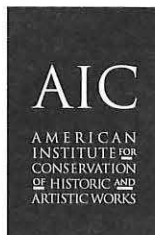
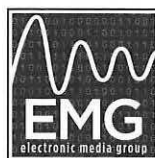

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**VERSIONS, VARIATIONS, AND VARIABILITY: ETHICAL CONSIDERATIONS AND
CONSERVATION OPTIONS FOR COMPUTER-BASED ART**

HANNA BARBARA HÖLLING

ABSTRACT

Computer-based art has evolved considerably since the first implementation of computer graphics in the early 1970s. In the past three decades, there has been a radical change towards more sophisticated solutions that have modified our understanding of technological borderlines and the limits of display standards and aesthetics. Although the preservation of computer-based artifacts owes much to discourse and research done in the preservation of electronic and time-based media, the approach to computer-based installations still calls for more exploration. That this topic has attracted little attention so far is mainly due to the lack of specific expertise at various institutions. The conservation of these artworks distinguishes itself from conventional approaches to traditional media. A singular work in different states results in the emergence of variations and multi-locational instantiations that call into question established procedures. At times, an artwork's recovery may lead to the fabrication of an additional version. In light of this, the ethics of conservation are subject to profound considerations. Moreover, it is not unusual that artists themselves act not only as creators, but also as caretakers. Most importantly, in reference to conservation discourse and the decision-making process—as is true with much of contemporary art (and in this paper)—the artist is not only alive, the artist is involved.

INTRODUCTION

Since the introduction of the Fluxus art movement in the 1960s and Nam June Paik's coronation as one of the undisputed fathers of video art, audiovisual media have been evolving and taking over the art scene. In art today their ubiquitous presence is self-evident; it is difficult to picture art practices, museum displays, and commercial art gallery spaces without media works. With the development of new technologies and the ever-shorter life cycles of software and hardware equipment, a new approach to their implementation and maintenance has been sought. It is no surprise that the dissemination of new electronic media has inevitably introduced the topic of their preservation, followed by the much-debated dilemmas of migration, emulation, and reinterpretation of what could already be seen as historical installations. Different discourses focused on maintaining the formats and forms rapidly becoming obsolete, in order to allow them to be viewed and appreciated by contemporary and future audiences. As a consequence, the complex issue of devising strategies for the preservation of technical heritage for future generations became the center of various initiatives. One of them—the Obsolete Equipment Project—gave rise to the author's involvement in research on conservation of computer-based art and this paper (Obsolete Equipment 2009).

Giving the example of the specific computer-based artwork, *//Eye* (1993) by Bill Spinhoven van Oosten (b. 1956) distributed by the Netherlands Media Art Institute, Amsterdam (NIMk), this paper will discuss its technologically complex nature. The issues pertaining to its recovery, conservation, and presentation will be addressed. *//Eye* became a particularly challenging case for analysis due to its unstable, processual nature, the recursive obsolescence of its display apparatus, and the artist's ongoing engagement in the artwork's development. The initial setting of *//Eye* when it entered the collection was complicated by the lack of clarity of its status, mainly due to the complexity of institutional distribution and acquisition procedures. In the early stages

of dealing with media collections, at least four equipment versions and a number of site-specific variations of *//Eye* were generated, an outcome triggered by technological obsolescence and institutional maintenance habits. Most recently, a decision was made to recover the historical functionality of *//Eye* by means of recreating and presenting it to the audience in its initial, and additionally newer, virtualized form.

The following will lead the reader through the life of *//Eye*, addressing its variable nature and main characteristics. I will explain the reasons why computer-based art has received little attention in the profession, how its transitory nature is being adapted to institutional constraints, and the way in which the emergence of versions challenges conservation ethics. One of the focal points of this essay will be *//Eye*'s initial status at the point of its commission and subsequent acquisition. Finally, I will show how the recovery of *//Eye* has been managed and what the possible options are for its future existence.

CHALLENGES OF COMPUTER-BASED ARTWORKS

The fact that the topic of conservation and presentation of computer-based art has attracted little notice so far is mainly due to the lack of specific expertise among institutions and caretakers. Curatorial and art historical knowledge about new media still has to be enhanced to encompass new sets of categories that involve interactivity, connectivity, and computability (Graham and Cook 2010). The tendency to isolate these art forms from conventional art, or its "ghettoization" in the galleries, epitomize the often difficult relationship that institutions maintain with them (Paul 2007, 251).

