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Intro to MIAP  
Final Project Paper

Conserving Computer-Based Art:  
Two Works from MoMA's Permanent Collection

**Introduction**

For my final project in Introduction to Moving Image Archiving and Preservation, I worked with Museum of Modern Art (MoMA) Media Conservator Glenn Wharton, New York University (NYU) Courant Institute Clinical Associate Professor of Computer Science Deena Engel, and three computer science undergraduate students from NYU (Katherine Freer, Elizabeth Pelka, and Paige Ponzeka). The project as a whole was to explore the problems of preserving computer-based art using two works from MoMA: Teiji Furuhashi's *Lovers* (1994) and Philip Worthington's *Shadow Monsters* (2004) and write official media conservation laboratory records for the two under researched pieces. My individual project was to delve into the art historical, curatorial, and conservation aspects of the two computer-based installations. I focused on the artists, installation concerns (e.g. room size, wall color, placement of screens and equipment), variability (e.g. allowable change, how they have been exhibited elsewhere), and conservation needs of the pieces.

My paper is divided into five sections. The first part of my paper will provide a brief historical background of the MoMA and its Department of Media: the department most strongly associated with the two works I researched. The second section will be mostly art historical in nature, focusing on the two specific works in question and their creators. This will include biographical information, background information on their oeuvre, media used, and the meaning or intention of their work. In the third part I will focus on the

installation concerns of both pieces. This section will be curatorial in nature; I will determine what size room the work should be exhibited in, how the walls function in the display, where the equipment will be placed in respect to the piece, what kind of equipment is needed to install it and the artistic intention that will play a major role in all of these details. Also provided will be an outline of the entire group's work. In the fourth portion, I will give some background on digital and computer-based art in order to better understand the broader issues at hand when dealing with this challenging type of art. In the fifth and final part of the paper, I will assert my recommendations to MoMA for future work, research, and preservation in regard to these two pieces.

### **The History of MoMA and its Media Department**

MoMA was founded in 1929 by Abby Aldrich Rockefeller, Lillie P. Bliss, Mary Quinn Sullivan, A. Conger Goodyear, Frank Crowninshield, Josephine Boardman Crane, and Paul J. Sachs. Since then, it has become what is widely recognized as the most prominent museum of modern art in the world, with incomparable holdings in contemporary art as well.<sup>1</sup> The Museum was founded ten days after the stock market crash of 1929 in a small group of midtown Manhattan rooms by three women who were passionate about modern art.<sup>2</sup> From those relatively humble beginnings, MoMA has grown to what it is today: occupying two buildings on Fifty-third and Fifty-fourth streets, with seven major curatorial departments: painting and sculpture; architecture and design; photography; drawings; prints and illustrated books; film and video; and media and performance.

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<sup>1</sup> In this paper, 'contemporary art' refers to all post-1960s work. This reflects the impulses of artists to create art that defied or challenged institutional norms of the collectible object.

<sup>2</sup> Harriet S. Bee and Michelle Elligott, ed. *Art in Our Time: A Chronicle of The Museum of Modern Art* (New York: Museum of Modern Art, 2004) 11.

The MoMA has led the way in the acquiring, exhibiting, acquiring and conserving media art since the late 1960s.<sup>3</sup> Iris Barry was the MoMA's first film curator and with the Museum's Founding Director Alfred H. Barr Jr., she established the MoMA Film Library. Its then director, documentary filmmaker Willard van Dyke, renamed the department in 1966 to the Department of Film.<sup>4</sup>

Associate Curator of Media Barbara London has played a prominent role in the Department of Media throughout its various title changes. After starting out at the Department of Prints and Illustrated Books in 1973, London soon moved on to working with video at a time when the medium had not yet entered the museum's collections. In late 1973 when MoMA received a National Endowment of the Arts grant to purchase a videocassette deck and two monitors, London began to organize shows of video art that consequently entered the canon of art history.<sup>5</sup> The institution founded its video program shortly after, in 1974. In 1994, the department was then renamed again as the Department of Film and Video in an effort to reflect the Museum's growing collection of video art, and again in 2001, to Film and Media, as they acquired media beyond video. On October 2, 2006, Film and Media was split into the Department of Film and Video and the Department of Media and Performance and remains in these designations as of this writing.

