity to "see doubles" and compare a number of original artworks to their re-created versions, which had been "upgraded" to newer, current technological platforms. Not all the works in the show were reproduced by means of emulators—computer programs that re-create the conditions of older hardware and software to allow the original code to run on a contemporary computer. Some of the projects were upgraded by "migration," that is, transplanted into a different presentation format or a higher version of hardware/software. In their case study, Caitlin Jones and the conservator Carol Stringari dis-

cuss these approaches to preservation and assess whether they can be applied to specific works.

In the final case study of this book, Tilman Baumgärtel, Hans D. Christ, and Iris Dressler share the curatorial concept behind their award-winning exhibition *games: Computer games by artists*. The exhibition—presented by the media arts organization hartware—surveyed artists' modifications and appropriations of computer games. The exhibition constituted a form of "interface" between different "cultures," approaches, and audiences (art and gaming), and posed numerous challenges in communicating its contents and contexts.

Although the contributions to this volume cover a broad territory, they can provide only a snapshot of what has been taking place inside and outside institutions, art centers, and universities, as well as on mailing lists worldwide. These exchanges continue to pursue adequate modes of "representation," in the broadest sense, for a continuously evolving artistic practice.

NOTES

1. Beryl Graham, "A Small Collection of Categories and Keywords of New Media Art," <http://www.crumbweb.org/crumb/phase3/append/taxontab.htm> (accessed August 7, 2007).

2. Gloria Sutton, "Exhibiting New Media Art," *Rhizome Digest*, November 5, 2004, and November 12, 2004, <http://www.constantvzw.com/?p=20> (accessed August 7, 2007).

3. Steve Dietz, "Interfacing the Digital," <http://www.archimuse.com/mw2003/papers/dietz/dietz.html> (accessed August 7, 2007).

4. The Variable Media Network is a consortium project of the University of California, Berkeley Art Museum and Pacific Film Archive, the Solomon R. Guggenheim Museum, Cleveland Performance Art Festival and Archive, Franklin Furnace Archive, and Rhizome.org; see <http://www.variablemedia.net>; and International Network for the Conservation of Contemporary Art, <http://www.incca.org>.

PART ONE

POSITIONING NEW MEDIA ART AND CURATORIAL MODELS

1

New Media Art and the Gallery in the Digital Age

In this essay I am concerned particularly with the representation in art galleries and museums of work created by using new technologies such as computers. For convenience's sake I shall call such work "new media art," even though this term is both problematic and, for at least some of my discussion, anachronistic. The early work I discuss would not have been defined in such terms. Nevertheless, it is useful shorthand for a range of practices and names, including "art and technology," "computer art," "systems art," and so on. The question of this kind of work's representation in institutions such as galleries and museums is important in relation to the work itself and how it is received and understood, but, at a broader level, also indicates how galleries and museums can engage with our increasingly technologized society, in particular the ubiquity of new media and new technologies such as the Internet.

As little as twenty years ago, the Internet was hardly used outside science departments, and interactive multimedia were only just becoming possible, CDs were a novelty, mobile phones unwieldy luxuries, and the World Wide Web nonexistent. Since then, these technological developments have begun to touch on almost every aspect of our lives. Nowadays, most forms of mass media, television, recorded music, and film

are produced and even distributed digitally; these media are beginning to converge with digital forms, such as the Internet, the World Wide Web, and video games, to produce something like a seamless digital mediascape. At work, we are surrounded by technology, whether in offices or in supermarkets and factories, where almost every aspect of planning, design, marketing, production, and distribution is monitored or controlled digitally.

Galleries and museums are far from exempt from the effects of these technological transformations. Indeed, it might be suggested that such institutions are profoundly affected and that the increasing ubiquity of systems of information manipulation and communication presents particular challenges to the art gallery or museum as an institution. At one level, these challenges are practical: how to take advantage of the new means of dissemination and communication these technologies make possible; how to compete as a medium for cultural practice in an increasingly media-saturated world; how to engage with new artistic practices made possible by such technologies, many of which present their own particular challenges in terms of acquisition, curation, and interpretation. Other challenges are arguably far more profound and concern the status of institutions such as art galleries in a world where such technologies radically bring into question not just the way in which art galleries and museums operate, but the very notions of history, heritage, and even time itself upon which they are predicated.

It would be hard to overstate the extent to which the reality of our lives is governed by technologically advanced processes and systems, from ubiquitous and increasingly invisible computer networks to mobile telephony to genetic manipulation, nanotechnology, artificial intelligence, and artificial life, or what Donna Haraway calls the “integrated circuit” of high-tech capital. These technologies, though intimately bound up with such issues as globalization, surveillance, terrorism, and pornography, barely seem to impinge on the spaces of contemporary art—and then only obliquely, or marginally. For example, although Tate Britain in London held a show of net art in 2001 (*Art and Money Online*, curated by Julian Stallabrass), and Tate Online (“the fifth site,” after the four galleries and the store) has hosted “net.art commissions” since 2002, neither initiative gave the work in question the same status as other contemporary work. *Art and Money Online* was in Tate Britain’s Art Now space, which exhibits new and experimental work that might not otherwise get a showing in the gallery; net art commissions allow the work to be sequestered safely

away from the actual galleries, while demonstrating Tate’s apparently unimpeachable commitment to such new practices.

It might be argued that, in showing such work in this manner, Tate is reflecting its actual status and importance in the art world. Artists, after all, are not obliged to consider the effects of technology today any more than they were bound to directly consider the effects of industrialization in the nineteenth century. Art reflects the conditions of its time not through the explicit and deliberate use of new techniques or technologies, or through relevant subject matter, but at a deeper level, through transformations in practice that may well be unconscious as far as the artists themselves are concerned. Thus industrialization was represented in nineteenth-century art not in subject matter so much as in the transformations in technique made possible by the industrialized production of paint and in the potential mobility of artists facilitated by new forms of mechanized transportation. Similarly, the effects of information technologies on our culture have found oblique expression, for example, through strategies of systematic and quasi-algorithmic production, such as those of Sol LeWitt or the systems artists of the 1960s and 1970s.

HISTORIES OF DIGITAL ART

Nevertheless, Tate and other such institutions fail to take into account the long history of artists using and directly representing new technologies in their work. It is just that this history has been more or less ignored by most modern and contemporary art galleries. When new media art is represented at all in such institutions, it is almost always treated as a recent phenomenon. But even if one ignores the pioneering work of the Futurists, the Surrealists, Dada, Naum Gabo, Marcel Duchamp, Alexander Calder, and László Moholy-Nagy, explicitly technological art has a history that goes back at least six decades, to World War II, when a number of important technologies developed, including digital computing and radar, giving rise to such discourses as cybernetics, information theory, and general systems theory. Artistic responses to the possibilities that these technologies and ideas offered proliferated after the war. In the 1950s and early 1960s, John Cage developed work that engaged interaction and multimedia and the possibilities of electronics, as in his famous “silent piece,” 4'33''. His work was one of the main inspirations not just for other composers working with electronic means, but also for artists interested in process, interaction, and performance, such as Allan Kaprow and those involved with the Fluxus group.

In the United States, during the 1950s, artists like Ben Laposky and John Whitney Sr., and Max Mathews at Bell Labs made some of the first electronic artworks and experimented with computer-generated music. Meanwhile, in Europe, composers such as Pierre Boulez, Edgar Varèse, and Karlheinz Stockhausen were also experimenting with electronics, while artists such as Jean Tinguely, Pol Bury, Nicolas Schöffer; Takis, Otto Piene, Julio le Parc, Tsai Wen-Ying, and Len Lye (also known as an experimental animator), and groups such as Le Mouvement, The "New Tendency," ZERO, and the Groupe de Recherche d'Art Visuel (GRAV) started to explore the possibilities of kineticism and cybernetics for art. These explorations were accompanied and encouraged by the work of theorists such as Abraham Moles in France and Max Bense in Germany, both of whom wrote works applying information theory and cybernetics to art. Bense was able to put his ideas into practice at the Stuttgart University Art Gallery, which he founded. During his two decades as head of the gallery, it held some of the very first exhibitions of computer art.

In Britain, a generally pastoral and antitechnological attitude had prevailed in the arts since the nineteenth century, with exceptions such as the Vorticist movement in the early twentieth century. But the primary force for promoting technological and systems ideas in this country was the short-lived but influential Independent Group (IG), a loose collection of young artists, designers, theorists, and architects connected with the Institute of Contemporary Arts (ICA). Through shows and discussions at the Institute of Contemporary Arts and elsewhere, advanced ideas about technology, media, information and communications theories, and cybernetics were presented and debated. The IG was connected with the famous exhibition *This Is Tomorrow* at the Whitechapel Art Gallery in 1956, which explored many of these ideas with great panache. Equally important were the IG's effects on art education in the United Kingdom, especially through Richard Hamilton and Victor Pasmore's groundbreaking Basic Design course at King's College, Durham, part of the University of Newcastle. This greatly influenced artists such as Roy Ascott, who studied and worked with Hamilton and Pasmore and who has continued to develop radical pedagogical strategies for the teaching of art, often involving both new technologies and new, technologically oriented discourses and ideas. The Basic Design course anticipated the wholesale restructuring of art education in the United Kingdom in the early 1960s, which came about as a result of the 1960 report of the National Advisory Council on Art Education (otherwise known as the Coldstream report).

By the mid-1960s, the increasing sophistication and availability of technologies such as video and the ideas of theorists such as Buckminster Fuller and Marshall McLuhan gave further impetus to the development of art practices involving both new technologies themselves and related concepts. Filmmakers Stan Vanderbeek and Len Lye, as well as Fluxus members Wolf Vostell and Nam June Paik, were among the first to use televisions in their work, whose work also involved other technologies such as tape, was also one of the first artists to take advantage of the development of portable video cameras to produce some of the first video art, a practice taken up by other young artists of the time, including Les Levine and Bruce Nauman. At the same time, other technologies, such as electronics, lasers, and light systems, were exploited by artists including Vladimir Bonacic, Otto Piene, and Dan Flavin. One of the most important developments of the period was that of large-scale multimedia environments. Among those involved in such work were Robert Rauschenberg; Robert Whitman; John Cage; La Monte Young, Marian Zazeela, and their Theater of Eternal Music; Mark Boyle; and groups such as USCO and Pulsa. This type of work intersected with developments in psychedelic rock music and underground entertainment. Many of those later considered conceptual artists worked on such projects.

In this context, it is no surprise that artists began to look at the possibilities of computing for making art. To begin with, the relationship between art and computer technology was mostly conceptual. Artists might be keen to exploit the potential of ideas such as cybernetics for their artistic practice, but few actually used computers. For the first fifteen to twenty years of their existence, digital computers were large, expensive number crunchers, forbiddingly difficult to use and with little to offer to artists as far as the practicalities of making art were concerned. But nuclear defense and other military needs had led to the development of the computer as an interactive visual medium rather than simply a number cracker. The Strategic Air Ground Environment (SAGE) nuclear early warning defense system, which involved networking, interactivity, and visual interfaces, as well as real-time data processing, led to a new understanding of what a computer might be. This development, along with others such as computer graphics, windows interfaces, mice, and the Arpanet, predecessor of the Internet, produced an increased interest in using such technologies for art. In 1965 and 1966, the first exhibitions of computer art were held at the Stuttgart University Art Gallery and the Howard Wise Art Gallery in New York. The artists and others who first exploited the computer in making art included Lillian Schwartz, Edward

Zajac, Charles Csuri (whose 1967 computer animation *Hummingbird* was the first computer artwork purchased by the Museum of Modern Art in New York), Ken Knowlton, Leon Harmon, and Michael Noll, who pioneered computer graphics in the United States at the same time that Manfred Mohr and others linked to Max Bense did so in Germany.