For some time, on a technical level, competence in maintaining and preserving computer-based works has been rare and unappreciated. At times it is their technical complexity that aggravates the access to and understanding of the functionality and specificity of these objects. As a result, only a small number of computer-based works find their way into public collections and

even fewer enter private hands. Although variability seems to have been built into technology from the very beginning (Rinehart 2011), the ability to weigh the importance of the technological substrata on which the artworks operate and their conceptual content translated into an aesthetic output, remains one of the most challenging tasks in the conservation of computer-based art.

Another reason why source code-based art has attracted little attention among museum professionals might be that besides maintaining creative authorship, its creators also play the role of technician when it comes to reinstalling, adjusting, arranging, and maintaining their artworks. Caretakers and institutions have learned that only by involving artists in collaborative, synergetic cooperation can they ensure the proper performance of computer-based art displays. These collaborations are invaluable and much appreciated as a source of cultural, social, and technical knowledge. They also challenge the common conservation approach that attempts to maintain an artwork's original or authentic state. Conservation ethics that have driven the profession for the last fifty years have to be reconsidered and adapted to a great number of computer-based installations. A call for different approaches often evokes heated discussion in the conservation field.

ON THE INTEGRITY AND VARIABILITY OF COMPUTER-BASED ART

The term computer-based art is wide and difficult to narrow to a single definition. In a time of enormous expansion of new media and the perpetual flux of encoded information on the Internet, almost every art installation involves computation at a certain stage of its development and/or presentation. In this essay I will attempt to specify what, in my understanding, might be included under the term computer-based art.

Unlike net-based, source-code-based, and computer-generated art, computer-based art generates artistic contents based on computer-technology without a particular

emphasis on the implemented apparatus, network environment, or the language of the source code. In other words it involves the computing device as a technical support, which can—but does not necessarily need to—participate in the creation of the aesthetic content of the artwork. In the case of *//Eye*, the aesthetic qualities of the visual output are not exclusively dependent on the employment of a specific technology. Still, the computing technology manages the rendition of the digital image content and constitutes the greater part of the core of the artwork, or its *logic* (Lurk 2010).

As a rule, computer-based artworks consist of files, an operating system, software, and hardware. When examined more closely, the software can consist of a source code of more than one generation, involving creator's annotations, and, if authored by more than one person, technical correspondence within the source code files. Hardware may involve the computer with its processor(s) driven by machine code, possible modifications such as oscillator, motherboard, and, in older devices, a floppy disc reader and a disc, from which the system can be booted. Additional elements such as camera, digitizers, monitor(s), and, last but not least, the physical casing of the equipment (computer, camera, and monitor) are integral parts of these artworks, and play a crucial role in defining their properties.

In contrast to a large portion of traditional fine art, where the point of departure for the assessment of its status lies in defining the authenticity or originality of the artwork in question, the method for describing computer-based artworks is built on the complex term—integrity. The integrity of computer-based installations depends on hardware and software components. Conceptual integrity refers to the work's relationship to the process or technology employed, and the social and cultural setting in which the work was created. Aesthetic integrity comprises the look and feel of displayed components and the outputs of the system such as sound, image, or both (Laurenson 2005). Hardware, with all its modifica-

tions and supplements, may have functional, but also aesthetic value. In the case of *I/Eye*, there are both: the sculptural presence of technology and its attendant aesthetic value, as well as the functional value of the apparatus in a ratio. The latter seems to be variable, at least in observation from a historical or biographical angle. Further, the location and spatial setting, as much as its historical and present manifestations, are crucial for the work's characterization. Installations in various galleries, within indoor and outdoor settings, shape the way the installation is perceived—and simultaneously—influences the modes of the viewers' interaction. Yet most importantly, as we will see, due to the adaptation of the given space and available equipment, these reinstallations may also lead to the creation of diverse versions and variations of the artwork, and play a crucial role in constructing its multi-aspectual identity.

In the last decade, promoted by the Variable Media Initiative undertaken by the Solomon R. Guggenheim Museum in New York, the term variability has been used to characterize installations (mostly technology-based and performative) that are in constant flux and for which identity was constituted by each and every instantiation of the artwork at any given time of its lifespan (Depocas, Ippolito, and Jones 2003). A range of possible values defined the core of the work, describing a closely clustered set of the artwork's data. These data could include the artistic idea, in the form of a score or instructions, sound or audio material, special installation requirements/prescriptions, and modes of interaction. The remaining variables were subject to change, having a status of loosely prescribed specifications for peripheral elements, often soft- or hardware. Significant coordinates characterizing variable artworks—distant from the understanding of conventional artifacts in terms of their physical components and materials—constituted their behavior. The artwork's behavior was neither permanent nor fixed; it rather described the ephemeral qualities of the work.