Klaus Biesenbach was appointed Chief Curator of the new Department of Media in October of 2006. Prior to this post, he was a curator of the former Film and Media department and Chief Curator at P.S.1 Contemporary Art Center. When asked to define the

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<sup>3</sup> Museum of Modern Art Department of Communications, "The Museum of Modern Art Creates New Curatorial Department: Klaus Biesenbach is Appointed Chief Curator of Media," (New York: Museum of Modern Art, 2006).

<sup>4</sup> Harriet S. Bee and Michelle Elligott, ed. *Art in Our Time: A Chronicle of The Museum of Modern Art* (New York: Museum of Modern Art, 2004) 135.

<sup>5</sup> Barbara London, *Multi-Multi-Media: An Interview with Barbara London*, Sarah Cook (www.crumbweb.org, 2001).

art that would fall under his department, Biesenbach replied, "'Time-based' work that is meant to be viewed in a gallery. In contrast to [film], you're not sitting and watching from the beginning to the end in a dark room with other people. It's basically always gallery-based. It can be moving pictures. It can be beautiful sound installations . . . It can be performance pieces. They're all time-based, and they're all moving in some broad sense."<sup>6</sup> Biesenbach's distinction of "meant to be viewed in a gallery" is an important one: this would preclude many time-based works that are inherently difficult or impossible to collect or exhibition in an institution.

### **The Two Works: Teiji Furuhashi's *Lovers* and Philip Worthington's *Shadow Monsters***

Teiji Furuhashi (1960-1995) was an acclaimed media artist who had a short but vital career, the height of which was in the 1980s when he appeared and produced work with "diode" artist Tatsuo Miyajima and "mutant" sculptor Noboru Tsubaki.<sup>7</sup> Furuhashi came from a family of creative characters: his parents designed exquisite kimonos and his grandmother owned a geisha house. As a teenager, he played drums, keyboard, and guitar for jazz and rock bands. He was first exposed to performance and conceptual art while attending Kyoto University of Arts. One of his most important early works was completed soon after, *7 Conversation Styles* (1984). It was a black-and-white video showing Furuhashi jolting on the screen as a "robotized everyman". The work was shown in the MoMA's "New Video Japan" show in 1986,<sup>8</sup> curated by Barbara London.

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<sup>6</sup> Kate Taylor, "MoMA Adds Department for 'Media'," [The New York Sun](#) 3 October 2006.

<sup>7</sup> Barbara London, "Teiji Furuhashi and his Legacy," [HIT Asia Pacific](#) 2006. 1.

<sup>8</sup> Barbara London, "Teiji Furuhashi and his Legacy," [HIT Asia Pacific](#) 2006. 1.

After a short stint in New York City sewing costumes and absorbing the vibrant experimental art scene there, Furuhashi moved back to Japan and teamed up with Toru Koyamada, Yukihiro Hozumi, Shiro Takatani, Takayuki Fujimoto, and Hiromasa Tomari to form Dumb Type, a collective of artists, architects, designers, choreographers, actors, and computer programmers. Everyone involved in Dumb Type felt the pull of technology and wished to incorporate it to produce provocative, challenging work. Dumb Type is best known for their formally complex and socially aware performance installations. When they formed, their mission statement of sorts declared they wished to “develop an art/performance form to fill the gap between static visual art and performance dependent on dialogue.” The 'dumb' in Dumb Type thus does not denote a level of intelligence, but rather describes a desire to create without words.<sup>9</sup>