These first small exhibitions were followed by more ambitious endeavors. Some of the most important work bringing together art and technology, though it did not in general involve computers, was that of Experiments in Art and Technology (E.A.T.), a group founded by Billy Klüver and Robert Rauschenberg to foster collaborations between artists and engineers. In 1966, E.A.T. held its famous show *9 Evenings* at the Armory in New York, staging a series of collaborative happenings involving both artists and engineers. Major exhibitions involving new technologies in the years that followed included *The Machine as Seen at the End of the Mechanical Age* at the Museum of Modern Art, New York, in 1968, which was accompanied by a show of work commissioned by E.A.T., *Some More Beginnings* at the Brooklyn Museum. In 1968 the legendary exhibition *Cybernetic Serendipity*, curated by Jasia Reichardt, was held at the Institute of Contemporary Arts in London. A year later, *Event One* in London was organized by the Computer Arts Society, the British equivalent of E.A.T., while *Art by Telephone* was held at the Museum of Contemporary Art in Chicago. In 1970, critic and theorist Jack Burnham organized *Software: Information Technology: Its Meaning for Art* at the Jewish Museum in New York. Like *Cybernetic Serendipity*, this show mixed the work of scientists, computer theorists, and artists with little regard for any disciplinary demarcations. A year later, the results of Maurice Tuchman's five-year Art and Technology program, which brought together engineers and artists to work on large-scale projects, were shown at the Los Angeles County Museum.

Jack Burnham and Jasia Reichardt also produced critical works on art, science, and technology. Burnham published his magnum opus, *Beyond Modern Sculpture*, in 1968. At around the same time, Reichardt published a special issue of *Studio International* to accompany her exhibition, while Gene Youngblood wrote *Expanded Cinema*, an extraordinarily prescient vision of experimental video and multimedia. Thames and Hudson considered this area important enough to publish two books on art and technology within two years of each other, *Science in Art and Technology Today* by Jonathan Benthall in 1972, and *Art and the Future* by Douglas Davis in 1973, the year when Stewart Kranz pro-

duced his monumental work *Science and Technology in the Arts: A Tour through the Realm of Science/Art*.

It is hard to recapture the utopian energy and belief these exhibitions and publications embodied. As far as Reichardt, Burnham, Davis, and others were concerned, the future of art was as a means of engaging with the concepts, technologies, and systems through which society was increasingly organized. Yet the apogee of this thoroughly utopian project also represented the beginning of its demise, and the replacement of its idealism and techno-futurism with the irony and critique of conceptual art. To begin with, at least, it was hard to distinguish between conceptual art and systems art. Indeed, they were often interchangeable and indistinguishable. But by 1970 the difference was beginning to come clear. That year, which was also the year of Burnham's *Software* show, Kynaston McShine curated an exhibition at MoMA whose title, *Information*, linked it to work in art and technology. Though it may have suggested a technological orientation and showed some of the same people as *Software*, it did not include the technologists and engineers of that earlier show. Furthermore, the artists evinced an increasingly distanced and critical attitude toward technology.

Thus in the early 1970s art involving new technologies seemed to be superseded by other approaches. Such failure, if it was failure, can be ascribed to the quality of much of the work; the failure of the exhibitions to work as intended; the artists' refusal to collaborate with industry to realize projects and exhibitions; a suspicion of systems art, cybernetics, and computers because of their roots in the military-industrial-academic complex and their use in the Vietnam War; and, finally, difficulties in collecting, conserving, and commodifying such work. The growing disappointment with the counterculture in the early 1970s and the economic crises of the same period did little to encourage technologically based utopianism. Nevertheless, the years from 1965 to the early 1970s were a high point for the exhibition and public visibility of art made using new technologies. Early exhibitions in New York and Stuttgart, and major shows and events such as *9 Evenings*, *Cybernetic Serendipity*, and *Software* must have made it seem that such work was a future for art, if not the future. Yet by the mid-1970s, such work had more or less disappeared as far as the mainstream art world was concerned.

In the 1970s and 1980s, video art was gradually subsumed by the mainstream art world, but new media, electronic, computer, and cybernetic art was largely ignored. Such art continued to be made and taught,

but it was shown mostly in specialist and trade shows such as SIGGRAPH in the United States, the annual conference organized by the Association for Computing Machinery for those with an interest in graphics. Many of the artists working with technology ended up in the burgeoning computer graphics industry. Douglas Davis, Harold Cohen (*Aaron*), Woody and Steina Vasulka, Stelarc, Jeffrey Shaw (*Legible City*), Lillian Schwartz, Paul Brown, and Robert Adrian X still made art using new technologies, but it was largely invisible in the mainstream art world and regarded by some as having failed. Such art did succeed—but not as art. Economic crises led to a restructuring of capitalist economies and global finance that was aided by the increasing ubiquity of networked computing. In what became known as the postindustrial economy, information, rather than material goods, became the focus of production in the West, as predicted by pundits such as Alvin Toffler and Daniel Bell. The techno-utopianism of the 1960s art world reemerged in the 1970s with the personal computer and the Internet, through which technologies developed by the military-industrial-academic complex were repurposed by the neoliberal end of the counterculture, in particular Stewart Brand and *The Whole Earth Catalog*. In the late 1970s, moreover, computer special effects, video games, and user-friendly systems and such cultural responses as cyberpunk fiction, techno music, and deconstructive graphic design all developed.

At the end of the decade, two French academics, Simon Nora and Alain Minc, wrote a report for President Giscard d'Estaing that heralded the “computerization of society” and the advent of “telematics,” meaning the coming together of computers and telecommunications. At about the same time, discourses such as poststructuralism and postmodernism began to emerge, partly as a critical response to the ubiquity and power of information technologies and communications networks. Despite differences in approach and ostensible subject matter, the writings of Jacques Derrida, Jean Baudrillard, Fredric Jameson, Gilles Deleuze and Félix Guattari, and Jean-François Lyotard always imply a critique of systems and communications theories. The space opened up by this critical approach may have begun to make systems art interesting to the mainstream art world again. In 1979 the first Ars Electronica festival, which looked at the application of computers and electronic technologies, was held in Linz, Austria. In 1985 Lyotard curated a massive exhibition at the Centre Pompidou, *Les Immériaux*—also discussed in Sarah Cook's essay in this volume—which was intended to show the cultural effects of new technologies and communication and

information. Also about this time Tate put on its first show of computer-generated art, the 1983 exhibition of work produced by Harold Cohen's *Aaron*, an artificial-intelligence program that drives a drawing machine.

But in the late 1980s and early 1990s, technologically based art really began to reemerge. In 1988 Moviola, an agency for commissioning, promoting, presenting, and distributing electronic media art, was founded in Liverpool, and Videopositive, an annual festival of such art, was held under its aegis. (Moviola later transmogrified into the Foundation for Art and Creative Technology [FACT].) In the same year, the first International Symposium on the Electronic Arts (ISEA) was held. A year later, the Zentrum für Kunst und Medientechnologie (ZKM), a major center for media and technology arts, was founded in Karlsruhe, Germany. In 1990 the NTT InterCommunication Center was opened in Tokyo, while the San Francisco Museum of Modern Art held its first show of new media art. Throughout the 1990s, the Walker Art Gallery in Minneapolis showed digital and new media works. About this time the National Gallery in London undertook the first use of computers for the public display of information. In 1993 the Guggenheim in New York held an exhibition titled *Virtual Reality: An Emerging Medium*, followed three years later by *Mediascape*. In 1994 the first Lovebytes festival of electronic art was held in Sheffield, and in 1997 the Barbican Art Gallery in London put on the exhibition *Serious Games: Art, Technology and Interaction*, curated by Beryl Graham (discussed in the case studies section of this book). In Hull, the Time-Based Arts center was established to concentrate on new media arts. In 2001 the San Francisco Museum of Modern Art presented its digital art exhibition *010101*, and the Whitney Museum of American Art organized *Bitstreams* and *Data Dynamics*. In 2003 FACT opened a new media arts center in Liverpool, while the BALTIC in Gateshead has committed itself to increasing its involvement in new media arts, as has Bromwich's new arts space, the Public (formerly c/Plex). (However, it is notable that the only institution in London regularly putting on gallery displays of such work is the Science Museum.)

Perhaps the most important event in digital art practice during the 1990s was the first user-friendly Web browser released in 1994. The World Wide Web developed in the late 1980s stemmed from the ideas of Tim Berners-Lee, a British scientist at the European Center for Nuclear Research (CERN) in Switzerland, to use the Internet to allow access to digital documents. To this end he developed a version of the standard generalized markup language (SGML) used in publishing, which he called hypertext markup language, or HTML. It allowed users to make

texts and, later on, pictures available to viewers with appropriate software, and to embed links from one document to another. The emergence of the Web coincided almost exactly with the collapse of the Soviet Union, and the newfound sense of freedom, the possibilities of cross-border exchange, and funding from the European Union and non-governmental organizations (NGOs) such as the Soros Foundation all helped foster net art in Eastern Europe, where much of the early work was done.

When “user-friendly” browsers such as Mosaic and Netscape came out in the early to middle 1990s, a number of artists seized upon the possibilities of the Web as a medium-producing work under the banner “net.art.” Such work was made at least partly on and for the Web and could be viewed only online. Vuk Čosić is said to have coined the term “net.art” in the mid-1990s, to refer to artistic practices involving the World Wide Web, after receiving an e-mail composed of ASCII gibberish, in which the only readable elements were the words “net” and “art” separated by a full stop. Since then the original European “net.art” group—including Vuk Čosić, Olia Lialina, Alexei Shulgin, Rachel Baker, Heath Bunting, and JODI—as well as artists such as Paul Sermon, 0100101110101101.org, Natalie Bookchin, Lisa Jevbratt, Radioqualia, ®TMmark (www.rtmak.com), Matt Fuller, Thomson and Craighead, and many others have been extraordinarily productive. At the same time, discussions and commentary about technology and art have proliferated through mailing lists and sites such as Rhizome, Nettyme, the Whitney Museum’s artport, and CRUMB (Beryl Graham and Sarah Cook’s digital curating list based at Sunderland University), as well as publications such as *Mute*. As in the late 1960s and early 1970s, important work has been published in this area by, among others, Lev Manovich, Christiane Paul, Oliver Grau, Stephen Wilson, Edward Shanken, and Michael Rush. Art history departments in Europe and the United States are now starting to look seriously at net art and new media art.