THE ARTWORK

The object and the subject of this study

I/Eye is a freestanding installation. It comprises a black and white monitor (48 x 51 x 50 cm), a manipulated camera modified with a fish-eye lens placed in a metal tube on the top of the monitor (10 x 10 x 35 cm), a black plinth (125 x 50 x 50 cm), and technical playback equipment; the latter is not exposed to the audience. On the monitor, one can see a large eye that fills the format of the screen. The eye is active, gazing at the viewer in a continuous manner. Moreover, it reacts to the viewer's movements. The standard role of an artwork, to be looked at and admired, is peculiarly reversed here. The artwork looks at and registers the presence of the viewer: it is not the viewer who watches the artwork, it is the artwork that watches the viewer. It is a surveillance technique well-known from the many security monitoring techniques used in public spaces, but an artwork that, in an unexpected, astonishing way, is interactively involved in the process of watching and being watched. The work is slightly provocative, as the viewer is automatically impelled to personify the installation. A phenomenon of the early electronic art—humanizing technology—results here in a vis-à-vis encounter of human and machine.

The interaction between the viewer and *I/Eye* is one of the central characteristics that define its behavior. In this case, the audience interaction with the installation comprises a doubling. On one hand, there is a viewer directly engaged with the artwork—the person standing in the range of the camera, experiencing a direct encounter with the eye that reacts to his movements—and, on the other, there is a more distant viewer, “the third actor,” that observes the encounter of the “first degree.”

I/Eye, created in 1993, is one of the earliest examples of interactive, computer-based art that found its destination in an institutional setting of the Montevideo/Time Based Arts later known as NIMk (fig. 1). In the 1990s, interactivity began “to celebrate itself as a sort

of hype,” maintains René Coehlo, the founder and first CEO of Montevideo (Coehlo 1999). Since *Documenta 19* in Kassel in 1992, Gary Hill (b. 1951), Bill Viola (b. 1951), Bruce Nauman (b. 1949), and Tony Oursler (b. 1957) have become frequently promoted and presented artists. Coehlo's gallery in the Netherlands innovatively presented and distributed video art. In an interview from 1991, Coehlo states: “For twenty years we have been promoting an art form that nobody was asking for. In the Netherlands it has never attracted a large audience, due to the lack of a scientific and theoretical foundation” (Coehlo 1999). Remarkably, in talking about the artistic achievements in context of the activity of Dutch art scene, he states “...Bill Spinhoven's *I/Eye* is an icon, too” (Coehlo 1999).

Early life



Fig. 1. Bill Spinhoven van Oosten, *I/Eye*, 1993, interactive computer-based installation, dimensions variable, Netherlands Media Art Institute, acc. no. 13-January-199725. The image illustrates the artwork's display at the Montevideo gallery in the Spuistraat in Amsterdam in 1994. Courtesy of the Netherlands Media Art Institute.

The idea for *I/Eye* was first conceived at Montevideo, during the period Bill Spinhoven spent at Coehlo's gallery at the time of its reorganization in the 1980s. The artist was experimenting in making drawings by recording his eye using a black and white camera. The first installation that resulted from these experiments, and the artist's cooperation with Paul Klomp, was a double screen projection entitled *Shot Across the Mind* (1989) (fig. 2a). The eye became fully computerized and made “drawings”

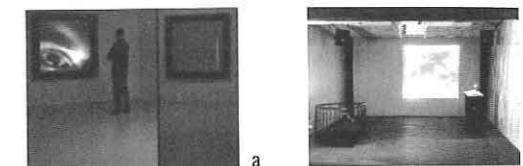


Fig. 2. (a) Bill Spinhoven van Oosten, *Shot across the mind*, 1989, and (b) *Birds Eye*, 1991, interactive computer-based installations, precursors of *I/Eye*. Courtesy of the artist.

by itself. Later, the development of this idea resulted in an interactive installation entitled *Birds Eye* (1991), which also implements a projection (fig. 2b). Spinhoven was able to connect to the installation via telephone to hear visitors' comments. These early versions lead to the creation of *I/Eye* in two primary ways. The eye images used in *Birds Eye* are identical to those incorporated in *I/Eye*, only zoomed. Moreover, the program of the later Montevideo version of *I/Eye* involves sequences of the source code taken from *Birds Eye*, which were able to be re-activated in order to recover the dysfunctional piece (Spinhoven 2010). This allows us to think about these artworks in a new way, one that might have an impact on how they are perceived and preserved: computer-based artworks as a documentation container or a self-documenting device. After receiving the Prix de Rome, the highest and oldest art award of the Rijksacademy in Amsterdam, Bill Spinhoven conceived another installation that used black and white images of his eye, but without any interactive functions. Although the installation was entirely static, intriguingly, the viewer believed it was interactive (fig. 3).

