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FABRIZIO PLESSI'S *LIQUID TIME II* AT THE CENTER FOR ART AND MEDIA (ZKM): OPTIONS AND LIMITATIONS FOR AN AUTHENTIC REINSTALLATION

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INTRODUCTION

Tempo Liquido II (1993), a video sculpture by the Italian artist Fabrizio Plessi (b. 1940), was presented in a special Philips Art Program exhibition at the 1993 Internationale Funkausstellung (IFA) in Berlin. The work was exhibited again for an extended period from 2004 to 2006 in the exhibition *Masterpieces of Media Art* at the Media Museum, Center for Art and Media (ZKM), Karlsruhe, Germany (fig. 1).

Fig. 1: Fabrizio Plessi, *Liquid Time II*, 1993, video installation with 21 television monitors, steel structure, motor and water, 8 x 4 x 5 m, Media Museum, Center for Art and Media (ZKM) Karlsruhe, Germany, acc. no. 216/97. 2006 installation at the Media Museum, ZKM. Courtesy of F. Wamhof, ZKM.

The sculpture comprises more than 100 elements joined together to form a metal structure that is 8 meters long, 4 meters wide and 5 meters high. Its surface has been artificially rusted with acid. An upright paddle wheel with 21 cathode ray tube (CRT) television sets is mounted above a long water trough. The wheel is driven slowly by an electric motor and continuously rotates on its central axis. The rear portion of the wheel is surrounded by a metal cover so that visitors can only see the television screens from the side facing the water trough. The viewer experiences a televised projection of water cascading from top to bottom on the screens, accompanied by the sound of approximately 1500 litres of actual rushing water that is circulated by an electrical pump through the water trough.

Fig. 2: Fabrizio Plessi, *Liquid Time II*, 1993. 2006 installation view of the moving television sets. Courtesy of F.Y. Tykwer, ZKM.

IFA in Berlin. A black and white single-channel video of flowing water is displayed on 21 television sets (23-inch wide display), appearing to flow from the top to the bottom of each screen from a recordable laser disc on a Phillips VP380 Multi-Standard Laser Disc Drive (figs. 2, 3). The 17 minute, 55 second video is transmitted to the color television sets via a coaxial cable connected to a sliding contact in a slip ring unit. During reinstallation at ZKM in 2004, no fundamental changes were made to the technical setup, except that a different laser disc player was used because the original player was no longer available.

PROBLEMS WITH TRANSMISSION OF THE VIDEO SIGNAL

After the artwork had been operating for almost two years, an examination in June 2006 revealed an increase in disturbances of the television displays. The screens showed spontaneous blackouts and disturbances. These disturbances always occurred simultaneously on the screens, which received their video signal from the video distributor at the same time. Furthermore, they occurred at a time when the housing of the slip ring unit was opened twice a week in order to clean the contacts. The signal disturbances continued to increase, despite regular cleaning. As this situation was not acceptable for the presentation, discussions were held to consider which alternative options were available for transmission of the video signal.

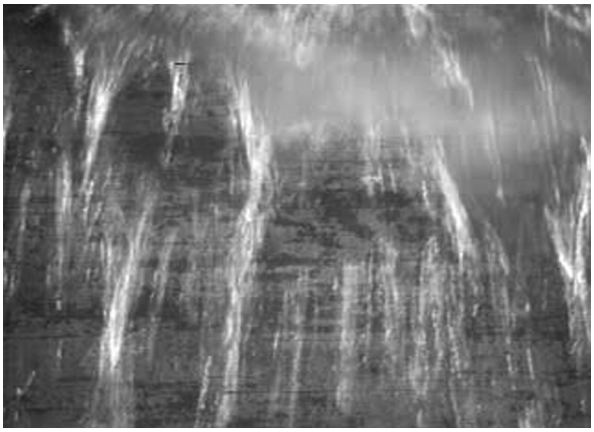

Fig. 3: Fabrizio Plessi, *Liquid Time II*, 1993. Still of the black-and-white video sequence. Courtesy of F.Y. Tykwer, ZKM.

Previous attempts to transmit the video signal to the television sets via a wireless system had been unsuccessful due to interference of the signal by the steel structure, the moving steel wheel of the installation, or both, so that an optimum signal transmission was not possible. Another approach was to integrate the player within the rotating wheel; however, this option was not feasible due to the lack of space in the wheel and the large size of the laser disc player. Furthermore, there were doubts whether the player would function correctly owing to the continuous 360° rotations.

INSTALLATION OF THE NEW VIDEO TRANSMISSION SYSTEM

Based on these considerations, ZKM decided to change the video system. A flash card player and three new video distributors were installed inside the wheel in such a way as to ensure that the new components of the wheel structure were concealed. This system allows transmission of the video signal without a sliding contact. The flash card player was then equipped with a CompactFlash memory card carrying a digital copy of the video sequence from the laser disc.

