

The Myth of Immateriality -- Presenting & Preserving New Media

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The process-oriented nature of the digital medium poses numerous challenges to the traditional art world, ranging from presentation to collection and preservation. The standards for presenting, collecting and preserving art have been tailored to objects for the longest time and few of them are applicable to new media works, which constitute a shift from object to process and substantially differ from previous process-oriented or dematerialized art forms. New media art in its multiple manifestations has become an important part of contemporary artistic practice that the art world cannot afford to ignore, but accommodating this art form within the institution and "art system" raises numerous conceptual, philosophical, as well as practical issues. New media art seems to call for a distributed, "living" information space that is open to artistic interference -- a space for exchange, collaborative creation, and presentation that is transparent and flexible. The latter certainly does not describe the framework of the average museum today, and in order to make a commitment to new media art, institutions need to develop alternative approaches to presentation, collection, documentation and preservation. Among the issues that will be

discussed in the following are the inherent challenges that the digital medium poses to the existing art system; the ways in which the roles of artists, audiences, and curators are changed through digital culture and practice; as well as different models for presenting and preserving new media art.

The challenges posed by new media art are often discussed in the context of the art form's "immateriality" -- its basis in software, systems, and networks. From an art-historical perspective, new media art has strong connections to the often instruction-based nature of previous movements such as Dada and Fluxus and continues the "dematerialization" of the art object that lies at the core of conceptual art. While immateriality and dematerialization are important aspects of new media art, it would be highly problematic to ignore the art's material components and the hardware that makes it accessible. Many of the issues surrounding the presentation and particularly preservation of new media art are related to its materiality. For example, museums and galleries commonly have to build structures or walls to hide "ugly" computers and need to assign staff to the ongoing maintenance of hardware. Bits and bytes are ultimately more stable than paint or video, and preservation challenges all too often arise from the fact that ever-faster computers and displays with higher resolution are released on the

market at short intervals, profoundly changing the experience of artworks that were created for slower computers and lower screen resolutions.

The title of this essay provocatively suggests a "Myth of Immateriality" that admittedly falls into the category of hyperbole: immateriality is not a fiction but an important element of new media that has profound effects on artistic practice, cultural production, and reception, as well as the curatorial process. At the same time, this immateriality cannot be separated from the material components of the digital medium. A more productive approach to understanding this tension may be Tiziana Terranova's definition of immateriality as "links between materialities."¹ Probably more than any other medium for art, the digital is embedded in various layers of commercial systems and technological industry that continuously define standards for the materialities of any kind of hardware components. At the same time, the immaterial systems supported by the digital medium and its network capabilities have opened up new spaces for cultural production and DIY culture. From the macrocosm of cultural practice to the microcosm of an individual artwork, the (immaterial) links between materialities are at the core of digital media. The presentation and preservation of new media art therefore needs to be discussed on the background of the tensions and connections between the material and immaterial.

Characteristics of the Digital Medium: Challenges and Opportunities

New media art is a continuously evolving field and the development of possible taxonomies for the art form has been a much-discussed topic and an elusive goal. The fact that new media art successfully evades definitions is one of its greatest assets and attractions, but at times the art seems more alive than its practitioners want it to be. The characteristics of new media discussed in the following are by no means inclusive and can be considered a preliminary and flexible construct for outlining some of challenges in presenting the art. Curator and theorist Beryl Graham has compiled a more comprehensive comparison of the taxonomies developed by new media festivals, theorists and practitioners, such as Lev Manovich and Steve Dietz, which is available online.²

A lowest common denominator for defining new media art seems to be its computability, the fact that it is computational and based on algorithms. Other descriptive adjectives commonly used for characterizing new media art are process-oriented, time-based, dynamic, and real-time; participatory, collaborative, and performative; modular, variable, generative, and customizable. Each of these distinguishing features of the digital medium -- which do not necessarily all surface in one work and are often used in varying combinations -- seems to pose its own set of

particular challenges. The time-based and dynamic nature of new media projects is not medium-specific but equally applies to many video works or performances. The latter have been an exception to the mostly object-based art world rather than the rule and even though video seems to have found an established, safe place in the art world after approximately three decades, the relationship of museums to performance, sound art, or other "non-material" art forms remains a problematic one. Artworks that require an extended viewing period are problematic per se -- since museum and gallery visitors tend to spend only a minimal amount of time with a work -- but the time-based nature of new media art is far more problematic than that of film or video due to the inherently non-linear qualities of the digital medium. The viewer may be looking at a database-driven project that continuously configures itself over time or a visualization that is driven by real-time data flow from the Internet (and will never repeat itself). At any given point in time, the viewer might only see one possible configuration of an essentially non-linear project. New media works tend to be more context-dependent than many other art forms since they require information about which data (in the broadest sense) is being shown, where it is coming from, and according to which logic it is configured. It is essential to a successful presentation of new media art to provide viewers

with sufficient context for understanding the basics of a process-oriented system, even if their viewing time is very short.