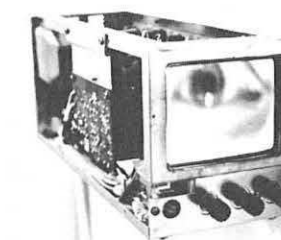


Fig. 3. A slide retrieved from Spinhoven archive in Hengelo depicting a prototype of *I/Eye* installation submitted for the Prix de Rome, Rijksacademy. Courtesy of the artist.

Institutional life

Asked to create a special artwork for the re-opening of the Montevideo gallery at the new venue, Spinhoven delivered *I/Eye*, an installation that conspicuously reverses the viewer experience: "My idea was that if everybody comes to Montevideo to look at art, I invent art that can look at people" (Spinhoven 2010).

Since its first display in the window of the gallery at the Spuistraat in February 1994, and its later acquisition, the aesthetic appearance—contrary to its "inner life" and spatial setting—of *I/Eye* has stayed virtually the same. The only exception was an early (unidentified) monitor and a plinth, which were provided from the NIMk's depository (fig. 1). The version of *I/Eye* that is currently distributed by the NIMk is a black and white version comprising a Sony monitor placed on a black cubic plinth, a camera hidden in a black cylinder placed on the top of the monitor, and a playback apparatus, which is usually hidden inside the plinth. The monitor displays five images of Bill's eye from an earlier installation. The camera interacts with the viewer, following his or her movements by registration of the change of contrast within the 180-degree camera angle.

The very first computer-type implemented was an Archimedes Acorn 410 home computer dating to 1987, along with its operating system Acorn RISC OS, versions 3.0 to 6.0, "the best at this time," according to the artist (2010). "They were very robust computers: the passive components did not need to be cleaned and they did not overheat. Only the back-up battery might have shown some problems. 16 MB sounds small now, but in those days it was a large memory" (Spinhoven 2010). The computer was programmed with the help of BASIC V Assembler. Contrary to a number of its precursors, *I/Eye* was created as a mute installation due to the fact it was meant for the outdoors.

The artwork was lent out for various exhibitions, such as *The Second. Time Based Art from the Netherlands* (Au-

gust–November 1998) at the Stedelijk Museum and subsequently traveled around the world. It was also included in *Dertig Jaar Nederlandse Videokunst* (January–March 2003) that was shown in, among other cities, Mexico, Taiwan, Japan, Budapest, and Prague. This stimulated the creation of different versions of the artwork and the implementation of more than one computer. The artist maintains that in these early stages, the artwork existed in the form of at least two or three versions at the same time. At the moment when the first and the second version were on display—at times simultaneously—the third one was kept at his studio and used for testing purposes. Spinhoven used the hardware in more than one version of the work, exchanging it between versions, manipulating the computer by means of replacing parts such as the monitor, graphic cards, and batteries interchangeably.

Since its first display at the Montevideo gallery, in the course of various travelling exhibitions, the spatial setting of *I/Eye*'s display has changed. This had an impact on the behavioral character of the artwork related to the way in which the audience engaged with it. For instance, the display during the exhibition *Kinetik und Interaktion. Multimediale Kunst aus den Niederlanden* at the Städtische Museum in Gelsenkirchen, Germany in 1996, reveals the monitor hung on metal chains attached to the ceiling. Another display set-up from at the Keizersgracht 264, Amsterdam, in 2003, shows *I/Eye* gazing at the viewer from a distant, high window at the current location (NIMk), rendering its direct interaction with the viewer almost impossible (fig. 4a).

Relevant for the question of the spatial setting of the artwork is whether the first exhibited version of *I/Eye* in the Spuistraat in 1993 should be regarded as site-specific and, if so, whether this site-specificity is critical for the artwork's integrity. The first setting in a window at René Coehlo's gallery and the view from the street offered an element of stenography within which the installation was staged: the accessibility of a public space and the accidentality of the chosen observer. The visitors