DIGITALISATION OF THE LASER DISC

The video material on the laser disc was digitalised in the ZKM Laboratory for Antiquated Video Systems to produce an MPEG-2 file that could be stored on a CompactFlash memory card (1 gigabyte (GB) capacity). During digitalisation, it was discovered that the video material on the laser disc was in color and not in black and white. An inspection of the Betacam SP cassette in the ZKM archive, which Fabrizio Plessi had handed over when the work had been purchased, revealed that it was also in color.

DEVELOPMENT OF A PICTURE FAULT

The prepared flash card was inserted in the player and the television sets were switched over from black and white to color. The installation was then started. Although the flash card player and the new video distributors worked satisfactorily, 14 screens displayed a picture fault (fig. 4) composed of colored patches on the left-hand edge of the screen. The other seven screens did not show any discolored patches. Even after several restarts, only seven screens of the installation never showed any faults. These seven were always the television sets that were facing the water trough, or in other words, those that were not surrounded by the metal cover of the wheel when the installation was switched on.

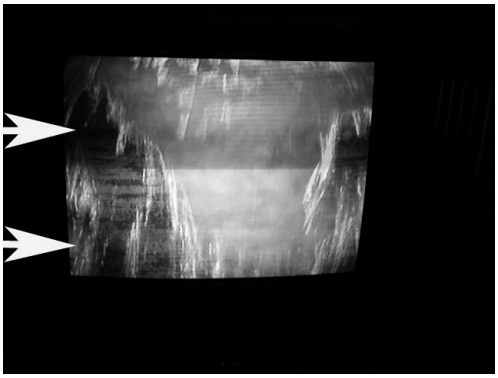

Fig. 4: Fabrizio Plessi, *Liquid Time II*, 1993. Detail of picture fault with white arrows showing the area of discolored patches on the edge of the screen. Courtesy of F.Y. Tykwer, ZKM.

REASONS FOR THE PICTURE FAULT

In order to generate a picture in a color cathode ray tube, there are three electron beam sources or guns, one for each of the three basic colors (red, green, and blue). They are usually located next to one another in the neck of the cathode ray tube. When the electrons are emitted, they are steered magnetically by deflection coils so that they run across the entire screen, line-by-line. Color television sets use a thin metal screen known as a shadow mask to allow the electrons to strike the different phosphor layers in the fluorescent screen from different directions. This mask is located just in front of the fluorescent screen and ensures that the beam from an electron gun will strike only the appropriately colored phosphor (fig. 5). If the shadow mask has become permanently magnetic due to external factors, it may deflect the electron beams to such an extent that the colors are rendered incorrectly on the screen (Rodekurth 1991). The picture faults exhibited by the installation are very similar to this effect.

Magnetisation of the shadow mask due to effects of the Earth's magnetic field and its consequences (discoloration and divergence) are well known, which is why a color cathode ray tube is protected by an internal or external shield. From the technical point of view, this can be a simple annular coil, half of which extends forward outside the cover and the other half extends to the rear within the cover (Rodekurth 1991). This coil, wrapped around the cathode ray tube, generates an alternating magnetic field that demagnetises the shadow mask. This process is known as "degaussing" and is carried out automatically by a color cathode ray tube every time it is powered on. This demagnetisation is associated with an audible noise that varies between a loud "thunk" and a "hum." The demagnetisation process is also visible because the displayed picture wobbles very noticeably for a moment or two.

In our case, the 21 color television sets are degaussed when they are turned on. Unfortunately, the design of the water wheel prevents correct demagnetisation of 14 sets; the wheel carrying the television sets has a metal cover (fig. 6) and only the seven screens facing the water trough are not surrounded by this cover. This means that only these seven television sets can be demagnetised correctly and thus display the correct picture. The other screens still show a picture fault because the magnetic field around the metal cover re-magnetises the shadow mask after it has been demagnetised. However, the screens do not show a picture fault if the same video material from the flash card is shown in the black and white mode.

CONSIDERATIONS RELATING TO THE PRESENTATION

As a consequence of the aforementioned technical findings, ZKM decided to re-address the issue of how the installation should be presented. An interview with Jochen Saueracker (b. 1957), who had already installed the *Liquid Time II* sculpture twice in the past, revealed that he had purposely chosen the black and white mode for the television sets because he had also observed the phenomenon of the faulty picture. When asked about this,