The potentially interactive and participatory nature of new media projects -- which allow people to navigate, assemble, or contribute to an art work in a way that goes beyond the interactive, mental event of experiencing it -- runs counter to the basic rule of museums, "Please do not touch the art." For the longest time, visitors of museums and galleries have entered art spaces with the expectation to contemplate objects. Many works of new media art do not only require active engagement but a certain familiarity with interfaces and navigation paradigms. While visitors of new media art festivals tend to draw a more specialized audience that is largely knowledgeable in "interface culture," one cannot presume that the broader museum audience consists of new media experts.

Interaction and participation are key elements in transforming new media works into "open systems." The openness of the system substantially differs from one digital artwork to the next, and one could argue that the degree of openness is directly related to the investment of time the viewer / participant has to make and the amount of expertise necessary to engage with it. Some works are open to navigation but still "informationally closed" (a term I borrow from N. Katherine Hayles³) since viewers navigate through a (visual, textual, aural) system that has been

configured by an artist, responds to its internal organization, and is not open to reconfiguration. Openness increases in projects where artists have established a framework that allows participants to create a contribution to the system, such as Josh On's *They rule*⁴ which allows users to create maps for the interconnectedness of the board of directors of corporations. This type of work is more open on the level of experience and perception than technologically, since it constantly keeps evolving and is conceptually shaped by the contributions of participants. The type of openness where any contributor can also reconfigure the system and its framework or build on it, mostly occurs within the realm of open source software development, be it in an artistic context or not. An example would be *Processing*, a visual programming environment and electronic sketchbook for developing ideas initiated by Ben Fry and Casey Reas.⁵ Reconfigurable and expandable new media projects ask for an involved engagement on the participants end and are not easy to integrate into the gallery space unless they are presented mostly as a "documentation of concept."

The presentation of new media art involves the creation of platforms of exchange, between the artwork and audience or the public space of a gallery and the public space of a network etc. The practical challenges of creating these platforms include need for continuous

maintenance and a flexible and technologically equipped exhibition environment, which museum buildings (which are traditionally based on the "white cube" model) do not necessarily provide. Among the more conceptual challenges are the facilitation of audience engagement and the need for continuing educational programs in order to make the public more familiar with the still emerging art form.

There is no doubt that digital technologies have profoundly shaped the landscape of cultural production. Compared to media such as radio, video, or television -- which mostly rely on a relatively defined technological super-structure of production, transmission, and reception and a one-to-many broadcasting model -- the modularity and variability of the digital medium constitutes a far broader and more scattered landscape of production and distribution. The networked environment of the World Wide Web supports content distribution by any individual through numerous channels, ranging from websites to weblogs, or Wikis⁶. Participation and collaboration are inherent to the networked digital medium, which supports and relies on a constant exchange and flow of information, and are an important element in multi-user environments, among them chat rooms, 3D worlds or massive multi-player games that allow their inhabitants to extend and "build" the virtual space. Due to the modularity of the digital medium, the plethora of available technologies

and softwares (commercial or open source) can also potentially be manipulated or expanded. As a result, there are numerous potential points of intervention for artistic practice and cultural production in general. Digital technologies and networks has opened up new spaces for autonomous producers and DIY culture -- through the process of copying, sharing and remixing -- as well as for the industry of market-driven media. Artistic production oscillates between the poles of openness of systems and restrictions imposed by protocols and the technological industry. This changed landscape of cultural exchange has a direct influence on the creation, presentation, and reception of art and affects the role of everyone engaged in these aspects.

Collaborative Exchange and the Changing Roles of Artists, Audiences, and Curators

Collaborative exchange has become a fundamental part of artistic new media practice and has affected notions of the artwork and authorship, which in turn has fundamental consequences for curatorial practice and the presentation of the art. The artistic process in new media creation to a large extent relies on collaborative models, which manifest themselves on various levels. New media works often require a complex collaboration between artists, programmers, researchers, designers, or scientists,

whose role may range from that of a consultant to a full collaborator. As opposed to a scenario where artists hire people to build or create components for their work according to instructions, new media practice brings together collaborators who are often very much involved in making aesthetic decisions regarding the work. Another level of cooperation occurs in projects where an artist establishes a framework in which other artists create original works. Lisa Jevbratt's *Mapping the Web Infome*⁷ and *Carnivore*⁸ by Alex Galloway and the Radical Software Group (RSG) are perfect examples of this approach. In both works, the artists set certain parameters through software or a server and invited other artists to create "clients," which in and of themselves again constitute art works. In these cases, the artists begin to play a role similar to that of a curator, and the collaborations are usually the result of extensive previous discussions, which sometimes take place on mailing lists specifically established for this purpose. While artists groups and collectives are by no means a new phenomenon that emerged along with digital media, they certainly have not been in the majority when it comes to artistic creation, and the art world in general has traditionally been focused on the model of a single creator and "star." Works that have been created by multiple authors in varying combinations over longer periods of time also necessitate new strategies for documentation, which will be discussed later in this essay.