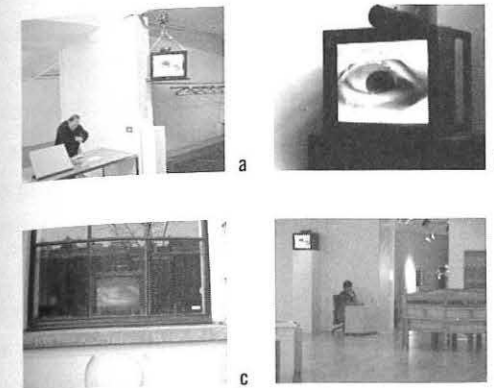


Fig. 4. Bill Spinhoven van Oosten, *I/Eye*, 1993, interactive computer-based installation. Changing spatial setting of the artwork's display in course of its various exhibitions in (a) Städtisches Museum Gelsenkirchen, 1996 (*Kinetik und Interaktion. Multimediale Kunst aus den Niederlanden*); (b) DASA Dortmund, 1997 (*Short Cuts Anschlüsse an den Körper*); (c) Inter Communication Center, Tokyo, 1998 (*The Second, Time Based Art from the Netherlands*); and (d) NIMk Amsterdam, 2003 (*Dertig jaar Nederlandse videokunst*). Courtesy of the Netherlands Media Art Institute.

to the pub located on the other side of the street, who observed the *mise-en-scène*, were enthusiastic about the possibility of contemplating the surprised passers-by followed by the telematic eye. On the video taped shortly after the re-opening (viewable in the online NIMk catalogue), the atmosphere of the street and the reactions of the pedestrians to the artwork are clearly recorded. With one single exception, the later versions of *I/Eye* were exhibited in the context of a museum or gallery space, taking the formal character of a white cube or a black box. This change had an effect upon the artwork's reception and the viewer's interaction with it in a rather decided manner.

The development of *I/Eye* renders the aspect of the relationship between *I/Eye* and its institutional affiliation unclear. Although the acquisition records recount quite the opposite, *I/Eye* seems to have never entered the collection of NIMk in a physical way. The particular position of NIMk and its mandate to distribute media art renders the physical collection holdings superfluous.

The Netherlands Media Art Institute came into being as Montevideo in 1978 and since then, an extensive col-

lection of video and media art has been assembled. In addition to its own collection, the institute also manages the video collections of the De Appel Foundation, the Lijnbaan Center in Rotterdam, and the Netherlands Cultural Heritage Agency (RCE). The distribution collection comprises more than two thousand media works, varying from the earliest experiments through recent productions by known Dutch and international artists. The institute's online archive accommodates over a thousand media artworks and unique documentation of events and projects realized and presented by NIMk.

The particularity of the NIMk collection lies in its compilation of diverse recording formats and carriers, which are distributed, but, in many cases, have no prescribed and specific material manifestation. NIMk acquisitions do not involve complex installations comprised of sculptural elements. However, it is surprising to note that the archival documents prove that the physical equipment of *I/Eye* was stored at its repository for a time. When necessary, this equipment was re-used in other installations. Furthermore, the artist remembers that *I/Eye*'s plinth was lent out to his fellow artists when they were in need. In the initial stage of the research, the fact that *I/Eye* was physically housed in the collection of NIMk was evident from discussions with personnel, who remembered the installation stored on the premises, but emphasized its exceptional state. In addition the documents from the NIMk archive reveal two acquisitions of *I/Eye* in its physical form: the first one dating to December 6, 1993 and *I/Eye*'s second exhibition version dating to July 11, 1994. The first *Ankoopcontract* includes the physical components of the artwork, the sum of the acquisition, and, furthermore, a note about the replacement of the camera which probably was posing technical problems. The second document *Ankoop I/Eye* states that in reference to the frequent absence of the artwork due to various exhibitions, its function as a flagship (*Uithangbord*) of NIMk had been dismissed. For this reason the artist was asked to produce another version of *I/Eye*, termed here a "second version" (*tweede versie* or *tweede expem-*

plaar). The contract involves the equipment, including all hardware and the plinth, except for the monitor. The contract specifies also the lowest and highest value of the installation in the case it left Montevideo after being acquired by a third party.

As time passed, and the installation became its multiplied form, the display equipment changed location. During my visit to the artist's studio in Hengelo, Netherlands (October 2010), various elements of *I/Eye* were stored *in situ*. This proves the ambiguity of its status: on one hand, it is a physical object about which contracts are signed and records kept and which, as a loan of NIMk, physically travels to different venues. On the other, although included in NIMk's media collection, it is present there solely as a registration file. Matters become further complicated due to the existence of different versions of *I/Eye* at the same time.