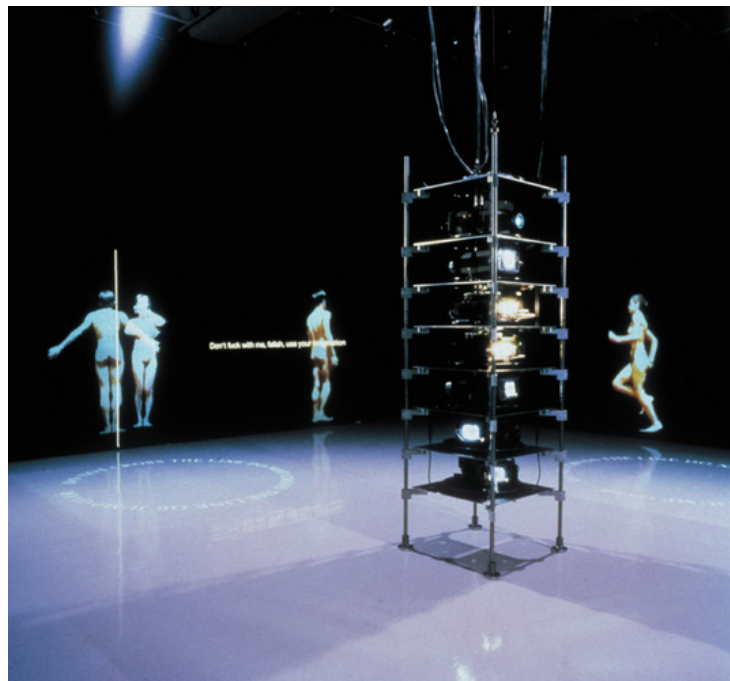


Fig. 1 Teiji Furuhashi *Lovers*

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<sup>9</sup> Dumb Type, *Dumb Type*, 6 April 2006, 1 December 2009 <[www.dumbtype.com](http://www.dumbtype.com)>.

Produced by Canon ARTLAB, *Lovers* is Teiji Furuhashi's acclaimed video installation piece from 1994. It is a computer-driven, five-channel laser disc sound installation comprised of five projectors and slides and is held jointly by the Paintings & Sculpture and Media & Performance Art Curatorial Departments. Images of nearly life-size nude figures appear and disappear on the wall surfaces. An unseen synthesizer placed behind the walls processes the muted mutterings heard throughout the experience. A second soundtrack chimes in with subtle sounds of metallic crashing. The horizontal and vertical sensors that are part of the piece can, to an extent, perceive how crowded the gallery is;<sup>10</sup> when it is relatively empty, one of the figures – Teiji himself – stops and looks directly at a viewer with outstretched arms. He stands there for a moment, defenseless and vulnerable before he falls backward into the darkness. *Lovers*, Furuhashi's final work, was an extremely ambitious piece, since in its time no other video artwork was able to use such a versatile system of integration in projecting multiple horizontally rotating images.

Philip Worthington (1977-) is an interactive designer whose playful, engaging work captivates the viewer. , He made *Shadow Monsters* as part of his degree in Interactive Design from the Royal College of Art. Some of his other projects include a digital version of a toy racecar track, an online graffiti network and a colony of digitalized ants that mimic actual ants as they forage around an interactive tabletop in search of objects.<sup>11</sup> His childhood toys and games, like Legos, peaked his interest in design. As a child he enjoyed working with his hands, taking machines apart and investigating how they worked. His first experiment with interactive media was a “web-zine” project he did for the International

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<sup>10</sup> Kazunao Abe and Yukiko Shikata, "Notes on "Lovers"," ARTLAB Fourth Original Exhibition "Lovers", trans. Miki Miyatake (n.d.).

<sup>11</sup> Design Museum, Philip Worthington/Design Mart - Design Museum exhibition - Design/Designer Information, 2007, 2 December 2009 <<http://designmuseum.org/design/philip-worthington>>.

Society of Typographical Designers (ISTD) Awards in 2000.<sup>12</sup> In 2002, he co-founded Az2 Lab, a graphic and interactive design studio. Worthington has worked in many fields on design, including with IBM to look into new ways to visualize information.<sup>13</sup>