A further level of participatory exchange -- depending on the "openness" of the work -- occurs on the level of audience input. While the artists still maintain a certain (and often substantial) control over the visual display or underlying framework of the project, works such as Mark Napier's *P-Soup*⁹ or Andy Deck's *Open Studio*¹⁰, an online multi-user drawing board, would consist of a blank screen without the audience's contribution. These projects are software "systems" in which the creation of the "manifestation" of the work relies on the content contributed by the audience. The artist becomes a mediatory agent and facilitator -- both for collaboration with other artists and for audiences' interaction with and contribution to the artwork. Any new media artist who creates a system that is open to public contribution has to consider the "socialization" of the work and the most effective framework for social interaction.

The collaborative exchanges outlined above have profound implications for the curatorial process. In the organization of an exhibition presenting new media art, a curator may play a role closer to that of a producer -- particularly if work is commissioned -- supervising a team of creators and the public presentation of the work. Collaboration requires an increased openness of the production and presentation process as well as an awareness of process. The success and results of an exhibition are

less predictable and highly dependent on the "platform" that the curators and artists establish for exchanges with the audience.

The openness of digital technologies also potentially allows for more audience involvement in the curatorial process. The development of ideas of "public curation" currently still is in the experimental stages but is increasingly gaining momentum within the museum world through initiatives that attempt to go beyond feedback in online discussion forums. The project, *(Your Show Here)*¹¹ -- shown at the Massachusetts Museum of Contemporary Art (MASS MoCA) in 2001 -- invited gallery visitors to use a curatorial software program that allowed them to filter and choose from a database of images of over 100 digital images of 20th-century works of art [Fig. 1], write a statement about their choices, title their show, and project their selections from onto the walls of the gallery. A similar system was developed in a class at the Interactive Telecommunications Program (ITP) at New York University, organized in conjunction with the Whitney Museum and devoted to the development of interfaces that would enhance the experience of visitors to the Whitney. The project -- *Connections* by Jon Alpert, Eric Green, Betsy Seder and Victoria Westhead -- consisted of three display walls with screens and one interaction wall, which used the metaphor of the mechanical switchboard. Users could plug a cable into the socket corresponding to an image from

the Whitney collection, preview the image, and make it appear on one of the screens on the display walls. Both projects use the possibilities of instant recycling, reproduction, and archiving facilitated by the digital medium to propose an alternative model of presenting and viewing art that moves away from a traditional pre-scripted model and allows the art to take on new meanings in multiple contextual reconfigurations. The models for “public curation” outlined above still consist of pre-defined archives but blur the boundaries between public and curator, allowing for models that potentially could establish a more direct reflection of the demands, tastes, and approaches of an audience. Due to the increasing development and popularity of mobile technologies, public response to and discussion of art has also begun to evolve on a self-organized grass-roots level. Students of Marymount Manhattan College recently created "unofficial" audio tours for artworks at New York's Museum of Modern Art in the form of podcasts, and made their *MoMA Audio Guides* available at the website of Art Mobs¹², an organization dedicated to exploring the intersection of communication, art, and mobile technology. The public is invited to create their own audio guides and submit them to the site. The more sophisticated models of public curation have been developed within the online environment and will be discussed within the context of online presentation.

One could argue that the changes in the roles of artists, audiences, and curators that have been brought about by collaborative models largely relate to the immateriality of systems, exchanges, and cultural production in general. At the same time, all parties involved are establishing links between the virtual space of the work, with its communicative and participatory interaction, and the respective site of interaction, be it a gallery space or one's own home.

New Media in the Gallery: From Installation to "Mobile" Art

It seems to be inherently misguided to address a topic outlined as "presenting new media," which suggests that new media might represent a unified field or that there might be a "silver bullet" or perfect approach to installing the work. New media art is an extremely hybrid practice, and each of the different manifestations of the art -- from installation and virtual reality to software art, net art, and mobile media -- poses its own set of challenges and requires an often distinctly different approach. The presentation and physical environment of a new media project ultimately should be defined by the conceptual requirements of the artwork itself.

When it comes to general models, one can make a distinction between "integration" of new media in the galleries together with other art forms or its "separation" in a specific new media space or lounge. The

latter has often been criticized as a "ghettoization" -- contributing to the separation of the art form from more traditional media and epitomizing the uneasy relationship that institutions tend to have with the medium at this point in time. The major disadvantage of the lounge model is that new media art will not be experienced in the context of works in other media and becomes marginalized with regard to the "(hi)story of art" unfolding in the other galleries. The presentation of new media in a separate "black box" or lounge area with computers and screens is not necessarily driven by concept but often brought about by technical requirements -- the fact that the art might need a dark space or a lack of network connections throughout the museum etc. -- or by the fact that financing for the lounge comes from a sponsor. However, the lounge model also has certain advantages. If museums have designated (sometimes sponsored) spaces for new media art, they are also obliged to offer continuous programming for these galleries, which translates into regular exposure for the art rather than an occasional presentation over the course of several years. The set-up of computers and screens in a lounge invites people to spend more time with the works than they would invest while standing in a gallery.