MUSEUMS AND THE ARCHIVE OF THE FUTURE

Despite proliferating artistic practice and projects in digital technologies, such work is underrepresented in museums today. Welcome developments included net art commissions and the increasing interest in film, video, and photography. But most art institutions (unless they are devoted to new media art) fail to encompass or engage this work. The new media works Tate is now collecting and displaying, for example, are

almost entirely static—even if time-based—in that they do not alter in response to interaction or their environment. Work that is interactive and process-based, or that involves networks, systems, and feedback, tends to question the very notions of history, heritage, and time upon which museums and galleries are based. “Real-time” projects in particular have the capacity to process and present data at such a speed that the user feels the machine’s responses as more or less immediate. Real-time computing underpins the contemporary communication and data processing of our techno-culture. Without it, we would have no e-mail, word processing, Internet, or World Wide Web, no computer-aided industrial production, and none of the invisible “smart” systems that surround us. “Real time” also stands for the more general trend toward instantaneity in contemporary culture, involving increasing demand for instant feedback and response, one result of which is that technologies themselves are beginning to evolve ever faster. The increasing complexity and speed of contemporary technology is cause for both euphoria and anxiety.

Both are reflected in the recent work of influential commentators. Richard Beardsworth states that “one of the major concerns of philosophical and cultural analysis in recent years has been the need to reflect upon the reduction of time and space brought about by contemporary processes of technicization, particularly digitalisation.”¹ Meanwhile, Andreas Huyssen suggests that an increasing interest in memory constitutes a response to the ever-greater ubiquity of real-time systems: “Our obsession with memory functions as a reaction formation against the accelerating technical processes that are transforming our *Lebenswelt* (lifeworld) in quite distinct ways. [Memory] represents the attempt to slow down information processing, to resist the dissolution of time in the synchronicity of the archive, to recover a mode of contemplation outside the universe of simulation, and fast-speed information and cable networks, to claim some anchoring space in a world of puzzling and often threatening heterogeneity, non-synchronicity, and information overload.”²

For Huyssen the museum or gallery in current technological conditions might thus be a “place of resistance to” and “contemplation outside” the effects of “accelerating technical processes.” Indeed, museums and galleries traditionally deal with things, objects, whose very materiality would seem to make them resistant to the transformations wrought on other discourses by electronic and digital media. Visits to most galleries and museums today make art seem still very much a matter of producing objects like paintings and sculptures.

But the function of the museum or gallery in relation to “the accelerating technical processes that are transforming our . . . life-world” is more complex. As an archive, a form of artificial, external memory, it cannot stand outside of, separate and resistant to the technical means that structure our memories. Derrida pursues this theme in his book *Archive Fever*, where he suggests that “we should not close our eyes to the unlimited upheaval under way in archival technology. It should above all remind us that the said archival technology no longer determines, will never have determined, merely the moment of the conservational recording, but rather the very institution of the archivable event . . . this archival technique has commanded that which in the past even instituted and constituted whatever there was as anticipation of the future.”³

A gallery such as Tate is both performative and constative. It creates the past it supposedly simply shows by what it chooses to buy, curate, conserve, and display or accept as a donation. Thus it affects not just our understanding of and access to the past, but also our relation to the future by choosing the legacies that are available to us and to future generations. And this is not just a question of taste, fashion, finances, and so on. It is fundamentally bound up with the structure of the gallery as an institution, its understanding of its role, its intentions and duties, and even its physical embodiment. For example, the most cursory look at the history of postwar art in relation to most traditional museums’ holdings demonstrates that—for all the museums’ intentions to represent art of that period—they have failed to engage many forms of practice completely or have done so only partially or belatedly. These forms include cybernetic art, robotic art, kinetic art, telematic art, computer art, and net.art.

It is far from coincidental that such practices emerged either in reaction or response to the increasing importance and ubiquity of information and communications technologies. Museums are not deliberately excluding them. Rather, these institutions, founded in and for conditions of art production and reception of the late nineteenth century, are not properly equipped to show such work, not, at least, as it is presently constituted.

But I do blame particular institutions for a failure of perception and action. For good reason, museums should be wary of the work I have described. The work is difficult to collect, curate, and display. Other forms of art practice, moreover, have equal claim to a museum’s attention; and the historical and contemporary importance of the new art may not yet be obvious. But there are compelling reasons for mainstream

museums and galleries to think actively about engaging with such work, whose long and important history intersects, at crucial points, with other better-known forms of art practice. Indeed, those practices would be very different without new media work. Renewed interest in it will enhance and deepen our understanding of artistic developments in the postwar era. Indeed the art of that period cannot be understood without taking new media art into account.

Furthermore, such practice, in both its historical and its current manifestations, is important for its capacity to reflect our current technological condition. This is one reason why so many artists work in the field of new media. It is also why any move to collect and display work made in this area is likely to prove very popular, especially among younger people. For many of them a world without video games, computer special effects, the Internet, the World Wide Web, mobile phones, and so on, is almost unimaginable. These are also the technologies that underpin and make possible globalization, genetic manipulation, bioterrorism, and other such phenomena. Art made by using and reflecting upon new media and new technologies helps us understand how our lives are being transformed by these very media and technologies. The gallery has an important role to play in making this art visible, not just now but also in the future, when such work will be part of art history. How our culture archives our past is not a question of our relationship just with that past, but with the future as well. What we choose to archive and thus to preserve for future generations will help determine the future.

NOTES

This essay reflects on some of the issues arising out of the three months I spent at Tate on an Arts and Humanities Research Board “Changing Places” Fellowship in 2002, looking at the role of the gallery in the digital age. A different version appears on the Tate Papers part of the Tate Web site, <http://www.tate.org.uk/research/tateresearch/tatepapers/04autumn/gere.htm>.

1. Richard Beardsworth, “Thinking Technicity,” in *Deconstruction: A Reader*, ed. Martin McQuillan (Edinburgh: Edinburgh University Press, 2000), 235.

2. Andreas Huyssen, *Twilight Memories: Marking Time in a Culture of Amnesia* (London: Routledge, 1994), 7.

3. Jacques Derrida, *Archive Fever: A Freudian Impression* (Chicago: University of Chicago Press, 1995), 18.

Immateriality and Its Discontents

An Overview of Main Models and Issues for Curating New Media

The exhibition *Les Immatériaux* was held at the Centre Pompidou in Paris in the spring of 1985. Curated by the philosopher Jean-François Lyotard, the show purported to bring together art, industry, information technology, and culture in a poststructuralist investigation of how one uses video, sound, Usenet groups (antecedent to e-mail), faxes, written documents, and visual displays to navigate immaterial information flows.

Given that this exhibition is often cited as a precursor to contemporary exhibitions of art and technology in museums around the world, it seems appropriate to recall the difficulties encountered installing the experimental, interactive, process-led, time-based works. The artist Rolf Gehlhaar, describing his installation *SOUND = SPACE* (a room containing a system of location sensors linked to a computer, a sampler, and a synthesizer producing sound) comments:

The problems we encountered on site were numerous, the most important being that the supply of electricity, the amount of light and the ventilation of the space . . . were all insufficient. Whenever we booted the computer and turned on the amplifiers the main fuse would blow, it was painfully dark in the space and it got so hot after only 2–3 hours that the computer would crash. . . . I went to visit F. Lyotard in his office. . . . The great man's

office was large, light, airy and strewn with the paraphernalia one commonly associates with great thinkers and curators. I told him of our problems—not enough juice, not enough light, too much heat. He was friendly, affable even, but seemed to have difficulties in focussing on them. The thought briefly appeared to me that maybe he did not really understand what we were doing and that perhaps even if he did understand, he didn't like the idea, that what I was doing was a bit too structural, too positive? I had already seen some of the other partially installed exhibits, and many of them seemed quite *triste*. But I rejected the thought because I was too excited by the novel terrain of my project. . . . I also told him that I wanted to put some sort of graphic indications on the walls and the floor of the space in order to make the 'control structure,' i.e. the topographical distribution of the controls over the sounds visible. . . . He had no objections and also assured me that we would get a proper electricity supply and that the lighting would also be attended to. As to the overheating, he said he was powerless to help me out. Nothing much happened during the next days; we resorted to 'borrowing' power from the installation next to us and buying a few lamps. After another visit to 'the man,' a proper electricity supply and better lighting were finally installed. The overheating remained a problem until I went out to the BHV and bought two large ventilators to place in a hole we cut into the ceiling of the computer cupboard.¹

This story, which predates our current understanding of new media art, is meant not to belittle the Pompidou's efforts to mount such an important exhibition, but to highlight the practical difficulties of curating new media even in situations where the theoretical quandaries are being considered at their highest philosophical level.

New media art encompasses a range of works, among them Web-based projects, sound events, virtual reality installations, mobile cellular or PDA projects, and practices—conceptual art practices, network-based practices, software coding, or sampling. Yet most new media projects share particular characteristics that—on their own and in combination—present challenges to the curator organizing presentations, whether in museum spaces or beyond the "white cube gallery."² This list of characteristics is ever changing, as new genres and practices of art emerge and technologies employed in making the work evolve, and as a result, some new media works are more challenging than others. Among the features cited repeatedly for their effects on the presentation and exhibition of new media art are interactivity, computability, connectivity, variability, a tendency to represent the "virtual" (as opposed to a physical reality), and the participatory and time-based nature of the works.

As the case studies in this volume show, these characteristics require a curator to consider how best to engage an audience with the work—a

process that needs to take place on both a technical and a theoretical level. Theoretically, the media arts challenge a curator to rethink the practice of exhibiting static, unchanging aesthetic objects in favor of presenting dynamic, durational, changing projects. Formalist aesthetics and its attendant value judgments must be reevaluated if we are to understand the often relational aesthetics of new media.³ Technically, exhibiting new media art entails securing an appropriate environment in which to present work—one that is flexible, sustainable, and inviting for longer periods of viewing. Both theoretically and technically, a curator has to work with the artist to create a platform for the exchange of ideas between the viewer or user of the work and the project itself.

This essay outlines the role of the museum in exhibiting cultural production and the rise of network culture and its strategies for exhibiting new media art. I also present some alternatives to the exhibition as a mode of presentation, as well as possible models of curatorial practice that might be useful to curators of new media art.⁴ I conclude by looking toward contemporary artist-led curatorial initiatives, pointing out that curators, regardless of the medium, should follow and be led by the art.

MUSEUMS AND CURATING

Since the early 1990s, a steady stream of critical literature has reexamined the role of the museum and the practice of exhibition production.⁵ Museums seem to be perceived less as pure storehouses of objects and gatekeepers of the history of art and more as sites of engagement and “edutainment.” If, as the artist Tom Sherman has commented, “museums are places where dead things are kept to be remembered,”⁶ it follows that the inclusion of “live” contemporary art “events” and “projects” in museum programming, notable in the last two decades, has changed both our perception of the museum and the role of the curator. A curator no longer simply facilitates the remembering process by telling a single story about a set of objects. As Teresa Gleadwe writes,

The curator is now often implicated in the production of the work, working closely with the artist as a commissioner or enabler, and is concerned with the whole physical and intellectual experience of an exhibition or off-site project. This is a very different role from that of the art historian or scholarly curator, whose principal task has been to research the history of a particular artistic movement or moment, to select key examples of an artist's work, and to present this research within the conventions of a historical presentation.⁷

As the comment suggests, curatorial practice has shifted in the past twenty to thirty years from museology to a more process-based methodology that focuses on temporary exhibitions and the specific context of their audiences.⁸ Brian O'Doherty, who uses the term “project” to refer to “short-term art made for specific sites and occasions,” observes that “context provides a large part of [the] content” of late modern and postmodern art.⁹ Whereas historically other works of art and their history (as told through the museum's collection) once established the context for art displayed in a museum, it is now just as likely that the context for the art stretches beyond the museum and collection to the world at large. While the fundamental role of the museum—to exhibit art and allow for its consideration—remains unchanged, the process of consideration has broadened.