Life outside NIMk and ongoing development

Dating back to the 1990s, there were at least four versions, including its NIMk versions, and a number of variations, or, in the artist's words, "editions" of *I/Eye* in existence (2010). Worth mentioning, among others, is a German version from 1997—the so-called DASA version (Industrial Safety Association in Dortmund). *I/Eye* was acquired by DASA on the occasion of an exhibition entitled *Short Cuts: Anschlüsse an den Körper: ein Cross-over durch Kunst, Wissenschaft und Körperbilder* (August–October 1997). This version characterized the implementation of a color JVC monitor displaying a black and white image, and a later version of RISC OS (286 Acorn RISC, OS 3.7, 1992). DASA made a decision to conceal the entire apparatus behind a grey-painted chipboard casing. The only visible part of the installation remaining was the screen of the monitor. The wall caption indicates that the installation was created in 1993; the indication of the remaking of the artwork for DASA, dated four years later, is lacking. According to the curator of the exhibition, Hans-Gerd Kaspers, for a considerable time, *I/Eye* has posed technical problems

and is the reason why it has been removed from the display. It became a subject of a preservation project by Intermedia Art Institute (IMAI), Düsseldorf. In reference to the number of existing versions the registration of *I/Eye* by IMAI in 2009 suggests that "there are four editions of the *I/Eye*: two with the artist, one at the NIMk and one at the DASA. It is unclear if all of them are the same" (Caianiello 2009, 1). Interestingly, and highly relevant for the discussion about *I/Eye*'s future manifestations, IMAI planned to recover the installation, taking the earlier DASA version from 1997 as a starting point.

In 2004 Spinhoven produced a color version of the eye. This version uses the image of an eye of a stranger and was presented as a multiple installation on a larger number of screens at the Library of Hengelo (The Netherlands). It is currently out of order.

Spinhoven still continues to develop further versions of *I/Eye* and comprehends the project as an open-ended process. In September 2010 the artist introduced us to a test version of the artwork that implemented five images of a child's eye. *I/Eye*'s actions were triggered by the movements of a computer mouse; the program was written on JavaScript, CTSS, and HTML5, and was loaded locally.

The conventional concept of an artifact entering a museum collection and being frozen in a static display mode does not coincide with *I/Eye*'s nature, which has become infinitely variable. "It was an installation at the beginning, then it became a part of a computer, then the computer became interactive, and a part of it became a core version. . . . The camera and the monitor are separate parts, but I would like to make it more organic. . . . An organism, I mean like cells that have kind of similarity and together they create all new organisms" (Spinhoven 2010). The latest instance of *I/Eye* is embodied in the project IART (2010), which focuses on the "the possibility to transform fluently from one classical installation into another." According to Spinhoven, over time, "IART

will become an extremely expressive self-supporting entity, capable of managing its own sustainability and development" (Spinhoven 2010). The project is based on the biologist James Grier Miller's living systems theory.

The artist liberates *I/Eye* from being an art object, allowing it to live in an unrestricted way, setting it free in form of the IART project. This might be seen both as an end of the development of *I/Eye*, but also as its beginning. In order to transfer *I/Eye*, Spinhoven applies virtualization of the computer system to a web-based platform (Spinhoven 2010). As will be shown in the following paragraph, virtualization plays a key role not solely from the conservation perspective, but triggers the artist to think far beyond its conventional implementation for source code-based systems.

CONSERVATION OPTIONS

International research on the preservation of computer-based art and new media

The research on preservation of computer-based installations was predominantly conducted concurrently with the research on a larger amount of media- and time-based artworks. Within the profession, there have been a number of attempts to find a way of understanding, documenting, and preserving these artworks, for example: Matters in Media Art, the Variable Media Initiative, DOCAM Research Alliance, International Network for the Conservation of Contemporary Art, and the above mentioned Obsolete Equipment Project by PACKED vzw in the Benelux countries. A number of exhibitions, conferences, and symposia resulted from these endeavors, allowing discussions of the more general issues of preserving digital heritage. Furthermore, this topic has been the focus of research undertaken by various international researchers examining the possibilities of assessing, documenting, and transferring computer-based art (Rinehart 2000; Dimitrovsky 2004; Garcia and Vilar 2007; Lurk 2008; Aktive Archive 2012; Variable Media Network 2012).

The issues surrounding the procedures, definitions, and implementation of a specific professional vocabulary in the preservation of electronic media poses a number of questions. There is still a great potential in the adaptation, interpretation, and adjustment of the scientific terminology. Admittedly, terms are currently used in very different manners, depending on the profile of the specialists and their background (programmers, conservators, etc.). At times the term *emulation* is used interchangeably with the term *virtualization*, meaning the process of extracting the operating system, the source code, and files to a new environment. Furthermore, there is no specific differentiation between the vocabulary applied to the purely carrier-, material-based aspects of the artwork and its encoded, digital content. For example, the process of rewriting a code in a different language may entail a radical strategy of *reinterpretation*. Alternatively, the migration of code to enable the operability of a newer application, operating system, hardware, or all three, implies less severity to an artwork's integrity in terms of honoring its initial condition.