Interfacing new media within the museum or gallery space always entails a certain recontextualization and often reconfiguration. Many new media art projects are inherently performative and contextual -- networked

and connected to the "outside" -- and feel decontextualized in the "white cube" that was intended to create a "sacred" space and blank slate for the contemplation of objects. The "black box" does not always provide better conditions and often is not required by the work itself: unless a new media project depends on specific lighting conditions -- because it strives to create an immersive space or incorporates light sensors -- it could equally be shown in a lit gallery space. However, this would require extremely strong and therefore costly projectors, which many institutions cannot afford. Since all forms of new media art tend to be process- rather than object-oriented, it is of crucial importance to communicate the underlying concept and context of the respective process to the audience, be it through labels or the configuration of the gallery space.

Installations of digital art sometimes need to be installed according to specified parameters (such as height, width, defined lighting requirements etc.) and create a distinct presence in physical space. However, the variability and modularity inherent to the digital medium also means that a work -- be it an installation, net art, or software art -- can be reconfigured for a specific space and shown in very different ways: the same work might be presented, for example, with installation components, as a projection, on a screen, or within a kiosk set-up. This applies to software art, in particular, which is by nature focused on the algorithmically

driven process of the "virtual object" rather than its display mechanisms. The basic arrangement of a laptop or computer / screen on a desk may provide the "natural environment" in which people usually interact with computers or surf the Internet but this set-up usually seems out of context within a museum space and creates an undesirable office environment. In a gallery space, curators and artists are confronted with the question whether it is desirable to hide the materiality of the computer (and construct pedestals or walls) or to expose it, which may be essential for works that address the hardware itself.

The variability of new media installations also means that the same work might not ever be installed again the same way as it travels from venue to venue. The net art project *Apartment*¹³ by Martin Wattenberg and Marek Walczak, for example, has been shown as installation / projection in various configurations in galleries in the US and Europe. The work was inspired by the Memory Palace / Theater, 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. One part of the project consists of a 2D component where words and texts typed in by viewers create a two-dimensional floor plan of rooms, similar to a

blueprint. The architecture is based on a semantic analysis of the viewers' words, reorganizing them to reflect the underlying themes they express. This structure is then translated into navigable 3D dwellings composed of images, which are the results of Internet searches run for the words typed in by the viewer. As part of the "Data Dynamics" exhibition at the Whitney Museum of American Art in 2001, *Apartment* was shown as a single-user workstation where visitors would create the 2D apartment, while the 3D interface was projected onto the museum wall. [Fig. 2] The projection established the connection to the memory palace (mentally inscribing words onto a wall) as an original source of inspiration. The installation at the Whitney Museum is the only variant to date that allowed visitors to print out their apartments and take them home. In the same year, the piece was installed at the Ars Electronica Festival in Linz, Austria, with two input stations for the 2D and the 2D and 3D components projected next to each other on the wall, as well as an "archive" station, which stored all the combined apartments. [Fig. 3] The adjacent projections of the two components gave them the same experiential impact and established a more direct connection between a 2D apartment and the naming of the images in the 3D version. At the Electrohype Festival in Sweden, the 2D component was projected onto a single table. [Fig. 4] In each of its different variants, the experience of the work substantially changes.

Whether a project was created for a single user or multiple participants (or could be transformed from a single- into a multi-user project) is an important issue for presenting any type of new media art. It can be a frustrating experience to watch someone else navigate a work and wait for one's turn -- similar to giving someone else control over the TV remote control and watching them surf channels -- and multi-user projects tend to create more engaging environments in public space. Nevertheless, the "performance" of a single user also has its positive effects: visitors who are less familiar with interfaces and would have been hesitant to take over the input device and explore a work often learn and get engaged by watching other people. For any type of work that has a simultaneous presence in the gallery space and online, it becomes important to establish a connection between the physical and virtual space, be it through contextual information or by making the web component accessible in the gallery space. The decisions that need to be made in establishing connections between virtual and physical space ultimately have an effect on the aesthetics of the work and ideally should be the result of collaborations between the curator and artist(s).

The form of new media art that is both most alien to the museum context and best exemplifies the idea of the museum without walls is mobile or locative media art -- art that has been created for networked

devices such as cell phones and Palm Pilots; or incorporates "wearables" such as clothing or accessories equipped with sensors or microprocessors; or makes use of the Global Positioning System (GPS) and wireless networks in order to deliver content specific to a location. Unless these works have been specifically created for a gallery space, they naturally transcend the physical boundaries and walls of the museum. In the case of mobile devices that the audience brings to a museum (such as cell phones or Palm Pilots), the institution becomes an access point or node in the network -- for example through setting up a beaming station. In order to communicate the inherent concept of these projects, it often makes sense to establish a larger network for the artwork by collaborating with other organizations that could serve as additional nodes. Some mobile or locative media projects require to leave the museum space behind and move into public space.