The shift in the understanding of exhibitions has brought about a change in contexts for the presentation of emerging art forms, such as new media art. In part, this has been a natural historical progression. Since the first computer-driven arts emerged in the 1960s, museums—unfamiliar with the medium, concerned about technological complexity, not to mention limited in terms of wiring or air conditioning systems—have been woefully unprepared to exhibit new media. Thus new media art has been seen predominantly in a range of “alternative” art contexts in its short history to date. It may have encountered its first large-scale audience through the festival circuit: film festivals and performance art festivals began to incorporate video and other forms of intermedia and multimedia art in their programs in the late 1970s.¹⁰ This change immediately highlighted certain characteristics of new media art, which have been problematic as the art entered the museum: its time-based, durational, participatory, transient, interdisciplinary, and internationally mobile nature.

In some instances, physical installations of new media art were more likely to be seen in “media-specific museums”—such as museums of science and technology (the Wellcome Wing of the London Science Museum; the Exploratorium in San Francisco) and museums of film, video, and photography (the Museum of the Moving Image in New York)—than in more traditional art museums (or mixed-media museums). Internet-based art was not considered by the international mainstream art world until its inclusion in *Documenta X* in 1997, and even then, the new media art community considered the static, offline, and office-based presentation a failure. New media art has flourished with the support of smaller media-specific organizations, although those

have often been geographically specific and deeply dependent on state-sponsored funding; for example, the Soros Foundation's efforts to get Eastern Europe online led to the founding of many art-driven media labs; cultural regeneration agendas in the formerly industrial areas of England led to the establishment of office-based agencies curating public art; the proliferation of media conglomerates in Canada and the United States spawned a network of video and TV cooperatives in an attempt to get "public access" to the airwaves. In North America, in particular, very few galleries or museums are devoted to the media arts or include new media in their wider museum programming.¹¹

AUTONOMOUS ZONES AND TEMPORARY CONTEMPORARIES: THE EFFECT OF NETWORKING

So why have new media art and the museum had such a rocky relationship? One reason is the rise of computer networking in the early 1990s, which provided new media artists with yet another platform for presenting (and creating) network-driven artworks: the Web. Much has been written about the artist groups that worked together on the Internet, and much of this writing has addressed their political disdain for the museum and gallery system or, at least, their justifiable sense that they had no need for it.¹² Given that networked art is made in part with distributive communication technologies (from video to HTML and other Web-based programming), it seems to have little use for the museum or the curator in reaching its intended audience. David Ross, the former director of the Whitney Museum of American Art and the San Francisco Museum of Modern Art, has discussed at length the similarities between the emergence of networked new media art in the early 1990s and the emergence of video art practices in the early 1970s—a collaborative and utopic undertaking to create new cultural systems of communication and exchange.¹³ Partly because the primary activity of these net-based artist groups had been administering bulletin board systems and hosting e-mail lists—in addition to artworks—on their servers, networked art was nurtured in a community of practitioners. An online dialogue emerged with the artworks; ideas for new projects were conceived, workshopped, discussed, made manifest, critiqued, and revised all in the same space.¹⁴ Hierarchies of media (the object and its history) and curatorial "gatekeeping"—both intrinsic to the museum—were demolished or simply sidestepped in the new sociopolitical arena of networked culture.¹⁵

Multidisciplinarity and a commitment to the social and political potential of new technologies have emerged as key indicators of network-based art activity outside art-institutional structures. Small and tight-knit artist groups such as Mongrel, irrational.org, and Consume.net (all in the United Kingdom) or the Raqs Media collective (Delhi) have developed shared or open-source software to communicate, create, and exchange content. The artist Minerva Cuevas writes: "I like to think about irrational.org as one of these political actors, not an online server, and results are there: work/campaigns are developed via online tools.... I think results should not be expected online but in the idea of the world we want to live in and in daily life."¹⁶

The interests of these artist groups in reconfiguring existing technologies—be they Internet radio stations or image-manipulation software—have led them to make those more accessible. The groups often consist of theorists, programmers, and activists as much as artists, and often no single person is named as the originator of a project (in the way an artist is credited as the sole creator of a work of art). The University of Openness (*sic*), for instance, models itself on the academic field, holding congresses and forming departmental curricula to bring together practitioners with shared interests in cultural phenomena, technological tools, or activities, such as cartography or problem solving.¹⁷ Monica Narula of the artist group Raqs has commented that their artwork is not a "static record of perceptions and finite aesthetics" but a "kaleidoscope of different motives."¹⁸ Raqs's project OPUS, a file-sharing software, is described as an organic curatorial mechanism, where authorship is a distributive fact.¹⁹ It is significant that these artist groups determine their own agency in relation to their communities. As the art activist and theorist Geert Lovink notes, these "digital commons" projects exist in a "third space" between state interests and market forces.²⁰ As a result, the greatest challenge for these artist groups—unless they align themselves with art production and exhibition facilities (Raqs, for instance, worked with the media lab Sarai and was included in *Documenta XI*)—lies in making art of their socially and politically engaged, activist projects and community-oriented tools.²¹ According to traditional notions of art's objecthood, these projects and their resulting shared intellectual property do not necessarily qualify as art because they cannot be commodified or distributed in the ways usual for art. The success of these works is conditioned by their users, not by an observant audience, and they consequently operate in a middle space between the dynamic, technology-driven media labs and the static exhibition spaces of the museum or gallery.

New media art currently sits somewhere between its emergence and historicization—a period that has been shrinking. Given the speed of changes in new media art, museums repeatedly encounter practical problems exhibiting it that are tied to developments in the field of technology. But as my examples indicate, it is not only the challenge of the technological media apparatus itself that makes new media artist groups shy away from the museum (and the museum from them); there are also political aspects of networked culture that have substantially changed the role of the curator. Rather than play the role of exhibition caretaker, collector, and conservator, curators increasingly act as filters and commissioners, seeking out opportunities for meaningful exchange between the artist and community partners.²² In an interview given after he organized the first overview of new media art in eastern Germany—the exhibition *Minima Media*, held in 1994 in Leipzig—the media theorist and curator Dieter Daniels commented,

I don't see yet the real way to bypass what you call the legitimation structure of the art world. Because bypassing any kind of context-creating structure—which is galleries, museums, curators, magazines, education and all this—makes it so difficult for who should find whom. It's a very good idea that artists might directly address the public, but we have the problem of information overflow in general, and so there is no quality filter within. We just get lost and we don't know how to choose and find what we want if everything is accessible. The question is: What should I be interested in, the artist living next door or one from another continent?²³

While the curating of new media art appears to have had a long history, since the first museum exhibitions incorporating computer-based arts, such as *Cybernetic Serendipity*, took place in the 1960s, it could be argued that both the space for art and the role of the curator were reconsidered only with the rise of accessible communication technologies and the emergence of network-based arts in the mid-1990s.

ALTERNATIVES TO THE TRADITIONAL MUSEUM EXHIBITION

Given the characteristics of new media art outlined at the start of this essay, there seems to be no one model for curating within this ever-diversifying field—hence the usefulness of the case studies included in this volume.²⁴ Each characteristic raises practical and theoretical challenges, of space for the exhibition, the technology needed, the appropriate time frame of presentation, or the management of audience interaction.²⁵ Given that curating also has changed, increasingly incorpo-

rating commissions and collaboration, curators are trying different methods for dealing with new media art. Rather than focus on the institution in which new media art exhibitions might take place (the art museum, gallery, science and technology museum, media lab), or even the situation in which the work is presented (a festival, an online server; an educational workshop), here I concentrate on metaphors for exhibiting new media art, as potentially useful to thinking about curating new media.

THE EXHIBITION AS SOFTWARE PROGRAM OR DATA FLOW

Is the exhibition in the information age an interface (meaning, an “area of contact” or “connection”), or a program (not in the sense of “overview,” but rather of “software”)? Probably both. In his overexposition [*Les Immatériaux*], Lyotard was the designer of an interface that aimed to allow the spectator to “run a program”: he was thus also a programmer.²⁶

Lyotard’s exhibition was a onetime presentation, centered on a particular social moment. By contrast, the exhibition *Art for Networks*—curated by the artist Simon Pope for Chapter Arts in Cardiff in 2002²⁷—was a traveling group exhibition focusing on a practice engendered by new media (“networking”) presented in a range of media and art forms (fig. 2.1). The exhibition included Web-based works, computer-driven installations, sculpture, video art, prints, and performative conceptual art projects—by Heath Bunting, Adam Chodzko, Nina Best, Ryosuke Cohen, Technologies to the People, Nina Pope and Karen Guthrie, Rachel Baker, James Stevens, JODI, and others. A premise of the project was that it could change its installation and checklist with each new gallery exhibiting it, in essence offering an ever-changing data flow that could be modified to demonstrate different aspects of each project and to produce different outcomes, depending on the audiences and the organizers. In this way, the exhibition was also, metaphorically, a software program, generating a new network of gallery spaces during its tour. The director of Chapter Arts commented, “This show works as an exhibition, and as a network-building exercise. By adding nodes you can have unexpected outcomes and consequences.”²⁸

The exhibition permitted each of the artists to bring an idea of what constitutes a network to a shared context. Daniel G. Andújar of Technologies to the People investigated how artists can shape the contours

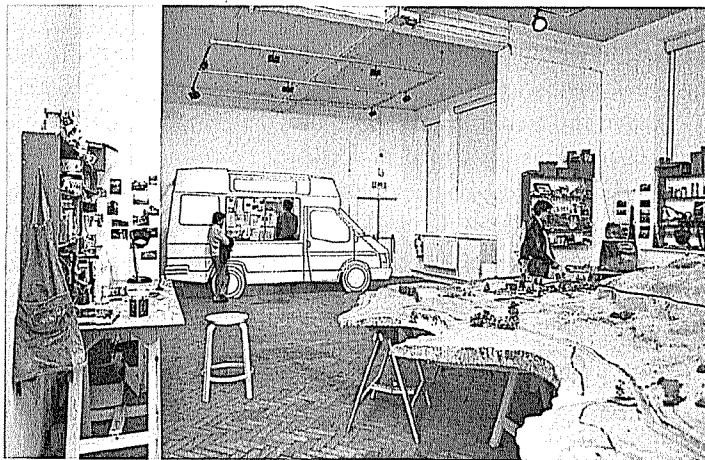


FIGURE 2.1 Installation view of exhibition *Art for Networks* (2002) at Chapter, Cardiff. Visible are works by Anna Best and Nina Pope and Karen Guthrie. Photo: Sarah Cook.

of exhibition making and reveal a better context for practicing art. His project—designing a new Web site for the exhibition based on his work at e-valencia, where he had created an accessible, open, and free online cultural news magazine and shared file system for engagement and critique—investigated the use of technological tools in local and sociopolitical contexts. As Nina Pope commented, the projects allowed the visitor to view the artwork “as a trigger to get you to think what it would be like to be in the network.”²⁹

In the United Kingdom, *Art for Networks* was one of the first small-scale exhibitions of new media combined with other art forms to cross the boundary into the white cube gallery space—predominantly because it did not look at media as the uniting theme for the show (by including non-media-based networked art such as mail art or performances, even conventions of ice cream van operators), nor did it look out to the network (in its limited definition of the Internet) as the sole context of the works. In fact, the context of many of the works was their community of constituents. As theorist Armin Medosch noted in his essay for the exhibition, “There is a long history of ‘art and telecommunications’ and it would do net art some good to look beyond its own technologically determined models.”³⁰ The context for the art (its interconnectedness in a network, computer generated or not, that involved an audience of active participants) says something significant about its content—in part

by describing the process behind the making of the artwork. One of the problems with this thinking of a show as a software program is that the gallery setting traditionally encourages passivity (contemplation) rather than engagement. The show is not “actively interactive” unless it is also activated in some way by the setup of the gallery.

