

**TO EMULATE OR NOT: A CASE STUDY FOR *REVOLUTION: A MONUMENT FOR THE TELEVISION REVOLUTION* BY JEFFREY SHAW**

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**ABSTRACT**

The focus of this preservation case study, conducted by the Netherlands Media Art Institute and the Netherlands Institute of Cultural Heritage in the framework of the project *Inside Installations: Preservation and Presentation of Installation Art (2004–2007)*, was to establish what was important for the preservation of this computer-based interactive installation and how emulation can be used as a preservation strategy. In Jeffrey Shaw's (b. 1944) interactive installation *Revolution: a Monument for the Television Revolution* (1990), the visitor pushes a bar attached to a steel column with a built-in monitor. Pushing the bar forward triggers 180 images depicting revolutionary moments in human history on the monitor. Rapidly turning the bar produces a vague blur of images, and pulling the bar backwards results in an image of two millstones grinding corn. *Revolution* can be divided into two parts, namely the sculpture (the push bar, the column, etc.) and the electronics. The technology it uses is over 15 years old and, within the next 10 years, at least one of the components of *Revolution* (an analog rotation sensor, an 8086 XT personal computer, a Sony Lasermax LDP-1500 laser disc player, and a custom-built sample player and interface box) will probably breakdown beyond repair. The personal computer and the laser disc player could be replaced, but the custom-built hardware that interfaces audio and sensor data cannot be rebuilt. There is no schematic diagram or documentation. The current hardware will have to be replaced if this installation is to be exhibited in the future. As preservation of the hardware is only a temporary solution, emulation, or at least an emulation plan, seemed to be the best strategy. In addition to the creation of in-depth documentation, installation instructions, and an artist interview, a precise description of hardware and software,

functionality, and user interaction was made. The content was secured digitally and many aspects of the behaviour of the installation were measured and described. To test the validity of this description, an emulation was made using Pure Data, an open source modular programming environment.

## INTRODUCTION

Since the 1970s, media art has become a category in itself, with a growing number of artists experimenting with technology. The use of ephemeral materials or of rapidly ageing media technologies affects the material stability of such works. This obsolescence of physical storage formats and presentation tools is one of the most pressing challenges facing the preservation of media art. Understanding what is important to preserve is vital to displaying these works in the future. When it comes to acquisition, presentation, registration, documentation, and preservation, new media art works call for a different approach to that employed with more traditional art forms, as the problems encountered are similar to those involved in preserving conceptual art and performances.

To quote William Real, (2001, 226)

. . . because of the performance aspect of many installations . . . [we have] to look beyond the material and consider that the “heart” of a work might . . . [be in its] less-tangible qualities. Preserving . . . an experience . . . for the future . . . might require . . . a more fluid view of what may or may not be changed about a work, challenging conventional notions of accuracy and authenticity.

Careful documentation of the specific requirements for presenting a work is key to being able to adequately present (and experience) media art, both now and in the future. This is a complicated task because the “optimum” form of presentation is difficult to define precisely for

many media artworks. Furthermore, the original “authentic” state often changes significantly each time the artwork is exhibited.

## PRESERVATION PRACTISE AND RESEARCH AT THE NETHERLANDS MEDIA ART INSTITUTE

Continuing to build on its extensive experience in producing and presenting video and installation art, The Netherlands Media Art Institute (NIMk) has—since 1992—conducted an ongoing research program into the preservation and documentation of media art (Wijers 2003). NIMk facilitates research into video art, installations, and live art and performances in order to identify and understand which components of a media artwork have to be preserved and the new methods, tools, language, and services that have to be developed to deal with this. NIMk carries out national projects aimed at preserving, presenting, and experiencing the Netherlands’ media arts heritage. Furthermore, NIMk preserves the main media art collection in the Netherlands, comprising over 2000 video and media art installations in distribution, and over 4000 reference works on videotape. In addition to its own collection, the Institute preserves over 6000 masters and sub-masters from artists and other collections as part of its function as a national repository.

The distributed collection is encoded as MPEG-2 and MPEG-4 files and preserved on digital Betacam tapes. Besides active preservation, research, and practice, passive preservation (i.e., the storing and registration of media art) is also a central focus of NIMk. The Institute develops models and guidelines for the registration of media artworks and advises nationally and internationally on the subject. NIMk’s preservation team is also well known for initiating and participating in case-study based research, collaborative research projects, and transferring knowledge in the field of media art documentation and preservation in cooperation with the Foundation for the Preservation of Contemporary Art (SBMK) ([www.sbm.nl](http://www.sbm.nl)) and the Netherlands Institute of Cultural Heritage (ICN) ([www.icn.nl](http://www.icn.nl)).



Fig. 1. Installation view of Jeffrey Shaw, *Revolution: A Monument for the Television Revolution*, 1990, interactive installation, 180 x 51 x 50 cm, 300 cm diameter, Instituut Collectie Nederland, acc. no. K90043. Courtesy of NIMk.