Mobile media works tend to be performative and often require the organization of an ongoing event. Projects that incorporate wearable computing can only be used by a limited number of people at any given time, and often require the presence of the artist(s) or facilitators who can assist the audience. One option of showing wearable projects is to arrange for scheduled "performances" during which the audience can experience the work. In addition to these scheduled events, it is crucial to

provide documentation that translates the project to the audience during the time periods when the piece cannot be actively used.

One of the most challenging scenarios for presenting new media art is the integration of Internet art within the museum or gallery space is.

Since net art has been created to be seen by anyone, anywhere, anytime (provided one has access to the network), it does not necessarily need a museum to be presented or introduced to the public. While net art exists within a (virtual) public space, it seems to be particularly difficult to "connect" it to the public space of a gallery. There have been multiple approaches to showing this art from, which all have their advantages and disadvantages. Some works of net art lend themselves to presentation through installation and / or physical interfaces because they address notions of space. Others work well as a projection -- these are often works that have not been created for a browser window and beg to get out of it. Yet others need to maintain their inherent "netness" and require one-on-one interaction through the physical set-up of a computer with monitor. The latter is supported by the lounge model where visitors either access each work on its dedicated computer or have a number of computers available, each of which provides a portal to all the works in the exhibition.

Decisions about the presentation of a new media work within a gallery always have to be made on a case-by-case basis, and there are no

specific methods for installing each of the different forms of new media that will automatically ensure a successful exhibition.

Models for Online Presentation

In the case of net art, in particular, the discussion surrounding presentation cannot be limited to the space of the physical gallery but also needs to consider the "natural habitat" of the art, the online environment. When net art officially came into being with the advent of the WWW in the early 1990s, an online art world -- consisting of artists, critics, curators, theorists and other practitioners -- immediately developed in tandem with the art and outside of the institutional art world. One of the inherent promises of net art was the opportunity to establish an "independent" art world that could function outside of the framework of the institution and its systems of validation. Even though it may not be their explicit goal, independent online exhibitions implicitly challenge the structures of legitimation created by the museum system and traditional art world. A broader art audience may still place more trust in the selection undertaken by a prestigious museum, but in the online environment, the only signifier of validation may be the brand recognition carried by the museum's name. In the late 1990s, institutions also began to pay attention to net art as part of contemporary artistic practice and slowly incorporated it into their

programming. Presentation of net art began to unfold not only independent of institutions -- through Web projects created by independent curators and (artist) collaboratives -- but also in an institutional context -- through websites affiliated with museums, such as the Walker Art Center's *Gallery 9*¹⁴, SF MOMA's *e-space*¹⁵ and the Whitney Museum's *artport*¹⁶. The presentation of net art within these different contexts -- institutional or non-institutional -- differs substantially when it comes to the interpretation of selection, filtering, and "gate-keeping" as fundamental aspects of the curatorial process.

The "online only" exhibition of net art seems to have advantages in that it preserves the original context of how the art is supposed to be seen, but poses the problem that one has only limited control over how a work is experienced by the viewer. Net art projects often require specific browser versions, plug-ins, or a minimum screen resolution etc. and the inability to view a work becomes more of an issue when viewers "visit" an online exhibition organized by a museum or arts organization, which they hold responsible for providing a certain quality of the experience of art.

The online presentation of net art still involves many of the traditional aspects of curation -- such as selection of works, organization of the exhibit and its art-historical framing -- but also has to acknowledge the specifics of its environment and its shifting contexts. The Internet is a

contextual network where a different context is always only one click away, and everyone is engaged in a continuous process of creating context and re-contextualizing. The embeddedness of online art into a rich contextual environment blurs boundaries between "categories" of cultural production (fine arts, pop culture, entertainment, software etc.) and creates a space for specialized interests with a very narrow focus. While an exhibition shown in physical space has a specific opening and closing date, requires a visit to a physical locality and, after its closing, becomes part of the "cultural archive" through its catalogue, documentation, and critical reception, an online exhibition is seen by a translocal community, never closes and continues to exist indefinitely (until some party fails in sustaining it). It exists within a network of related and previous exhibitions that can be seen directly next to it in another browser window, becoming part of the continuous evolution of the art form. In addition, the artworks included in the exhibition (through linking) may continue to evolve over time. Online presentation has to acknowledge the distributed model of the networked exhibition environment: an exhibition of net art on a website, be it that of an institution or individual, inhabits a "living," discursive environment with multiple perspectives beyond those of a single institution or organization.