How do you show an experience or a participatory work? You have to change the work a lot. The project runs outside the gallery but opens the gallery up as a framework. How to reproduce the experience, the debate, how to translate or document it? One central, controlled server owns the work. Or one space commissions the work but does not own it.³¹

The touring of this exhibition proved that galleries are hard-pressed to be responsible to the network that supports the work: “[Y]ou need a network of new media museums to sustain a show. This has become the responsibility of the artist too now, to sustain both the network of the art and the new network of the re-presenting venue.”³²

THE EXHIBITION AS A TRADE SHOW

Given the investment of time the visitor must make to engage with works of new media art in a show, and the need for an attendant or docent to explain technological interfaces or reset Web-based works, it is worth considering whether a one-day exhibition, with artists present, might be more rewarding than the traditional longer-term gallery exhibition. Would a short-term, trade show-like presentation divest art of its preciousness and therefore create a deeper engagement?

Artists in the United Kingdom have repeatedly experimented with this format of presentation, primarily by organizing their own networks within the wider community of net-based artists: I/O/D, Furtherfield, Mongrel, and bak.spc.org, among others. In many ways, these experiments, from the “Secret net.art Conf” meetings (1997) to “Expo Destructo: Post Media Pressure,” a meeting of activists complete with their own flea market (1999), physically manifest the online listservs. They recognize that presentation structures for new media projects have to be mostly self-generated. As Medosch explains, “Most shows of Internet art have failed to translate [the networks that exist for the participants] into the gallery. (Galleries are using a different operating system).”³³

In November 2003, the Limehouse Town Hall in London worked with the Arts Council England and other partners to mount the two-day

DMZ Festival. Recognizing the dearth of gallery spaces for exhibiting new media art in London, the prohibitive price of real estate, and the concept of a demilitarized zone as a freely accessible space, the DMZ brought together artists, curators, writers, and publishers to present collaborative projects. There were criticisms that the DMZ, while crucial for the professional development of the East End of London's new media scene, struggled to be accessible to a wider public as an exhibition (a criticism later addressed in the 2006 Season of Media Arts, NODE.London). This is not necessarily perceived as a problem by the artists, however, who have commented that the place "where you get your collaborators is the same place you get your audience."³⁴

THE EXHIBITION AS A BROADCAST

New media art's occasional need for a time frame, a durational viewing, the notion of a scheduled broadcast—emanating from one and received by many—with as many or as few channels as needed can provide an interesting alternative exhibition model.³⁵ The UK-based artists Nina Pope and Karen Guthrie, who originated the project *TV Swansong* (2002) in this manner, have worked with new technologies and collaborative projects for more than a decade. They often begin with a research question—about the inherent qualities of a medium, such as the placelessness of the Internet—or a particular site or phenomenon they want to investigate. They admit to being unsure of the results their research will generate.³⁶ In recent years, they have increasingly invited other artists to create projects under the umbrella of their own initiative. This commissioning aspect of their work makes their artistic practice inherently curatorial, geared toward project management and the creation of context. In fact, Pope and Guthrie have often spoken about this aspect of their art practice, stressing the need to control the entire process of a work's production, including such elements as press campaigns and final reports to funders after the project is completed.

TV Swansong included the work of eight artists who, in addition to Pope and Guthrie, all created works about sites or events made famous by television. The project took the form of a single-day Webcast of programmed content, both live and prerecorded (fig. 2.2). It bucked a trend toward "convergence media,"³⁷ premised on the Internet as a medium more advanced than television, even if the experience of watching a Web broadcast is often less rewarding than watching television.

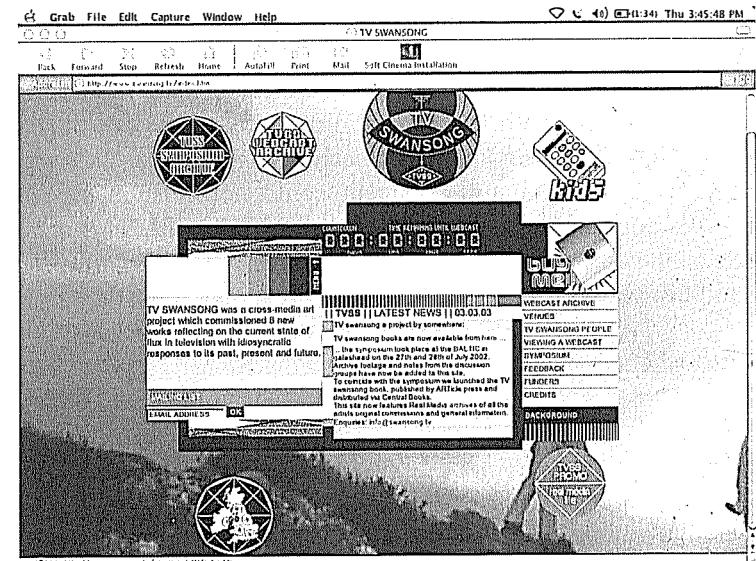


FIGURE 2.2 Nina Pope and Karen Guthrie, *TV Swansong* (2002), screenshot of the project's Web site (<http://www.swansong.tv>).

TV Swansong is an interesting model of collaborative curatorial practice in new media exhibition formats. Is it a single project with nine components, or are there nine projects subsumed under one structure? One of the challenges presented by collaboration is that funders or the audience might interpret the artist-led activity "as artists colonizing a space (i.e. degree show in a warehouse)," and, by extension, understand visitors as attendees of a live broadcast.³⁸ Yet, as the artists pointed out, they all received equal billing and equal access to an online audience because the project was "distributed." Pope and Guthrie noted that in a group show, artists often do not meet one another until opening night.³⁹ Their own collaborative model required that the artists meet regularly while the work was being created, thus maintaining transparent operations and evoking a shared responsibility for the project.

In a symposium about *TV Swansong* held at BALTIC, the theorist and artist Grant Kester commented that video art, as an antecedent to new media art, has become "museumified" and franchised. He also noted that the museum both gives artificial life support to art and makes demands on the work, for example, by foregrounding product over process.⁴⁰ In this respect, *TV Swansong* critiqued the most common

misconception about new technology on the part of arts administrators, curators, and cultural workers—that it is nothing more than an alternative broadcast medium, and that its content (the product) can be separated from its context (the process) and exhibited as a static object. In the case of *TV Swansong*, this was clearly impossible: the Web may be a broadcast medium, but the content could not exist in any other form—it is durational (temporal) as well as site-specific. This scenario by extension subverts traditional notions of temporality in art: production and distribution are contained in the same time frame.

The three alternative models I have discussed demonstrate some ways in which new media art challenges the traditional museum exhibition. Museum exhibitions are often static and linear—presenting the works so that there is but one point of entry (and one point of exit, usually into a souvenir shop) to the story of their interrelationships. New media art is a variable endeavor—a flow through time—often with more than one creator, many interconnections, and elements that change with viewers' collaborative input. Works made for the Web in particular depend on context—they are site-specific and hence problematic when separated from the network and placed in a gallery space (unless redesigned for such a presentation). On a practical level, the exhibition-as-trade-show model is often the most appealing to organizers, the technical needs of mounting new media projects being such that it simply is not feasible to keep some of them on view for the normal six-week to three-month run of a museum exhibition (because of the cost of renting the necessary equipment for that time or getting technical support when the work breaks down). As the artist Kate Rich commented to me recently, the flaneur-style gallerygoer encountering new media art in a gallery will have an experience less rich than the audience member who comes to the exhibition specifically to hear an artist talk about a work or demonstrate it. In the long run, while we must cater to the first viewer, it is perhaps more rewarding for the artist and the work to invest in the latter.

ALTERNATIVE MODELS OF CURATING

As artists explore new technologies and strategies, and create hybrid media . . . the nature of their “exhibition” necessitates close collaboration. . . . [This is] very different than the selection and arrangement of say,

paintings in a room. Overall the obligation to exhibit, collect and conserve new media work is challenging as it is in addition to sustaining “traditional” programming. It challenges resources, particularly maintaining and replacing equipment, and sustaining technical expertise.⁴¹

The different exhibition structures suggested by these examples demand curatorial methods different from those normally employed by the museum or gallery curator. The models of curating new media that follow are concerned with the practical and technical aspects of a curator's job. For instance, the arts funding system (which varies from country to country and region to region) and the pressures for concrete exhibition outcomes (from a funder, a museum, or artists themselves) have shaped the field for both good and ill. In many instances, the constraints of time and space collide.⁴² The three models that follow outline possibilities for limiting the constraints on new media art exhibitions.

THE ITERATIVE MODEL

The iterative model of curating has been described as a spin-off of the recipe for making sourdough bread, which involves the repeated use of a “starter dough” containing yeast that is used in each subsequent batch of bread.⁴³ This model proposes the development of an exhibition that invites artists to investigate a topic. The curator then “skims off” the projects that are potentially or actually the most successful or interesting and builds another show around them. This second show might be exhibited in another venue or created in a different environment.

This model originated partly in computer programming, where software is released in versions and improved by a process of beta testing and user tests with feedback. According to some curators, new media frequently adopt the language of science and technology because terms such as “research” or “versioning” are understood more specifically in the sciences and better describe the ongoing process of developing the work. In the arts, the term “research” evokes a stage in a work's development that is unseen and exists prior to a finite outcome. This is not the case in scientific disciplines, where the results of testing a hypothesis are made publicly available even if the experiment itself is a failure. In computer sciences, feedback informs the next level of the work; when it

comes to curating exhibitions, this is rarely the case: few exhibition concepts explicitly recognize unfinished work or work in progress that can change its form or content from one venue to another, as *Art for Networks* did. Curators, producers, funders, and institutions often have trouble recognizing that an audience (as a user) can affect the development and outcome of a project. Institutions, in particular, prefer the work to be “cut and dried”—they want predictable and fixed outcomes they can count (and bank) on.

The iterative model resembles the working method of an independent curator—constantly looking beyond the institution for an appropriate opportunity to take an idea to its next stage. Provocative but not always successful, this method has become increasingly common in mainstream visual arts. The curator Hans Ulrich Obrist, for instance, described the idea of his exhibition *Cities on the Move* as a complex dynamic system wherein “the topic (cities) changes fast—the artists are constantly making new works for each venue.”⁴⁴ One of the inherent problems of this model is that the branding of the exhibition as a movable feast often supersedes the content of the works themselves.