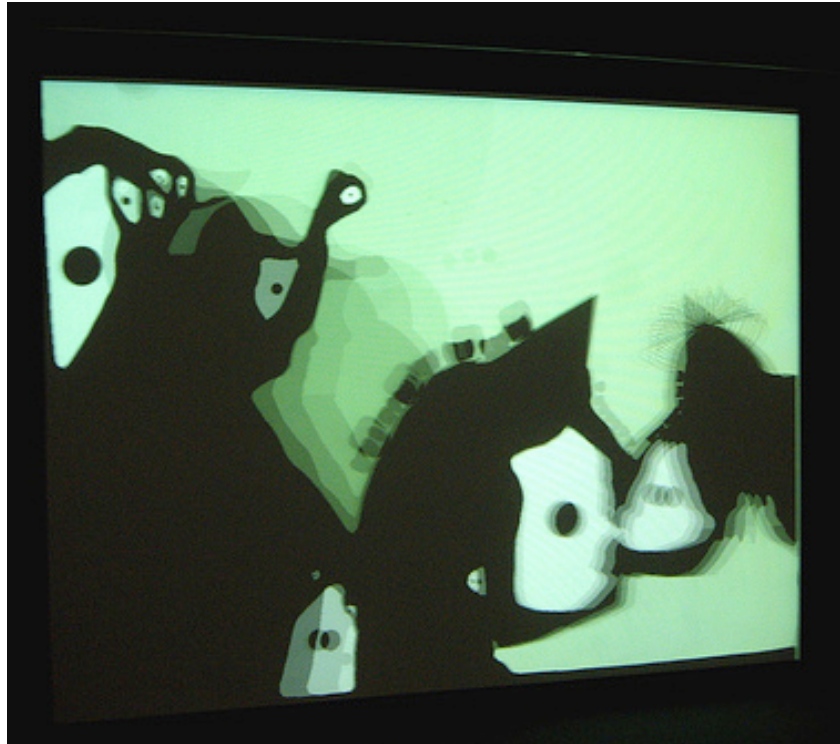


Fig. 2 Philip Worthington *Shadow Monsters*

*Shadow Monsters* is a digital, full-body interactive installation work that uses the body postures and the silhouettes of its participants to create monsters in real-time. It is kept by the Department of Architecture and Design and was first exhibited at MoMA in 2008 for the "Design and the Elastic Mind" exhibition. In making this piece, the artist Philip Worthington was inspired by Victorian and Chinese shadow play. The piece is comprised of two surfaces: a light box or other light-omitting device, and a digital display output (either

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<sup>12</sup> Design Museum, [Philip Worthington/Design Mart - Design Museum exhibition - Design/Designer Information](http://designmuseum.org/design/philip-worthington), 2007, 2 December 2009 <<http://designmuseum.org/design/philip-worthington>>.

<sup>13</sup> DesignTide, [DesignTide Designers](http://www.designtide.jp/06/en/OthersEN_designers.php), 2006, 2 December 2009 <[http://www.designtide.jp/06/en/OthersEN\\_designers.php](http://www.designtide.jp/06/en/OthersEN_designers.php)>.

projection, LED screen, etc.). The participant stands between these two surfaces, casting a shadow onto the display surface with the help of the light surface. The shadow itself is not real, but a silhouette captured by a camera that is connected to a computer that uses the *Shadow Monster* software to output the image that viewers see on the display. Vital to the piece is also the element of sound: birds squawk and dinosaurs speak, responding to the participant's range of motion.

The artist stated in an interview on November 4, 2009 that the ideal situation for experiencing this piece is in unforced, transient spaces.<sup>14</sup> He envisions people walking by the work unawares and realizing the result of their presence in front of this work in a serendipitous manner. The essence of the piece lies in the interplay between the work and its participants and between the individual participants. The surfaces themselves can vary, but light is essential, as it has a direct effect on the interplay that results. The piece was executed in London, England in 2003 and is not currently editioned.

### **Installation Concerns**

One aspect of a contemporary art museum's acquisition procedure ideally involves interviewing living artists to ascertain how a work should ideally be shown and the degree of variability the museum is allowed in installation. With traditional collectable objects such as painting and sculpture, this step is practically a non-issue. However, with post-object art (which is all new media art, including time-based art, digital art, net art, etc.), speaking with the artist is essential because the essence of the work depends on ephemeral hardware, software and programs.

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<sup>14</sup> Philip Worthington, [MoMA Artist Interview with Philip Worthington](#), Glenn Wharton, et al. (4 November 2009).