The Walker Art Center's online exhibition space *Gallery 9*, developed from 1997 until 2003 under the direction of its founding director Steve Dietz, acknowledged this need from its inception and was created as an online venue for both the exhibition and contextualization of Internet-based art. As Steve Dietz explains in his introduction to the site, the space features "artist commissions, interface experiments, exhibitions, community discussion, a study collection, hyperessays, filtered links, lectures and other guerilla raids into real space, and collaborations with other entities (both internal and external)." *Gallery 9* also became a permanent home for content that was not originally created by the Walker Art Center, such as Benjamin Weil's *äda'web*, an online gallery and digital foundry (created in 1995) that featured work by net artists as well as established artists, for instance Jenny Holtzer and Julia Scher, who expanded their practice with the new medium. After *äda'web* lost its financial support, the gallery and its "holdings" were permanently archived at *Gallery 9*. Another part of the gallery's archive is G.H. Hovagimyan's *Art Dirt*, an online radio talk show that was originally webcast from 1996 - 98 by the Pseudo Online Network. While sites such as *Gallery 9* or the Whitney Museum's *artport* are geared towards creating a contextual network, they still follow a traditional model in that they are overseen by a single curator rather than open to a multiplicity of curatorial "voices."

These institutional sites find their counterpart in online exhibitions that are organized by individual, independent curators -- not affiliated with an institution -- and often tend to take more experimental formats. Since these curatorial efforts are mostly distributed throughout the specialized community of the online art world, they do not necessarily need to consider a broader audience and museum patron who might not be familiar with net art but visits an online gallery since it is affiliated with a major institution. A shift from the model of the single curator to that of multiple curatorial perspectives is more likely to be found at websites of non-profit organizations devoted to online art. The British website *low-fi net art locator*¹⁷, run by a collaborative team, regularly invites guests to "curate" a selection of online projects within a theme of the guest's choice. The selections are accompanied by a curatorial statement and brief texts on each of the projects. Over time, *low-fi* has grown into an impressive curatorial resource, consisting of numerous online exhibitions. A range of perspectives can also be found at *turbulence*¹⁸, a project of New Radio and Performing Arts and its co-directors Helen Thorington and Jo-Anne Green, which, in addition to commissioned projects, features curated exhibitions (often organized by artists) as well as "Artist Studios" that present artists' works and provide context for them through writings and interviews.

Some of the most advanced implementations of multiple curatorial perspectives and "public curation" have occurred in projects that explicitly consider software as a framework for curation, such as the software art repository *runme.org*¹⁹ and Eva Grubinger's *C@C - computer aided curating*²⁰. Within a technological framework, curation is always mediated and agency becomes distributed between the curator, the public, and software is involved in the filtering process. Eva Grubinger's *C@C* (1993), with software development by Thomas Kaulmann, probably was the earliest attempt at creating a software-driven framework and tool that responded to the needs of artistic and curatorial practice in an online environment. *C@C* was visionary at its time in that it developed a space that combined the production, presentation, reception, and purchase of art and thus erased several boundaries between delineated practices within the art system. The concept included individual artist studios with built-in editing tools; a branching social network structure in which artists could introduce other selected artists; an area for discussion by the public and curators; as well as spaces that could be "purchased" by art dealers in order to present and promote their activities. The idea of "automated curation" and software-based filtering becomes more pronounced in the *runme* software art repository, an open, moderated database that emerged out of the *Readme* software art festival (first held in Moscow in

2002) and launched in January 2003. The site is an open database to which anyone can submit their project accompanied by commentary and contextual information. Selection only occurs in the reviewing process conducted by the *runme* "expert team" who evaluate whether a project fits the basic objective of the site and makes an interesting contribution before the work becomes available for viewing to the public through the Web interface. While the team has final say over inclusion of a project, the basic criteria for submission are fairly broad, and the initial filtering process certainly could not be described as "highly selective." Further filtering occurs in the classifying and labeling that occurs through the taxonomical system established for the site: projects are classified according to a list of categories of software art as well as a "keyword cloud" that further describes projects and allows viewers to navigate them. [Fig. 5] Both the categories and keywords are open to additions / revisions by the public, so that classification occurs in a process where agency is distributed between automation and "human input." In different ways and to varying degrees, all of the above models for online presentation illustrate the changes that the "immaterial systems" of the online environment have brought about for concepts of the exhibition.

Preservation Strategies: From Materiality to Immaterial Process

The inherent nature of new media projects and the collaborative processes employed in their creation and presentation make it necessary to develop new models and criteria for documenting and preserving process and instability. Both in Europe and the US, several preservation initiatives are striving to create standards for the preservation of media works. Among them are the Variable Media Network²¹ -- 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 and INCCA.²² (International Network for the Preservation of Contemporary Art, <http://www.incca.org>). Main issues that have to be addressed by these initiatives include the development of vocabulary for catalog records, standards that allow the interoperability of the metadata gathered by institutions; and tools for the cataloguing of "unstable" and process-oriented art. Among the latter is the Guggenheim's "Variable Media Questionnaire," an interactive questionnaire that enables artists and museum and media consultants to identify artist-approved strategies for preserving artwork and to define the behaviors of artworks in a media-independent way. The behaviors defined by the questionnaire are installed / performed / reproduced / duplicated / interactive / encoded / networked / contained. Other tools include Franklin Furnace's primarily performance-

oriented archive cataloging database; and the Digital Asset Management Database (DAMD)²³, developed at the UC Berkeley Art Museum, which consists of seven related databases that store files and the objects they represent, integrate descriptive metadata from institutions' Collection Management System and support their export to different formats.