Iterative structures are clearly useful to artists, but the applicability of this model to curating new media has not been sufficiently “tested,” perhaps out of fear of “feature creep”—the scenario where artists working with media technology delay producing and finishing a work if they know that, in a few months, they might be able to add yet another feature or make the work technically proficient at the next higher level. As a result, the original concept of the work and the exhibition is likely to be watered down as much as strengthened. As in any software development process, the chance to continually remake a piece with new technology that has just become available does not necessarily mean that the original idea for the work of art will be better realized because of the addition of newly available features. In my mind, a good work of art is always a fully resolved match of its form to its content, no matter its media.

The drawback of applying this model to curatorial practice is that it demands a longer development time than is usually available—with stages and staggered outcomes, as well as flexible funding for presentation in a sequence of venues. Funders are unlikely to support the ongoing production unless output can be evaluated at some point.⁴⁵ That being said, the advantage of iterative curating is that the curator can sustain longer-term relationships with artists who can subsequently develop their projects over longer periods of time and in response to changes in technology as well as location.

THE MODULAR MODEL

When mixed-media institutions are venues for production and presentation, the exhibition structures have to take into account the fluidity and instability of the technological media driving the works. If institutions have no new media specialist on staff, they often turn to adjunct curators to help develop those structures. Some independent curators have built their projects “in collaborative nodes or modules”—with a network of institutions or exhibition venues.⁴⁶ Modular curating manifests itself both in the exhibition structure and in the working method of independent curators and is evident in both new media and traditional art exhibitions. Behind this way of working is the expectation that—in the event of unforeseen difficulties with a project, whether funding problems or breakdowns in communication between collaborators—the curator could simply drop the problematic module or node of the exhibition (for instance, one venue’s public performance element of a global online exhibition, or an off-site project, or an element of the public programming). This model of curating, evident in international visual arts festivals, applies equally well to modular works of new media art. A curator could collaborate with the artist to drop or add an element to the work of art (not affecting the intent of the work, but perhaps scaling back or augmenting its degree of interactivity, for instance). This is not the same as dropping a single work from an exhibition because of technical difficulties. This model works only if it is possible to scale back or eliminate discrete elements of a multinodal project without drastically affecting its overall coherence.

Modular curatorial practice—often placeless and spaceless, developed by an independent producer in collaboration with partners—is useful in the field of new media art, where technological goalposts and funding criteria shift constantly. The modular model is similar to the method adopted by some artists in order to realize initial stages of longer-term research projects. Karen Guthrie and Nina Pope write: “In practical terms we have funded a lot of the R&D by doing some pilot projects—and by that I actually mean art projects—. . . by saying [to the funders] ‘here’s an art project that describes what this [research] might be like.’”⁴⁷

A difficulty of the modular model is that projects must be able to move from venue to venue, often with a single curator working across borders with a global team. An example within the mainstream visual arts world would be the “Platforms” of *Documenta XI*, grounded in

five manifestations (public discussions, conferences, workshops, programs, and the exhibition, each in different locations); or, in the field of new media, the itinerant ISEA festival, which takes place in different cities and countries every two years. Curators can do a lot of their work telematically—by e-mail, phone, and fax—before they have to appear at the project’s place of presentation, thinking globally, but acting locally. To handle this situation effectively, a curator must often appoint local partners—what the international curator Iliyana Nedkova has referred to as “guides on the side”—for each node of the project.⁴⁸ The “modular curator” is an adjunct project manager—supervising teams of people who are producing the project in each location, overseeing the different stages, managing and supporting them as independently as possible. The resulting project often has the benefit of developing cumulatively (growing from one international venue to the next) and responsively (informed by and created in reaction to a local context by the respective partners). Overall, the importance of such a project also lies in uniting people in a network of production, suggesting that “on-the-fly” productions are no less valid than more predetermined ones, especially in the impact they can have on the field or the region in which they are presented.

The modular method has its challenges, most notably that the curator has to be clear about who has authority and decision-making power in each node or module—allowing each local team creative freedom and giving it a reliable structure—and who controls the final quality and authorship of a project. It is a model of trust and one best utilized by experienced and well-traveled curators. As Peter Ride comments, a funding commission “could certainly advocate ‘you should, if you’re setting up networks, work with people with whom you [share an understanding of] working patterns.’ . . . [A] notion of curatorial practice might be completely different in Ohio, Sofia, Sydney or wherever; and yet you’re working with different groups simultaneously. How do you then discover and negotiate how they understand what curatorial practice is and what they want from you?”⁴⁹

This model of curating—or, more accurately, commissioning and producing new media art—poses many questions about the collaborative characteristics of new media art. Does technology increase or decrease the collaborative element of art making? Who leads the research, and who is a partner in it: the artist, the curator, the technologist? It may be necessary to change the structure of the collaboration as the participants change.

Modular curating differs slightly from iterative curating—the development of manifestations of a project over time—in that modules can be put into play simultaneously across space, with teams in different countries working on the project. The two models overlap, however, and both reflect the variable and collaborative characteristics of new media art.

THE DISTRIBUTIVE MODEL

How do we face up to the issues of cultural currency—and not simply adopt the manner of existent contemporary art forms (i.e. putting work into the gallery when perhaps that’s not the place for it)?⁵⁰

Both of the previous models are well suited to a curator working outside the institution, using its resources as needed for production and presentation, remaining near the work but at arm’s length from the institution. In another appropriate scenario for negotiating the presentation of new media art, curators are based in small (mixed-media or media-specific) institutions or organizations, occasionally established by the curators themselves, and are working with partners of their choice. These art organizations, or “agencies,” are often office-based and commission work in non-museum contexts. They emphasize getting work out to the public with minimal interference. The advantage for the new media curator working in an agency is that the organization can, to some extent, re-form and rebuild itself anew with each project.

Some organizations in the United Kingdom—such as low-fi, New Media Scotland,⁵¹ Forma, and ArtAngel—have deliberately not established resources, such as a gallery space, dedicated media lab, or production facility, and new media projects therefore benefit from being allocated the most appropriate technology or equipment (whether rented, borrowed, leased or purchased), setting, time frame, and audience interface for each exhibition. (The organization Furtherfield, which once followed this model, recently added its own gallery space, called “http.”)⁵² In many ways, the impetus behind the distributive model is recognition of the placelessness of the projects—their contexts are their varying sites (online or offline). The role of the curator in such an organization again is that of a production manager who takes on all the tasks, from supplier to travel agent to marketing director; usually handled by separate departments in a larger organization.

This model is more prevalent in the United Kingdom and the rest of Europe, where the funding of organizations is more flexible, than in North America. (In Canada, a great deal of public arts funding for new projects goes directly to the artists; in the United States, by contrast, support for artists' projects is often channeled through museums and organizations.)⁵³ Working with this model can be difficult, however; when it comes to new media art projects that have either very short lives or longer, continually evolving ones, since funding is often awarded project by project and demands concrete outcomes. For the office-based organization, it is harder to sustain momentum from one project to the next without ongoing core funding. Too often, the conception of the next project is influenced by an awareness of possible funding sources. For instance, an organization might commission a biotechnology-based art project because it knows that the funding system, which often plays catch-up with the avant-garde of art production, is looking to further projects that combine art and science research agendas.

The three alternative models of curatorial practice discussed here have become apparent not only with the rise of networked new media art, but with all forms of art making that seek to locate the experience of the work outside a traditional gallery space.⁵⁴ While they have practical connections to the technical characteristics of new media art—again, its variability, its interactivity—these models could be equally useful to us as we move toward curating in a field of “art after new media,” where all art is relational, interconnected, mediated by communication systems, and global.

CONCLUSION: FOLLOW THE ARTISTS

Net-based culture holds out an even more challenging possibility; to force us to rethink the conventional identity of the artist as someone who develops projects or works that are then administered to a receptive viewer.⁵⁵

The last proposed model of curatorial practice showed that curators dealing with new media art must increasingly follow the strategies employed by artists themselves. In fact, we have come full circle, back to the framework of the bulletin boards and listservs of the early 1990s (or earlier artist-run centers): the workshop model, which, as Furtherfield—a nonprofit online organization founded in 1997 by the artists Marc

Garrett and Ruth Catlow—suggests, “[employs] imaginative strategies that actively communicate ideas and issues in a range of digital & terrestrial media contexts; featuring works online and organizing global, contributory projects, simultaneously on the Internet, the streets and in public venues. Furtherfield focuses on network-related projects that explore new social contexts that transcend the digital, or offer a subjective voice that communicates beyond the medium.”⁵⁶

Following the practice of artists presupposes that the way to curate new media art—and any form of process-led art that implicates the viewer in the completion of the work, regardless of media—is to shift the curatorial focus to the work’s production as much as its distribution and exhibition.

Lyotard’s *Les Immatériaux* is significant for its understanding of the inseparability of the medium and its message in networked culture (and hence net-based works), the inseparability of the distribution method from the work’s content. Net artists often respond to the failure to understand this unbreakable link by asking the question whether one could “peel” an image from a painting and sell it on a postcard as the original. Bringing together the technological stages of production and distribution in creating exhibition strategies seems the most sensible way to proceed, reflecting the collaborative, variable, and participatory characteristics of new media art.

NOTES

1. Artist Rolf Gehlhaar describing his installation of the work *SOUND = SPACE* in *Les Immatériaux*, <http://www.gehlhaar.org>.

2. This idea is expanded further in an essay coauthored with Beryl Graham; Sarah Cook and Beryl Graham, “Curating New Media Art: Models and Challenges,” in *New Media Art: Practice and Context in the UK 1994–2004* (London: Arts Council of England, 2004), 84–91.

3. As I argue in a previous essay; Sarah Cook, “Toward a Theory of the Practice of Curating New Media Art,” in *Beyond the Box: Diverging Curatorial Practices*, ed. Melanie Townsend (Banff, AB: Banff Centre Press, 2003), 169–82.

4. This essay includes material gathered as part of my Ph.D. dissertation, “The Search for a Third Way of Curating New Media Art: Balancing Content and Context In and Out of the Institution” (University of Sunderland, 2004). In the thesis, I theorize a number of possible models based on an examination of examples of curatorial practice in the field of new media art.

5. See, for instance, Donald Crimp, *On the Museum’s Ruins* (Cambridge, MA: MIT Press, 1993), and Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London: Routledge, 1995).