Preservation options and outlooks for I/Eye

One could assume that with the research undertaken on the preservation possibilities and the subsequent decisions made concerning the conservation of *I/Eye*, its vivid trajectory would reach its final stages. As I shall demonstrate below, what happened was quite the contrary.

In 2010, a decision was made at NIMk to recover the functionality of *I/Eye*. The logical circumstance of this decision was the selection of one from the many versions of the installation from its twenty-years lifespan. The efforts were concentrated on bringing back to life the version of *I/Eye* dating to 1993, when it was acquired by NIMk, due to its historic significance and the fact that *I/Eye*'s initial behavior and functionality has a strong relationship with specific computer hardware architecture. Immediately, the objective of the recovery of this version encountered complications. The early Panasonic monitor once displayed on the window

of Montevideo was missing. The implementation of the Sony monitor that appeared on the occasion of the exhibition *The Second* in 2004, and from then on most preferred by the artist, already excluded this strategy as revival of the initial version. Spinhoven maintained that the installation retained its look and feel only by being displayed on a cathode ray tube monitor due to the image texture. It gradually became clear that coming back to the early version of the *I/Eye* was illusory, at least as far as the hardware was concerned. This was confirmed by the fact that the historical Acorn Archimedes 410 dating to 1987 was no longer recoverable due to the obsolescence of its components. Furthermore, numerous modifications and additions were made and removed over time, which made the return to the original configuration of the computer impossible. For this reason, a later and better-maintained Acorn RISC PC dating to 1992 was employed (fig. 5). The original program was booted from a floppy disk. To recover the functionality of the old version, a later motherboard was assembled from bits and pieces found on the second hand market; the source code had to be migrated. The oscillator originally used to accelerate the processor was no longer necessary with the later, faster processor. The original camera was no longer available. The digitizer had to be replaced and, finally, in order to ensure proper functionality, an emulation of the machine code was performed. The synchronization of the image timings posed challenges. At the end the physical appearance of the activated artwork and its technical functions resembled the version from 1993. The emulation and migration of *I/Eye* went hand in hand, as it were. One could say that the endeavor was an attempt to recover and present a media artwork with help of archaeological equipment.

The next step in the development of preservation strategies for *I/Eye* was the isolation of the entire system and its transplantation to a different environment by means of virtualization. The artist performed the virtualization of the recovered Acorn RISC PC to a Microsoft Windows operating system with the help of a virtual machine. The

latter is an isolated software container that can run its own operating systems and applications imitating the function of a physical computer. The performance and behavior of the first version of *I/Eye* were maintained. The emulation of the visible hardware equipment rendered the esthetic appearance of the installation similar to its initial version.

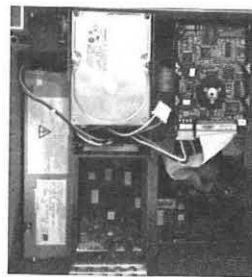


Fig. 5. The inner life of *I/Eye* (1993) by Bill Spinhoven van Oosten: an Archimedes Acorn computer dating to 1992 in refurbished form in February 2011. Courtesy of Hanna Hölling.

In February 2011 the recovered version of *I/Eye* was presented side by side with its virtualized clone (fig. 6). The outcomes of the reinstallation of both examples of *I/Eye* were assessed by the professional audience invited to NIMk for the symposium *To Transform or To Transfer*.

Lastly, a fully virtualized version of *I/Eye*, operating solely on the web browser, was conceived. This strategy omits the immediate physical dependency on computer

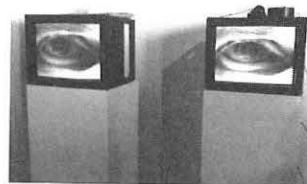


Fig. 6. Bill Spinhoven van Oosten, *I/Eye*, 1993/2011, interactive computer-based installation. The refurbished version of the installation from 1993 (on the right), and its virtualized form during the reinstallation at NIMk on February 24, 2011 (on the left). Courtesy of Hanna Hölling.

hardware. It is solely the artwork performance that is being maintained in a form close to the initial version. Most critical, however, is the aspect characteristic for many other computer- and net-based artworks, namely the achievement of a certain form of independence from a physical carrier, and, theoretically, from a number of system restrictions and market dependencies in a broader sense. The implications of this type of virtualization provoke a radical ontological shift, which relates both to the physical object (which ceases to exist) and to time (intermittent access rather than continuous presence), and parallel the shift that might be observed in music and film (transfer from physical carriers to distributed records).