For *Lovers*, Dumb Type provided a system manual and very thorough diagrams as to how to install the work. The work requires an empty room with matte black walls in the dimensions of 10-meter squares with the height of 6 meters, with a floor paneled with white linoleum timber with a gloss finish.<sup>15</sup> A seven-shelf tower of laser discs positioned in the center of the room produces the images of figures on the walls. The top two shelves are for slide projectors and the lower five are for video projectors. The speakers are positioned directly on the center of the back of each wall and in every corner of the room. On the other side of each non-corner speaker hangs a bright, controllable light, preferably 500W halogens with a wide (around 120 degrees) angle. Each shelf functions as a turntable, and the computers that drive the piece closely monitor the 360-degree horizontal movement. A key component in producing the visual is that the foci of the multi-projections are set on the same horizontal plane, enabling the images of nude men and women to move through each other.

Behind the wall, out of sight, stands the computer system. Consisting of two PC machines, called IBM-PC1 and IBM PC2, IBM PC1 starts up the MDP Control Program, which controls four Sony LaserDisk players and the motors built in the turntable that rotates four of the video projectors. IBM PC2 controls the Pioneer LaserDisk player and the two slide projectors on the top two shelves of the apparatus. It also controls the motors built in the turntable rotating those two slide projectors plus the fifth video projector.<sup>16</sup> The installation instructions for *Lovers* are specific and detailed. Because it was acquired in the

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<sup>15</sup> Dumb Type, "'Lovers' Plan #01-004," (Kyoto, n.d.).

<sup>16</sup> Shinko Sugiyama, "Lovers System Manual," (Canon ARTLAB, 1998).

late 1990s when museums had yet to establish such protocol and the artist is deceased, the range of variability is difficult to determine with this piece.

*Shadow Monsters*, a more recent work, came with very clear and extensive installation instructions and variability guidelines. My group was also fortunate enough to conduct an official artist interview with Philip Worthington to add more information to the media laboratory record we co-wrote. It is important to point out that this work allows for more variability than *Lovers*, and because Worthington frequents New York City, we were able to collect information about his artistic intention that will be invaluable for future media conservators and curators.

The installation consists of two surfaces, a light-box or other even light emitting surface, or a display such as LED screens, or projection. According to the artist, the light-box is usually constructed on-site and made specifically for each installation.<sup>17</sup> Participants stand between the two surfaces, thereby casting a shadow from the light surface to the display surface. This is not actually a shadow but a silhouette that a camera, positioned in front of the participant, captures. The camera (connected to a computer) should be placed facing directly at the center of the light surface on the opposite wall (that being the display surface). Proper lighting is crucial in this work, since the accuracy of the recognition system depends heavily on being able to capture a clean silhouette.

The light surface usually needs to be around 2 meters wide and 1.5 meters tall, although some variability is allowed. Generally speaking, the artist feels that the bigger the display surface, the better the effect. He also recommends high ceilings, and having a

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<sup>17</sup> Philip Worthington, "Shadow Monsters: Technical Overview/Guidelines," (2004).

around 4 meters between the light surface and the display surface, as the quality of the effect tends to suffer if the distance is anything less than 2 meters.

As for the computer, the general rule is the more powerful, the better, since this results in higher frame rates.<sup>18</sup> The artist advises a Mac Pro with at least 2GB of RAM. The artist does not appear to value the current frame rate as vital to the essence of the work, although it may be up to future curators to determine whether the current speed has historical importance. Since the computer is hidden from view, a wireless mouse and keyboard are highly useful. The camera must be able to lock its exposure levels and possess a lens capable of zooming to fit exactly the desired capture area on the light surface, usually the edges of the light-box, and have a digital output to a computer. In most cases, the digital output for the installation is a digital projector. Worthington requires it to be at least XGA, which is 1024x768 pixel resolution and be acceptably bright for the space: 5000 lumens is usually sufficient in a standard configuration of the piece. LCD walls, monitors, and other digital outputs can serve as substitutes for a digital projector, bearing in mind that the size of the output should be considerably larger than the size of the light-box. This ratio is vital to creating the illusion of shadows being cast.<sup>19</sup>

The sound system used should be directly proportional to the scale of the installation. The artist insists on using high quality sound system to avoid “clipping” of the high and low frequency sounds. Generally, a PA system or high power amp with a speakers will produce the intended artistic effect.