The challenges of documenting and preserving new media art most poignantly illustrate the concept of immateriality as links between materialities -- the connections between hardware and software components and processes initiated by humans and machines that form an immaterial system of their own. As previously mentioned, some of the main issues of preservation are not related to a deterioration of bits and bytes but arise from the fact that hardware is almost obsolete once it becomes available on the market (the next system already being in development) and operation systems and software constantly keep changing. The most inelegant and impractical strategy for addressing this situation is to collect software and hardware, which would turn any art institution or organization into a "computer museum." Another method of preservation are emulators, computer programs that "recreate" the conditions of hardware, software, or operating systems, so that the original code can still run on a newer system. Yet another approach is "migration" -- an upgrade to the next version of hardware / software. The latter may

work well for some projects and turn out to be problematic for others, which might still look "dated" in their recreation: if the latest technology had been available to the artists at the time of the work's creation, they might have done a different project in the first place.

In the spring of 2004, the Guggenheim Museum in New York presented a groundbreaking exhibition called *Seeing Double -- Emulation in Theory and Practice*²⁴, which paired new media artworks (as well as others created in now endangered media) with their re-created doubles -- a version of the original upgraded to a newer medium or platform. Organized by Jon Ippolito, Caitlin Jones and Carol Stringari, the show included works by Cory Arcangel, Mary Flanagan, Jodi, Robert Morris, Nam June Paik, John F. Simon Jr., Grahame Weinbren and Roberta Friedman. The term emulation was interpreted in a broader sense since some of the works were technically migrations. John F. Simon, Jr.'s *Color Panel v1.0*, for example -- originally created for a 1994 Apple PowerBook 280C stripped of its casing and embedded in a white acrylic frame -- was migrated to a G3, and the artist had to "slow down" the speed at which the program originally was running. [Fig. 6] The circuitry of the 280C, which is visible on the frame in the original piece, does not exist in the G3 any more, and Simon decided to glue the original circuitry, now without any function, on the G3's frame. In some cases, where the original work

consists of a hardware manipulation that makes the specific hardware itself a focus of the project, the artists and organizers left the artwork untouched. Artist Cory Arcangel, for example, has created a whole body of work that involves a re-engineering of Nintendo cartridges and plays with the aesthetics of Nintendo games. The project would not only be impossible to upgrade but would become meaningless. The exhibition, supported by the Daniel Langlois Foundation *for Art, Science, and Technology*, gave its audience a unique opportunity to compare an original to its recreated version, and detailed documentation about the show is available at the accompanying web site.

As mentioned earlier, the variability and collaborative creation process of new media has the effect that the artwork often undergoes changes in personnel, equipment, and scale from one venue to the next. Current vocabularies and tools for describing and documenting artwork hardly accommodate the various mutations new media art undergoes. In his essay "Death by Wall Label,"²⁵ Jon Ippolito uses the wall label (the art institution's standard method for "defining" a work) as a starting point for exploring the documentation problems posed by new media art's variable authors, titles, and media. Using the vocabulary of the Guggenheim's "Variable Media Questionnaire," Ippolito develops an alternative to the standard vocabulary of the wall label.

A documentation tool that specifically addresses the issue of mutability is *The Pool* [Fig. 7], developed by Ippolito, Joline Blais and collaborators at the University of Maine's Still Water Lab.²⁶ *The Pool* was specifically designed as an architecture for asynchronous and distributed creativity and documents the creative process in different stages: the "Intent," a description of what the artwork might be, an "Approach" to how it could be implemented and a "Release" of the artwork online. The architecture also includes a scaling system that allows visitors to the site to rate any given project. *The Pool* supplies descriptions of projects' versions, reviews of the projects, as well as relationships to other works in the database. Tags to contributors make it possible to credit all the artists who have worked on a project at any given stage. *The Pool* illustrates the shifts in the paradigm of culture production induced by the digital commons where a whole culture can be built upon seed ideas and different iterations of a particular project.