ETHICAL CONSIDERATIONS

For decades the axiomatic concept of the original state of the object has governed the discipline of conservation. The profession has often strived to recover the original. But, given the pace of technological development and obsolescence, it is unlikely that present and future audiences will have the same authentic experience of media artwork that audiences had at the time of a work's first presentation. The artwork maintains different relations with changing temporal conditions. Technology regarded as state-of-the-art in the 1990s, over a time span of twenty years and after the emergence of "Big Brother" and new monitoring technologies, became an almost archaeological instance of surveillance in media. Moreover, artworks are entangled in social and cultural networks; their identity is created in interaction with the time and circumstances in which they exist. Thus, even the highest attainable recovery of a media artifact cannot resurrect the *Zeitgeist* of the era of its creation. What it can do is evoke nostalgic ideas about an irretrievable past. However, if one assumes that in some way the conception of a work extends beyond its physical manifestation, one risks becoming blind to the importance of these manifestations and to the tangible evidence of the object's history. *I/Eye* is obviously not an ephemeron that in its evanescence addresses itself only to the present.

As in the theory of musical performance, and parallel to the tendency to re-do performance art, the extension of the artist's idea to the IART project— which exists on a web-based platform— alters its meaning, but also preserves the concept for at least the near future. Computer-based art teaches us that fidelity to the original, or the original material, which has a long tradition in conservation of the conventional fine arts, has to be rethought. There remains, however, the challenging question of what is the core and what is the periphery. The question of how, and according to which arguments, a distinction between them can be made rests on the socially and culturally dependent level of interpretation and re-interpretation.

The greatest dilemma that must be faced while designing a preservation strategy for *I/Eye* pertains to the definition of its nature. The question must be asked: it is an object or a concept? It is surely one of the most frequently posed questions in the conservation field of recent media art. The answer is far from being straightforward. Let us reconsider the particular case of *I/Eye* in this light.

As suggested above, the status of the artwork within the NIMk collection might be regarded as purely conceptual. Without its physical manifestation dozing in the repositories, the artwork exists only in form of documentation and registration files. The impact on conservation might be obvious: since there is no physical form of *I/Eye*, why should any element of the work be physically conserved, or *passed to posterity*? On the other hand, as opposed to many new art productions, *I/Eye*'s long history allows us to analyze its physical manifestation in its specific temporal and spatial context. The various embodiments of the installation over the course of almost twenty years of existence provide a solid testimony of its development, which responds to the given technological capacities. These historical instantiations construct the trajectory of the artwork in its struggle with time, proving its tangible dependency on these physical forms. All of them respond to the temporary state of knowledge and

technology, and involve programmers, conservators, curators, technicians, and other actors. Conservation of the installation should thus respect its unique trajectory by documenting its life, which is constructed through social entanglement with people and things.

ROLE OF THE ARTIST

A novelty in preservation of these types of artworks is the particular role played by the artist. Following conservation doctrines, respect of an artist's intentions was always assigned the highest value and priority. Now, however, it is the artist that takes an active role in designing and re-designing the preservation strategy of his or her piece, programming, re-programming, and manipulating the work. Like craftsmen in centuries past, the contemporary media artist is also a specialist in information technology, and acts as restorer of his or her own artistic production. For a conservator, bearing witness to the artist's (re-) engagement may, over time, be not enough. An extended collaboration is called for, one that requires subtle and skillful maneuvering and negotiation in the zones between technological know-how, creativity, and fidelity to conservation dicta.

In the case of Bill Spinhoven, the particularity of his engagement with computer-based arts is evident in the support that he used to offer other artists. The gathered experience and knowledge inseminated his own creations. Spinhoven states: "At the beginning I earned money with producing artworks for other artists. I used the modules then for something else" (2010). In addition, his cooperation with other artists, such as Paul Klomp, had an impact on the realization of his artworks.

It could thus be assumed that the early Dutch media art that arose around the Montevideo cross-fertilized on the technological and aesthetical level. This could play a role in thinking about preserving this significant portion of our digital heritage.

CONCLUSION

We can state that *//Eye* has existed in many forms and variations. The artist's personal preference and the development of the installation during the last two decades render conservation decision-making a highly complex and multilayered issue. *//Eye*'s variability is a part of its very nature, and its original or authentic state is not recoverable. Rather than existing as something fixed and stable, it is merely a conglomerate of the artwork's embodiments and instantiations. Facing the impossibility of the recovery of old, obsolete equipment, conservation produces further versions of the work. The question remains open as to when its conservation begins and ends. In the course of the conservation process, artworks are being remediated, enriched with new values and deprived of others; new versions emerge. The conservator's responsibility is not only to honor and safeguard the material authenticity of the artwork's various instantiations through documentation, but also to ensure its intrinsic fluidity, allowing for ongoing development and change.

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