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<sup>18</sup> Philip Worthington, "Shadow Monsters: Technical Overview/Guidelines," (2004).

<sup>19</sup> Philip Worthington, "Shadow Monsters: Technical Overview/Guidelines," (2004).

## An Introduction to Media Art

Since my project involves two media art works, I thought it would be worthwhile to go over the history of media art and some of the issues they pose for the MoMA and other institutions that collect these works. To start off, I'd like to attempt to clarify the meanings of some contemporary art nomenclature. "New media art" or "media art" is a larger umbrella term that encompasses art made with new media technology. Among many others, under that is "digital art", another umbrella term for a broad range of art that uses digital technology – the type of art I researched for this project. It is the updated term for "computer art" and "multimedia art", both terms used since the 1970s until around the 1990s.<sup>20</sup> However, it is important to keep in mind that defining media art is very difficult because it is constantly being reconfigured in the present; its lack of clear definition is perhaps its strongest quality.<sup>21</sup>

Adjunct Curator of New Media Arts at the Whitney Museum of American Art Christiane Paul has summed up media art well: "Media art challenges the traditional art world and its customary methods of presentation and documentation, as well as its approach to collection and preservation . . . New media art resists 'objectification' and challenges traditional notions of the art object."<sup>22</sup> One can see from the very nature of media art that it poses significant problems for not only physical institutions like art museums, but also to institutions in the sense of established curatorial and display practices that have been in place for centuries.

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<sup>20</sup> Christiane Paul, *Digital Art* (London: Thames and Hudson, 2006) 7-8.

<sup>21</sup> Christiane Paul, *New Media in the White Cube and Beyond: Curatorial Models for Digital Art*, ed. Christiane Paul (Berkeley: University of California Press, 2008) 2.

<sup>22</sup> Christiane Paul, *New Media in the White Cube and Beyond: Curatorial Models for Digital Art*, ed. Christiane Paul (Berkeley: University of California Press, 2008) 1.

The concept of digital art came very shortly after the development of the computer, but really started captivating artists and getting the attention of the art world in the 1960s. Digital artwork began to be exhibited in this decade, in galleries like the Studiengalerie der TH and Galerie Wendelin Niedlich in Stuttgart, Germany and the Howard Wise Gallery in New York.<sup>23</sup> An example of a seminal event in the development of the genre of media art was the 1966 exhibition "9 Evenings: Theater and Engineering," at the 69th Regiment Armory which was organized by, among others, Robert Rauschenberg, John Cage, and a group of engineers from Bell Labs.<sup>24</sup>

The form that digital art takes is most often a computer file on some type of digital storage media.<sup>25</sup> Many digital artists consider the code the actual artwork, which can be difficult for many people to understand:

"Why would artists forego the directness of squeezing out tubes of cadmium red or chiseling away chunks of marble in favor of disembodied commands? For many practitioners, code is not simply a means to an end; on the contrary, they revel in the intricacies of `document.write`; they chisel lines of Perl or Java instead of marble, creating elegant solutions to artistic problems. Code is their muse."<sup>26</sup>

The code can be the final form the artwork takes, or can morph into something more concrete, at the artist's discretion. There can also be multiple forms of a work, which are referred to as 'polyforms' or 'meta-forms',<sup>27</sup> but the final form is what is usually documented and addressed as the artwork.

Software, programs, standardizations, and platforms are all prone to rapid technological obsolescence. Media artists do not always consider the ramifications of dying

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<sup>23</sup> Bruce Wands, *Art of the Digital Age* (London: Thames and Hudson, 2006) 24.

<sup>24</sup> Kate Taylor, "MoMA Adds Department for 'Media'," *The New York Sun* 3 October 2006.

<sup>25</sup> Bruce Wands, *Art of the Digital Age* (London: Thames and Hudson, 2006) 14.