6. Tom Sherman, "Museums of Tomorrow," in *Before and after the i-bomb: An Artist in the Information Environment* (Banff, AB: Banff Centre Press, 2002), 293.
7. Teresa Gleadwe, "Curating in a Changing Climate," in *Curating in the 21st Century*, ed. Gavin Wade (Walsall, UK: New Art Gallery, 2000), 29.
8. See Reesa Greenberg, Bruce W. Ferguson, and Sandy Nairne, eds., *Thinking about Exhibitions* (London: Routledge, 1996).
9. Brian O'Doherty, *Inside the White Cube: The Ideology of the Gallery Space* (San Francisco: Lapis Press, 1976), 70, 79.
10. Including, for instance, the World Wide Video Festival; Multimediale; the Montreal Festival of New Cinema and New Media; SIGGRAPH.
11. As in the lesson learned from the Walker Art Center; see Steve Dietz's response to the net art community's concerns regarding the future of new media at the Walker Art Center (2003), http://www.mteww.com/walker_letter/dietz_response.html.
12. Tilman Baumgärtel, ed., *Net Art 2.0: Neue Materialien zur Netzkunst/New Materials towards Net Art* (Nuremberg: Institut für moderne Kunst, 2002); Josephine Bosma, "The Dot on a Velvet Pillow: Net.art Nostalgia and Net Art Today" (conference paper, Oslo, March 16, 2003), available online at *Cream*, <http://www.laudanum.net>; Josephine Berry, "The Thematics of Site-Specific Art on the Net" (Ph.D. diss., University of Manchester, 2001), <http://www.metamute.com>.
13. David Ross, "Net.art in the Age of Digital Reproduction" ("Art and the Age of the Digital") (transcript of a lecture at Cadre, San Jose State University, March 2, 1999), <http://switch.sjsu.edu/web/v5n1/ross/index.html>; edited version reprinted in *Camerawork: A Journal of Photographic Arts* 26, no. 1 (Spring/Summer 1999).
14. Many artists still contributed to the festival circuit in order to meet people with whom they had corresponded online; see Julian Stallabrass, *Internet Art: The Online Clash of Culture and Commerce* (London: Tate, 2003), 112. Festivals devoted solely to media arts already existed or had come into being by this time (Ars Electronica, the International Symposium on the Electronic Arts [ISEA], Next5Minutes, etc.), and an increasing number of academic conferences were devoted to the nature of new media and cybersculture, making manifest Hakim Bey's notion of the "Temporary Autonomous Zone" for the exhibition of new media art.
15. See Geert Lovink, "Early History of 1990s Cybersculture," in *Dark Fiber* (Cambridge, MA: MIT Press, 2002).
16. M. Cuevas, "Re: New-Media-Curating Discussion List," April 11, 2001, <http://www.jiscmail.ac.uk/lists/new-media-curating.html>.
17. See <http://www.twentiethcentury.com/uo>.
18. Monica Narula, Raqs, unpublished notes from a presentation at the conference "Digital Commons," *Documenta XI*, Kassel, Germany, July 2002.
19. See <http://www.opuscommons.net>.
20. Geert Lovink, unpublished notes from a presentation at the conference "Digital Commons," *Documenta XI*, Kassel, Germany, July 2002.
21. It has become increasingly difficult for these groups to secure "arts" funding. Mongrel recently lost (and reclaimed in part) all of its operational funding, as the Arts Council England did not see its work—sustaining a network of research collaborators and developing software tools—as new "art" production.
22. Anne-Marie Schleiner's flowchart (2003) is available at http://www.intelligentagent.com/archive/Vol3_No1_curation_schleiner.html.
23. A conversation on media and art between Dieter Daniels (former curator of the media collection at the Center for Culture and Media, Zentrum für Kunst und Medientechnologie [ZKM], Karlsruhe, Germany) and Volker Grassmuck, Tokyo, March 8, 1995, for *InterCommunication* magazine, <http://waste.informatik.hu-berlin.de/Grassmuck/Texts/ddaniels.e.html>. See also the exhibition catalogue *Minima Media*, ed. Dieter Daniels and Inke Arns (Leipzig, Germany: Medienbiennale, 1995).
24. CRUMB contains interviews I have conducted with curators of new media art in which methodologies and strategies of exhibition creation are discussed and more mainstream models (as opposed to the alternatives described here) are examined. See <http://www.crumbweb.org>.
25. Beryl Graham and Sarah Cook, "A Curatorial Resource for Upstart Media Bliss," in *Museums and the Web 2001: Selected Papers from an International Conference*, ed. David Bearman and Jennifer Trant (Pittsburgh: Archives and Museum Informatics, 2001), 197–208; also available at <http://www.archimuse.com/mw2001/papers/graham/graham.html>.
26. Jorinde Seijdel, "The Exhibition as Emulator," trans. James Boekbinder (The Hague, Netherlands: Stroom Den Haag, 2000), <http://www.mediamatic.net/cwolk/view/5245>.
27. It has toured to a number of venues across the United Kingdom and was exhibited at the University of Sunderland in November 2003. See <http://www.newmedia.sunderland.ac.uk/artfornetworks>.
28. Janek Alexander, unpublished notes from a presentation at the conference "Art for Networks," Chapter Arts, Cardiff, UK, November 2002.
29. Nina Pope, unpublished notes from a presentation at the conference "Art for Networks," Chapter Arts, Cardiff, UK, November 2002.
30. Armin Medosch, "Network 404," in *Art for Networks*, ed. S. Pope (Cardiff, UK: Chapter Arts, 2002), n. 86.
31. Daniel G. Andújar, unpublished notes from a presentation at the conference "Art for Networks," Chapter Arts, Cardiff, UK, November 2002.
32. Shu Lea Cheang, unpublished notes from a presentation at the conference "Art for Networks," Chapter Arts, Cardiff, UK, November 2002.
33. Armin Medosch, unpublished notes from a presentation at the conference "Art for Networks," Chapter Arts, Cardiff, UK, November 2002.
34. Nina Pope and Karen Guthrie, "TV Swansong," unpublished notes from a presentation at the conference "TV Swansong," Baltic, Gateshead, UK, July 27, 2002, <http://www.swansong.tv/symp.htm>.
35. This tactic is being used increasingly by museum education departments in order to stream, via Webcast, archival material or interpretational events

such as talks and conferences. See, for instance, the Walker Channel, or the Tate's webcasting program.

36. Nina Pope and Karen Guthrie in *Curating New Media*, ed. Sarah Cook and Beryl Graham (Third Baltic International Seminar, May 2001); alternative version online at <http://www.crumbweb.org>.

37. A term much used in media circles, which technically describes little more than advertising the educational wonders of the Internet on television, so that people will go online and, once there, be convinced to watch more television through targeted advertising.

38. Pope and Guthrie, "TV Swansong."

39. Vuk Ćosić in *Curating New Media*, ed. Sarah Cook, Beryl Graham, and Sarah Martin, Third Baltic International Seminar, May 2001 (Gateshead: BALTIC, 2002), 14–15.

40. Grant Kester, New-Media-Curating Discussion List, April 8, 2001, <http://www.jiscmail.ac.uk/lists/new-media-curating.html>.

41. Liane Davidson, "Re: New-Media-Curating Discussion List," March 25, 2003, <http://www.jiscmail.ac.uk/lists/new-media-curating.html>.

42. The interviews and material compiled on the CRUMB site may be useful in teasing out the particularities of an individual curator's practice and a particular organization's constraints.

43. From a conversation with Kathleen Pirrie Adams of Interaccess Gallery, Toronto.

44. Hans Ulrich Obrist, "Kraftwerk, Time Storage, Laboratory," in *Curating in the 21st Century*, ed. Gavin Wade (Walsall, UK: New Art Gallery, 2000), 45–59.

45. As in the case of Mongrel's work; see note 21.

46. Nina Czegledy, in *The Edge of Everything: Reflections on Curatorial Practice*, ed. Catherine Thomas (Banff, AB: Banff Centre Press, 2002); Nina Czegledy, in *Curating New Media*, ed. Sarah Cook and Beryl Graham (Third Baltic International Seminar, May 2001), <http://www.crumbweb.org>.

47. Karen Guthrie and Nina Pope in *Curating New Media*, ed. Sarah Cook and Beryl Graham (Third Baltic International Seminar, May 2001), <http://www.crumbweb.org>.

48. Iliyana Nedkova, in *Curating New Media*, ed. Sarah Cook, Beryl Graham, and Sarah Martin, Third Baltic International Seminar, May 2001 (Gateshead: BALTIC, 2002), 103.

49. Peter Ride, in *Curating New Media*, ed. Sarah Cook, Beryl Graham, and Sarah Martin, Third Baltic International Seminar, May 2001 (Gateshead: BALTIC, 2002), 107–8.

50. Clive Gillman, "Re: Installing It. June Theme of the Month," New-Media-Curating Discussion List, June 6, 2001, <http://www.jiscmail.ac.uk/lists/new-media-curating.html>.

51. Now under new management and likely to be restructured.

52. Furtherfield, <http://www.furtherfield.org>; <http://www.http.uk.net/>.

53. Susan Morris, *Museums and New Media Art* (research report commissioned by the Rockefeller Foundation, October 2001), http://www.rockfound.org/Documents/528/Museums_and_New_Media_Art.pdf.

54. The curatorial work of Nicolas Bourriaud, in a very non-technically specific manner, hints at this move within mainstream visual art practice. See, for instance, *Relational Aesthetics* (Paris: Les Presses du Réel, 2002) and *Post-production* (New York: Lukas and Sternberg, 2002).

55. Grant Kester, New-Media-Curating Discussion List, April 17, 2001. Available online at <http://www.jiscmail.ac.uk/lists/new-media-curating.html>.

56. From the Web site for Furtherfield, <http://www.furtherfield.org>.

3

Challenges for a Ubiquitous Museum

From the White Cube to the
Black Box and Beyond

New media art has inspired dreams about our technological future, among them the dream of reconfiguring 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—which do not all necessarily surface in one work and may 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. The time-based quality of projects that require an extended viewing period is 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 museums' relationship to performance, sound art, or "nonmaterial" 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 nonlinear: 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 remain 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 artwork 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 cannot 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 foolproof system.

Many of the categories on the traditional loan form are inapplicable to software art 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 (e.g., 1024 × 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 fifteen-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 World Wide Web. 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 little 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 spaces create exhibition 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 will 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 primary 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 participants/visitors to spend more time with an artwork than the average museumgoer 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 form 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 setup is precisely how one would experience the art in one’s own home, it 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 have taken 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. Multiuser 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 that person 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 other 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.² 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 the stories in the database, the other 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. Adrienne 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 Marek Walczak and Martin Wattenberg'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 and Walczak's *Apartment*, inspired by the concept of the memory palace/theater,³ consists of a two-dimensional 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 three-dimensional 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 two- and three-dimensional 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

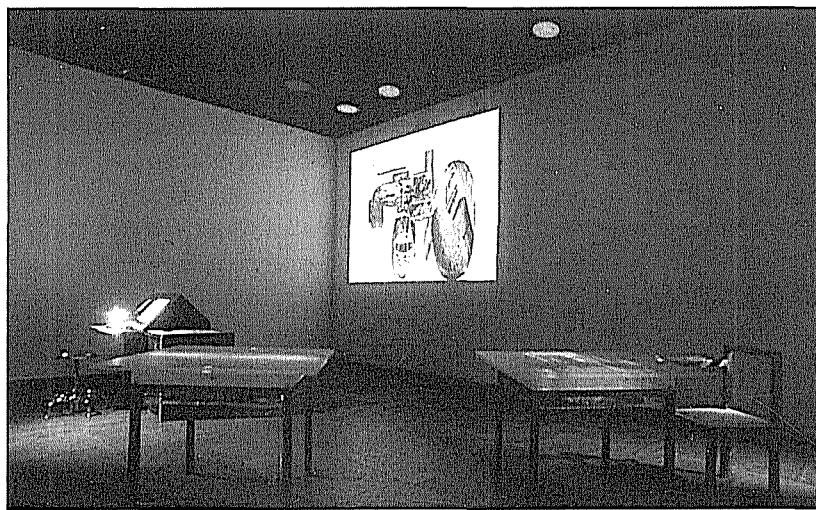


FIGURE 3.1 Installation view of the exhibition *Data Dynamics* (March 22–June 10, 2001) at the Whitney Museum of American Art, New York. Front: Sawad Brooks and Beth Stryker, *DissemiNET*, two telematic tables. Back: Marek Walczak and Martin Wattenberg, *Apartment*, computer station (two-dimensional) and projection (three-dimensional).

