# Installation Art Subjected to Risk Assessment – Jeffrey Shaw's *Revolution* as Case Study

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**Abstract**

This paper describes the application of the risk assessment approach to an installation made by Jeffrey Shaw and Tjebbe van Tijen, *Revolution. A Monument for the Television Revolution* (1990) in order to prioritize preservation options. Its significance was determined, a description of its anatomy and identity was made and the contribution of the various components to the significance of the whole 'ensemble' was determined. Risks were identified and scenarios were developed describing expected loss of cultural value in the future. Since replacement, migration and emulation are common conservation strategies for installation art, the possibility to include recoverability of lost value in the assessment was explored. Compared with decisions curators and conservators would make based on their individual knowledge and experience, this rational, collaborative and structured risk assessment methodology provided increased insight in identity of the work and a ranking of the risks.

## Introduction: the collection risk management approach

Collection risk management (CRM) has gradually made its way to the field of cultural heritage preservation. It deals with all threats to which objects and collections are being exposed, from light and climate to fire and theft, and thus places preventive conservation together with security and facility management in the context of collections management. The method consists of identifying possible risks, analysing and quantifying them, ranking them, and setting priorities in order to select options for reducing the relevant risks. It is a rational approach which enables well-argued risk-based decision-making (Waller 1994; Ashley-Smith 1999). After its initial application in natural history collections by Robert Waller in the 1990s, the methodology has been applied to an historic house museum (Brokerhof et al. 2005), archives (Pinheiro and Maceo 2009; Bülow, 2009) and digital library collections (Woodyard, 2005). The risk management approach has been taught in several international courses over the past years (Antomarchi et al. 2005). The CRM methodology has its origin in moveable collections in more traditional institutions. The Netherlands Institute for Cultural Heritage (ICN)[1] and the Netherlands Media Art Institute/Montevideo (NIMk) saw an opportunity to investigate its robustness by applying it to the preservation of an installation made by Jeffrey Shaw and Tjebbe van Tijen, *Revolution. A Monument for the Television Revolution* (1990).[2] This installation had been selected as one of the case studies in the *Inside Installations* project. A risk assessment workshop was organized aiming to rationalize the conservation research and

1 On 1 January 2011, the Netherlands Institute for Cultural Heritage / ICN became part of the Cultural Heritage Agency / RCE.

2 This case study was carried out during the *Inside Installations* project (2004-2007). See Vermaat (2005) and case study results at www.inside-installations.org/artworks/artwork.php?r_id=15 (accessed 16 August 2010)

decision-making process and to evaluate this methodology for a complex work of installation art. Much of the knowledge and information that was generated in the case study was fed into the risk assessment while the outcome of the risk assessment contributed to the case study. The case study team was expanded with risk management specialist to form the risk team which further consisted of the curator of collections of ICN, the collection manager and a technician of NIMk, a conservator, an art historian, a conservation scientist, a documentalist, and an 'ethnographic' observer who provided feedback on the process.[3] This article describes the eight steps of the risk assessment process and its outcomes.

### Step 1. Making, history and context

The first step in conducting a risk assessment is to research the artist or culture of production, and the collection or work of art (history, material construction, condition and cultural context). For this case study, the team read the object files available at ICN and NIMk, and investigated (art historical) archival material. *Revolution* was re-installed at NIMk and was thoroughly examined by the team. The technician made a condition survey of its technical components. At the start of the project Jeffrey Shaw (who currently lives in Australia) was contacted by email. Co-creator Tjebbe van Tijen was interviewed in the course of the project.

Jeffrey Shaw is regarded as a pioneer of interactive technology-based art in which he applies media such as film, light, architecture and texts. *Revolution* was created at the end of a period in which Shaw experimented with a variety of media and interactivity with the viewer. Since 1977 Shaw lived and worked in Amsterdam. For most of his site- and time-specific projects he collaborated with other artists and technicians. *Revolution* was rooted in one of his last projects in the Netherlands carried out together with Van Tijen: *The Imaginary Museum of Revolution* (1988-1991).[4] In the same period the artists were asked to contribute a work to the travelling group exhibition *Imago: Fin de siècle in Dutch contemporary art*. This exhibition presented an overview of media art from an international group of artists living in the Netherlands at the time.[5] For this work Shaw and Van Tijen reused ingredients of the Imaginary Museum project, such as images of 200 years of revolutions and their 'heroes' (starting with the French Revolution and ending with the revolt in Romania in 1989). The images of 'revolutionary moments' were digitized and reworked copies from paintings, drawings and photographs. Tjebbe van Tijen was responsible for this visualization and he still has the original paper copies and his electronic database ❶.