### EMULATION AS PRESERVATION STRATEGY

Media artists, in particular, have to deal with changing technologies as a part of their everyday practice. In the long-term, newer equipment featuring different technology with the same basic functions in terms of image production could replace certain types of equipment that are beyond repair or are discontinued. The problem here is that, in many cases, new equipment performs faster, can produce a different image quality in terms of resolution, contrast, or proportion, or both. Fortunately, however, significant upgrading poses no problem for many media art works, and many artists appreciate the incorporation of newer technology in the functionality of their works. As a distributor, NIMk often follows the artists' wishes. In the project *Inside Installations: Preservation and Presentation of Installation Art* ([www.inside-installations.org](http://www.inside-installations.org)), NIMk and ICN researched if and how emulation can be used as a preservation strategy, using Jeffrey Shaw's installation *Revolution* as one of the case studies for this research.

### JEFFREY SHAW, *REVOLUTION: A MONUMENT FOR THE TELEVISION REVOLUTION*

Tjebbe van Tijen (b. 1944) and Jeffrey Shaw developed the concept for their *Revolution* project in 1987 in anticipation of the 200-year anniversary in 1989 of the beginning of the French Revolution. Although this initial concept remains unrealized, a preliminary stage of the project was exhibited in The Hague in 1988, and in Linz, Austria in 1989. The installation *Revolution* (fig. 1) was created in response to a commission for the exhibition *Imago* in 1990. It was based largely on the existing material. In this interactive installation, the visitor pushes a bar attached to a steel column with a built-in monitor. Images are displayed on the monitor if the bar is rotated. Pushing the bar forward triggers 180 images depicting revolutionary moments in human history that are displayed on the monitor. Rapidly turning the bar produces a vague blur of images, and pulling the bar backwards results in an image of two millstones grinding corn. The visitor is thus an active participant who has to use physi-

cal effort to achieve a result (Wijers and Vermaat, Inside Installations).

The installation can be divided in two parts, namely the sculpture (the push bar, the column, etc.) and the electronics (an analog rotation sensor, an 8086 XT personal computer, a Sony Lasermax LDP-1500 laser disc player, and a custom-built sample player and interface box). The technology used in *Revolution* is over 15 years old and at least one of the components will probably breakdown beyond repair within the next 10 years. The PC and laser disc player can be replaced, but the custom-built hardware that interfaces audio and sensor data cannot be rebuilt. There is no schematic diagram or documentation. If this installation is to be exhibited in the future, the current hardware will have to be replaced. Emulation, or at least an emulation plan, seemed to be the best strategy. To do this we used the checklist for assessing the conservation options developed by the SBMK in 1997 and the guidelines presented by the Tate (Laurenson 2004). Responding to an e-mail about this approach, Jeffrey Shaw suggested “forgetting about the video disc player and play all the images back from a computer . . . The audio should also come from this computer.” And he wished us good luck. It is clear that emulation is in line with Shaw’s ideas.

The case study team and Paul Klomp, an independent artist who develops and creates hardware and software solutions for media and interactive works in collaboration with NIMk, investigated the possibilities of using an emulation plan for the long-term preservation of the installation. This research resulted in a precise description of the hardware and software, the functionality and the user interaction, providing a description that can be used later as a basis for emulation. Because the schematics and source code of the electronics and the software were unavailable, Klomp used the “black box principle” to analyze the behaviour of the techniques employed by recording the exact way in which the installation re-

acts and interacts. Before setting up the installation for measurements and observation, the contents of the laser disc and audio EPROMs were secured digitally. Klomp also made a description of *Revolution’s* functionality and interactivity. To test the validity of this description, an emulation was made using Pure Data. In a test setup, the images and sounds produced by the emulated version were compared to the output of the original installation. The emulating program was adapted and its functionality was compared to the original setup, using data captured from the original installation. The copy appeared to be reasonably precise. This emulation was not a complete replacement of the original hardware (e.g., the images are not full screen nor are they in the correct video resolution), but it does prove that there is an adequate description of the functionality of the installation and that the image and sound data was correctly stored. The hardware used in this installation was emulated based on analysis and functions in a completely different way to the original hardware. We decided that the emulated “replacement” does not have to look like the original version, as long as it behaved in the same way.

In this regard, emulation raises the following questions:

1. Which requirements must the emulation meet, both in relation to the original state of the artwork and its (future) preservation?
2. What are the advantages and disadvantages with regard to reconstruction, configuration, and emulation as strategies for conservation?
3. How can we assess the success of these types of activities and what criteria can we use to evaluate the results?
4. How much of the historical context is lost for the audience?
5. How can we compensate for this loss, for instance, by means of documentation, interviews, or both?
6. If the questions above are taken into consideration, is emulation (or virtualisation)<sup>1</sup> a viable option for presenting the work in the future?

The result of this emulation case study is that this installation is operational again, complete with installation descriptions and instructions. Moreover, the case studies have produced knowhow about emulation and the re-installation of video and computer-based installations, and have fostered a network for knowledge exchange and future projects. This outcome is exactly what was needed because now is the time to cooperatively preserve video and computer-based installations from the 1980s (while we still have the equipment and knowledge), with urgent attention being paid to monitors, the *real* preservation challenge at the moment. We now know that storing old formats, computers, and playback and presentation equipment as part of a preservation strategy is extremely important, but it is not enough. More research should be conducted into equipment if we are to use the original tools for authentic and historically accurate presentations, and this equipment will also serve as a reference when investigating the possibilities of replacement, emulation, or both.

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## NOTES

1. Virtualisation is a transferring method to port the work or specific components to a virtual machine (VM). The VM replicates original coding elements and the authentic environment.

## REFERENCES

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