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 movement or speech of the robot was 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.

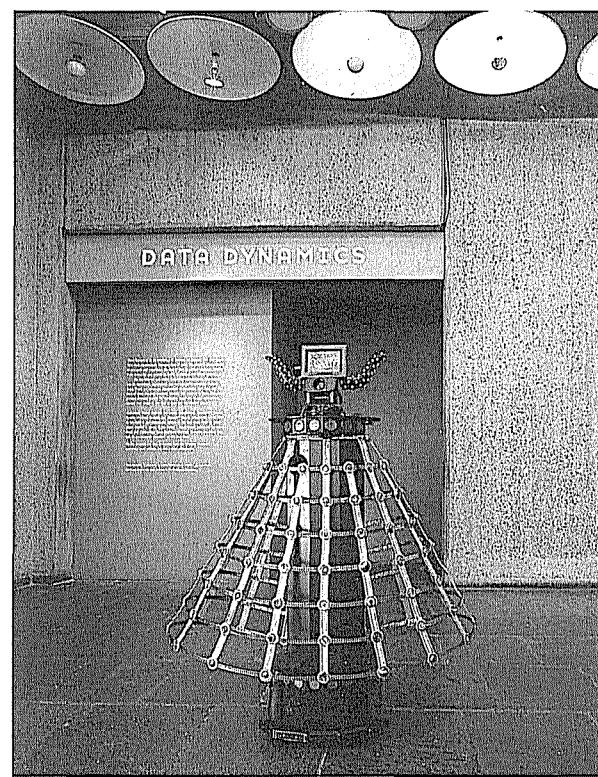


FIGURE 3.2 Adrianne Wortzel, *Camouflage Town* (2001), net-worked robot. Installation view of the exhibition *Data Dynamics* (March 22–June 10, 2001) at the Whitney Museum of American Art, New York.

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.⁴ 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.

The new-media art that seems to engage the audience most easily is “reactive art.” While most digital art projects may be “reactive” (even those consisting of noninteractive software elements that respond to

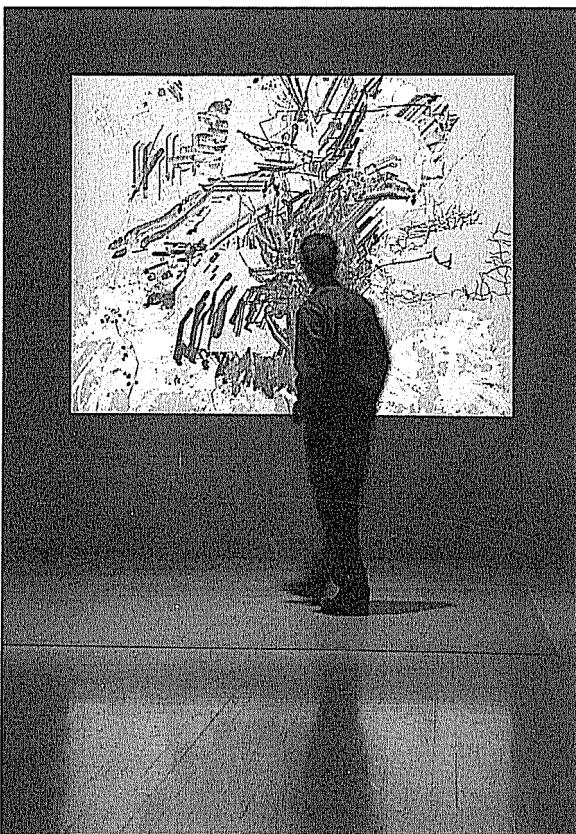


FIGURE 3.3 Camille Utterback, *Untitled 5* (2004), interactive installation. Photo courtesy of the artist.

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 them. Examples include Mark Napier’s *Point to Point*; Camille Utterback’s *Untitled 5* (fig. 3.3),⁵ 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* (figs. 3.4 and 3.5), 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.⁶ Snibbe’s pieces, in particular, tend to develop into performative events when viewers stage impromptu shadow plays, some of them extremely creative.

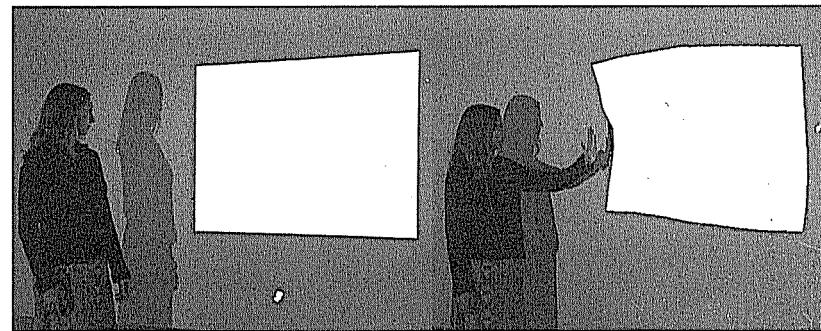


FIGURE 3.4 Scott Snibbe, *Compliant* (2002), *Screen Series*. Photo courtesy of the artist.

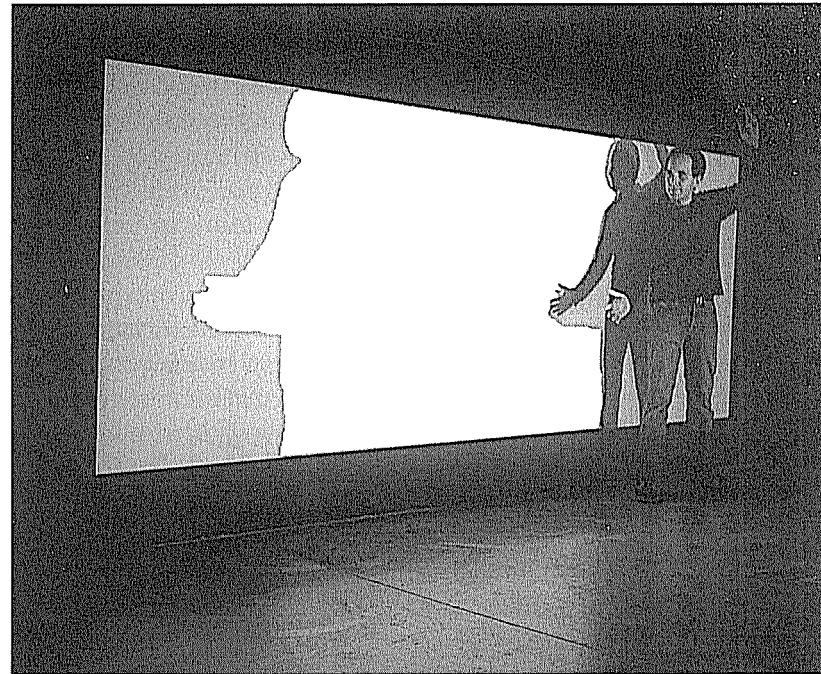


FIGURE 3.5 Scott Snibbe, *Impression* (2003), *Screen Series*. Photo courtesy of the artist.

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. Noninteractive 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 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 most alien to the museum context and also 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 PalmPilots; 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 PalmPilots), 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 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 often must 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 often must 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 Infomie* and Alex Galloway and the Radical Software Group’s *Carnivore* are perfect examples.⁷ 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 multiuser

environments—for example, three-dimensional 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 be 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 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 here, 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 a 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, this 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 a decade, 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 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 as a fixation.

"IT DOESN'T WORK"

Describing the reaction to E.A.T.'s famous performance exhibition *9 Evenings: Theatre and Engineering* in 1966, Billy Klüver remarked, "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 His comment 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 nonworking 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 are 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 in new media art, technical malfunctions may simply be a fact of life 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 integral to its content.

"IT BELONGS IN 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 three-dimensional 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.

X 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 other's 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 1959.⁹

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 2003 showing of Leonardo's *Leicester Codex* in New York both at the Museum of Natural History and, later, at the Metropolitan Museum of Art 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 on monitors and 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 creates 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 shocks the average museumgoer, disrupting the mind-set 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."¹⁰

BANAL
INTERACTION

"WHERE ARE THE SPECIAL EFFECTS?"

The frustration with the perceived gratuitous use of technology in new media art is counterbalanced 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."¹¹ 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.¹²

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 need 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 nonissue, 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 here 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 this position 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, allows 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 artworks. Art institutions, however, neglect the audience, failing to involve it in the curatorial process. The idea of "public curating" 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) invited gallery visitors to use a curatorial software program to project their selections from more than one hundred digital images of twentieth-century works of art from the museum's collection onto the walls of the gallery.¹³ The project, called *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 curating" 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

1. See Sabine Himmelsbach, “Vom ‘White Cube’ zur ‘Black Box’ und weiter. Strategien und Entwicklungen in der Präsentation von Medienkunst im musealen Rahmen,” in *Digitale Transformationen*, ed. Monika Fleischmann and Ulrike Reinhard (Heidelberg: WHOIS Verlagsgesellschaft, 2004), 171–73.

2. *Data Dynamics*, Whitney Museum of American Art, 2001; <http://artport.whitney.org/exhibitions/past-exhibitions.shtml>.

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>.

4. Mark Napier, *P-Soup*, <http://www.potatoland.org/p-soup>; Andy Deck, *Open Studio*, <http://draw.artcontext.net>.

5. See also Camille Utterback, *Untitled 5*, <http://www.camilleutterback.com/untitled5.html>.

6. See also Scott Snibbe, *Screen Series*, <http://www.snibbe.com/scott/screen/index.html>.

7. Lisa Jevbratt, *Mapping the Web Infome*, <http://www.newlangtonarts.org/network/infome>; Alex Galloway and RSG, *Carnivore*, <http://www.rhizome.org/carnivore>.

8. Billy Klüver, in *The New Media Reader*, ed. Noah Wardrip-Fruin and Nick Montfort (Cambridge, MA: MIT Press, 2003), 212.

9. C. P. Snow, *The Two Cultures* (Cambridge: Cambridge University Press, 1998 [1959]).

10. David Rokeby, lecture at “Info Art,” Kwanju Biennale, Korea, 1996, <http://www.interlog.com/~rokeby/install.html>.

11. Norman Klein, “Inside the Stomach of the Dragon: The Victory of the Entertainment Economy,” http://www.eyebeam.org/reblog/journal/archives/2005/01/inside_the_stomach_of_the_dragon.html (accessed August 8, 2007).

12. Angela Ndalianis, *Neo-Baroque Aesthetics and Contemporary Entertainment* (Cambridge, MA: MIT Press, 2004)

13. <http://www.massmoca.org>.