One of the most difficult challenges of preserving new media and net art, in particular, arises from the immateriality of context in the hyperlinked environment of the Internet and the ephemeral nature of links -- a phenomenon often referred to as "link rot." Olia Lialina's early net art piece *Anna Karenina Goes to Paradise*²⁷, for example, sets up three "Acts" -- "Anna Looking for Love," "Anna Looking for Train," "Anna Looking for Paradise." The

content for each act is provided by pages that list the results that search engines returned for the words love, train, and paradise at the time of the work's creation. Lialina's piece (which is already contextualized by Anna Karenina, the novel) was meant to point to constant shifts of context, which ultimately are the focus and content of the artwork. If one visits the work today, most of the links will be "dead" --the piece has been reduced to its concept while the implementation is inaccessible. Even if one would rewrite the piece so that it allows returns "live" search results, the previous versions of the piece will be lost unless their documentation -- for example, through screenshots of all the sites that are linked to -- is "programmed" into the piece itself. Artists usually have neither the time nor the money to engage in long-term preservation of their work, and institutions or tools developed by preservation initiatives could fulfill an important function in this type of context preservation.

There always have been and will be art objects that can rely on an established cultural "system" of presentation and preservation (museums, galleries, collectors, conservators) and new media art does not threaten to supersede these objects. However, if new media art will find its place in the art world through a support system that accommodates its needs, it will expand the notion of what art is and can be. Picking up where conceptual art and other "movements" that reconsidered concepts of the

art object left off, new media art has the potential to broaden our understanding of artistic practice.

¹ Tiziana Terranova, "Immateriality and Cultural Production," presentation at the symposium "Curating, Immateriality, Systems: On Curating Digital Media," Tate Modern, London, June 4, 2005; online archive at <http://www.tate.org.uk/onlineevents/archive/CuratingImmaterialitySystems/>

² Beryl Graham, "A small collection of categories and keywords of new media art," <http://www.crumbweb.org/crumb/phase3/append/taxontab.htm>

³ N. Katherine Hayles, "Liberal Subjectivity Imperiled: Norbert Wiener and Cybernetic Anxiety," in *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (University of Chicago Press: Chicago, 1999)

⁴ Josh On, "They Rule," <http://www.theyrule.net>

⁵ Benjamin Fry and Casey Reas, "Processing," <http://www.processing.org>

⁶ A Wiki is a web application that allows users to add content, as on an Internet forum, but also allows anyone to edit the content. The term Wiki also refers to the collaborative software used to create such a website

⁷ Lisa Jevbratt, *Mapping the Web Infome*,

<http://www.newlangtonarts.org/network/infome>

⁸ Alex Galloway and Radical Software Group (RSG), *Carnivore*,

<http://www.rhizome.org/carnivore>

⁹ Mark Napier, *P-Soup*, <http://www.potatoland.org/p-soup>

¹⁰ Andy Deck's *Open Studio*, <http://draw.artcontext.net>

¹¹ Tara McDowell and Letha Wilson (project coordinators), Chris Pennock (software design), Nina Dinoff, (graphic design) and Scott Paterson (information architecture)

¹² Art Mobs, http://mod.blogs.com/art_mobs/

¹³ Martin Wattenberg and Marek Walczak, *Apartment*,

<http://www.turbulence.org/Works/apartment>

¹⁴ *Gallery 9*, Walker Art Center, <http://gallery9.walkerart.org>

¹⁵ e-space, San Francisco Museum of Modern Art,

http://www.sfmoma.org/espace/espace_overview.html

¹⁶ *artport*, Whitney Museum of American Art, <http://artport.whitney.org>

¹⁷ *low-fi net art locator*, organized by Kris Cohen, Rod Dickinson, Jenny Ekelund, Luci Eysers, Alex Kent, Jon Thomson, Chloe Vaitsou; and other members include Ryan Johnston, Pierre le Gonidec, Anna Kari and Guilhem Alandry. <http://www.low-fi.org.uk>

¹⁸ *turbulence*, New Radio and Performing Arts, <http://www.turbulence.org/>

¹⁹ *Runme* software art repository, developed by Amy Alexander, Florian Cramer, Matthew Fuller, Olga Goriunova, Thomax Kaulmann, Alex McLean, Pit Schultz, Alexei Shulgin, and The Yes Men.

<http://www.runme.org>

²⁰ Eva Grubinger, *C@C Computer Aided Curating*,

http://www.aec.at/en/archives/festival_archive/festival_catalogs/festival_artikel.asp?iProjectID=8638

²¹ 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

http://www.bampfa.berkeley.edu/ciao/avant_garde.html

²² International Network for the Preservation of Contemporary Art,

<http://www.incca.org>

²³ Digital Asset Management Database (DAMD),

http://www.bampfa.berkeley.edu/moac/damd/DAMD_manual.pdf

²⁴ *Seeing Double -- Emulation in Theory and Practice*, Solomon R.

Guggenheim Museum, New York,

<http://www.variablemedia.net/e/seeingdouble/home.html>

²⁵ Jon Ippolito, "Deathy by Wall Label" in *Presenting New Media*, ed.

Christiane Paul (University of California Press: Berkeley, CA, forthcoming)

²⁶ *The Pool*, <http://river.asap.um.maine.edu/~jon/pool/splash.html>

²⁷ Olia Lialina, *Anna Karenina Goes to Paradise*,

<http://www.teleportacia.org/anna/>