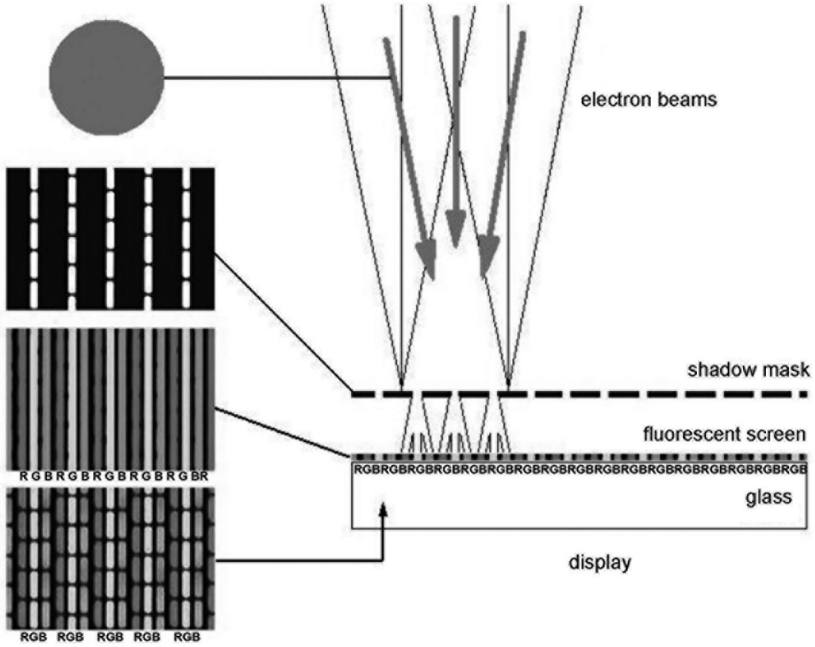

Fig. 5: Fabrizio Plessi, *Liquid Time II*, 1993. Diagram of how colors (red, green, and blue) are produced on a typical CRT television set. Courtesy of F.Y. Tykwer, ZKM.

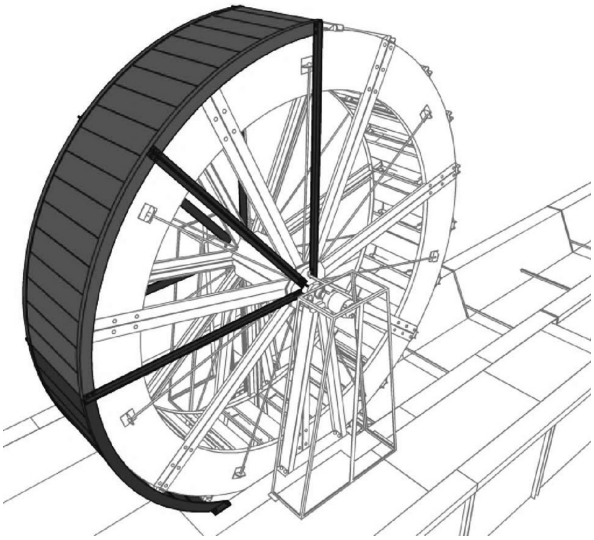

Fig. 6: Fabrizio Plessi, *Liquid Time II*, 1993. Drawing of the metal cover over half of the wheel. Courtesy of Voker Möllenhoff, ZKM.

Fig. 7: Fabrizio Plessi, *Liquid Time II*, 1993. Label on original laser disc by Fabrizio Plessi. Courtesy of F.Y. Tykwer, ZKM.

Fabrizio Plessi answered as follows: "It's very important to clear out that the color of the water on the video must be colored. The color must be the natural color of water as it has always been."

RESEARCH IN THE CATALOGUE OF WORKS

This situation led to further discussions of this issue. The first topic was the laser disc. It has a sticker labelled: "Fabrizio Plessi "PRATO"" (fig. 7). Starting with this designation, a search was made for works with this title in Fabrizio Plessi's catalogue of works (Koelen 1998). We found evidence that Plessi had been pursuing the *Tempo Liquido* concept since 1970. Plessi developed various drawings and designs based on a performance in 1978. The catalogue raisonné lists two similar installations entitled: *Liquid Time* and *Liquid Time II*. *Liquid Time,* from 1989, with the work number 89002 (Koelen 1998) is owned by the Centro per l'arte contemporanea Luigi Pecci in Prato, Italy. This installation comprises a steel structure, painted grey, with a free-standing wheel that is also outfitted with color television sets. A stable metal bridge over the water trough invites viewers to cross over the flowing water. The description states that the video is shown in color. The illustrations show the identical video sequence of cascading water.

Liquid Time II, from 1993, is listed as work number 93003 (Koelen 1998) as a structure made of rusted steel and owned by ZKM. In contrast to the work in Prato, the wheel of this installation has a metal cover.

CONCLUSION

It can be concluded that the video was intended to be shown in color because Fabrizio Plessi stated that the water should be seen in its natural colors. However, a color presentation of the Karlsruhe installation is confronted with the special properties of the metal structure and the associated physical phenomena. The previous method of presenting the artwork using the black and white mode for the color television sets can be regarded as the simplest way of avoiding undesirable picture faults.

Discussions relating to a future presentation in color were based on the idea of using a more complicated technical method of manipulating the screens; however, these were rejected because although such a method could have enabled a presentation in the color mode without picture faults, it would have not only altered the original presentation practice but also led to higher costs.

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