<sup>26</sup> Joline Blais and Jon Ippolito, *At the Edge of Art* (London: Thames and Hudson, 2006).

<sup>27</sup> Bruce Wands, *Art of the Digital Age* (London: Thames and Hudson, 2006) 14.

technologies and version incompatibility when creating their work, which leaves museums with the precarious problem of trying to preserve these vulnerable pieces and essentially try to “predict the future” of technological advancement as well as obsolescence. This ranges from shoring up on discontinued models of apparatuses and software to contacting and negotiating variability options if the artist is still alive. In the case of digital art, obtaining the code becomes incredibly important but since ownership of the code means the ability to reproduce as many editions or versions as desired, artists may be reluctant to transfer it to the museum.

### **Recommendations**

Both *Lovers* and *Shadow Monsters* are both computer-based artworks that have a specific set of conservation concerns. The computers that drive these pieces are indeed art objects and must be treated as such. Computers are subject to many of the same conservation concerns as paintings or sculpture, such as sun and water damage and should therefore be stored in cool, dry areas. In addition to the elements, computer-based art presents a whole host of new conservation issues. Because they are electrically charged, computers attract significant amounts of dust on its chips and capacitors.<sup>28</sup> In fact, many of the issues of computer-based art conservation seem rooted in the repercussions of electricity and heat:

“Computers run on electricity: they get power surges, floods of bad voltage that just crack components and blow them up. The screens are also vulnerable: cathode-ray tubes have big

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<sup>28</sup> Bruce Sterling, "Digital Decay," Jon Ippolito, Alain Depocas and Caitlin Jones, ed. Permanence Through Change: The Variable Media Approach (New York: Guggenheim Museum and Daniel Langlois Foundation, 2003). 16.

electronic guns firing beams at powder. Heat cycling racks chips, stressing them mechanically every time you boot up or shut down.<sup>29</sup>

The MoMA conservation department should routinely check their computers for heat damage to preserve the original hardware as much as possible.

Infinitely more important, MoMA should try to obtain the source code for not only the two pieces I focused on for my project, but every computer-based art work that it seeks to acquire. For *Lovers* in particular due to its age and vulnerability, the original operating system version and the original programming information must be obtained. Since it was acquired before many museums had thorough questionnaires about this information, MoMA will need to communicate with Dumb Type to obtain this information. Furthermore, the code in other versions of *Lovers* has been changed by the collective; it would be helpful for MoMA to know what these changes are to assess whether they should be applied to their version of the work. Since *Shadow Monsters* came with a lot of this information, has less installation restrictions and more variability is afforded to MoMA, there is less urgency in procuring this information.

These types of works are founded on ephemera: software versions that are constantly changing, hardware that is obsolete before it leaves the assembly line, online libraries, internet sources, and rapidly changing industry standards. Although the artist may intend for the work to be difficult or even impossible to collect, as a collecting institution MoMA must do its utmost to preserve and maintain the work in its “original form” although I acknowledge this term opens a can of philosophical and technical worms.

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<sup>29</sup> Bruce Sterling, "Digital Decay," Jon Ippolito, Alain Depocas and Caitlin Jones, Permanence Through Change: The Variable Media Approach (New York: Guggenheim Museum and Daniel Langlois Foundation, 2003).

Some contend that media art does not have an “original form”, or that the notion of originality is irrelevant to work that is post-object, time-based, and postmodern. This is a valid point, but one that does not productively address how collecting institutions will preserve and conserve media art. The original source code, a thorough artist interview and questionnaire process is absolutely crucial to the futures of these pieces. In the future, it is certain there will be Departments of Media Conservation at art museums. Media conservators have the challenging occupation of considering the present as the past, and trying to pinpoint what information will be most helpful for the media conservators of the future. Collaboration is the only way effective standards in this field can be established since long-term care of this type of work is fairly new and uncharted territory. With groups such as NYU’s Working Group on Computer-Based Art Conservation and Matters in Media Art, a consortium of curators, conservators, registrars and media technical managers from New Art Trust, MoMA, SFMOMA, and the Tate, I hope effective media conservation guidelines will be established based on best practices and thoughtful consideration of where the future of technology may lead.



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