### Step 2. Anatomy, character and identity

From the outside, *Revolution* is a steel framework in the shape of a column and a Sony Trinitron monitor on top of it. The technology is built inside and consists of a computer, laserdisc player, an audio system and devices for interactivity. Attached to the frame is a bar which the visitor can turn around. When pushing the bar in a clockwise direction, images of revolutions appear which are accompanied by the sound of buzzing voices. Each of the 180 images can only be viewed for two degrees. To see all of the images the visitor

[3] The authors would like to thank Ramon Coelho (technician, NIMk), IJsbrand Hummelen (conservator, ICN), Thea van Oosten (conservation scientist, ICN), Nathalie Menke (documentalist), Vivian van Saaze (ethnographic observer) and Paul Klomp (Klomp Kunst & Electro) for contributing their knowledge and experience to the risk assessment.

[4] The project was submitted to the city of Paris for the commemoration of the bicentenary of the French Revolution but was not selected. It was, however, partly realized in The Hague. For this occasion, a database of over 2,000 images was created by Tjebbe van Tijens. His website offers a description of the *Imaginary Museum of Revolutions* project. See http://imaginarymuseum-archive.org/AAA/index.html#30 (search for number 30) (accessed 16 August 2010)

[5] In total, 14 prominent artists participated in this exhibition. *Imago* travelled for four years around the world. Afterwards all works were acquired by the Netherlands Office of Fine Arts.


❶ Jeffrey Shaw and Tjebbe van Tijen, *Revolution. A Monument for the Television Revolution*, 1990, at the Imago exhibition, Taipei, 1993.

must slowly turn the installation full circle (360 degrees), which requires considerable physical effort. The pressure influences the speed of rotation and consequently the rate at which the images are shown and the pitch and density of the sound. When pulling the bar backwards, a video image appears of a millstone grinding grain to flour. The interactive role of the visitor is crucial in this work. Only by acting, that is, by pushing the bar, is one able to experience the work. The images do not change by themselves.

There is no artist statement for *Revolution*. Although both artists were contacted they did not show an overwhelming interest in conservation decisions. When Shaw was notified that much of the support technology had become obsolete he suggested: 'Forget about the video disc player and play all the images back from a computer [...]. Also the audio should come from this computer'. He wished the team good luck with their enterprise.[6] Hence it was concluded by the team that he would agree with emulating the work as long as it guaranteed a similar experience of its initial 'look and feel'. Van Tijen took a different perspective: '[...] the realization of this kind of project is relative. The concept is that the project could have different appearances up till today. Each realisation is just one manifestation. The whole project is the concept. It could be realized differently over and over again and still would be the same work'.[7] From the interview it became clear that Van Tijen considered *Revolution* just an occasional spin-off of the larger project which he would have liked to continue. However, he was not against its conservation and provided some comments which have been included in the considerations.

At the time of the risk assessment workshop the case study was still in full swing. The case study team had identified a lack of essential information but had only just started to fill the gaps in knowledge. There was a patch diagram, some photographs, some video fragments of 'installation moments' at *Imago*, and a list with descriptions of the constituting parts. There was a basic registration of the work but no technical documentation such as source code, circuit diagrams, or sound and image data. The risk assessment was performed within the context of this lack of information.

The risk team described *Revolution* as an interactive video sculpture because of its 'fixed' appearance and spatial dimensions (column, monitor, bar). Three characteristics were thought to be decisive for its identity. Firstly, interactivity, as a conceptual and physical component which is related to the pressure of the body against the push bar. Secondly, visual appearance, for which the dimensions of the column and the Sony monitor are decisive, as well as the quality and rate of the images. Also, the specific 'look and feel' of the 1990s is a determining characteristic of the visual appearance. In the interview, Van Tijen said that resolution of the images (which tremble slightly due to the limitations in storage capacity of the laserdisc at that time) could be 'emulated' or simulated to keep this appearance, but was not strictly necessary. However, he stressed the fact that all images should appear (no dropouts) and that physical effort should be needed for pushing the column around its axis. The monitor and frame should stay the same.[8] The third component is audio, the sound of buzzing voices and the millstones that are reproduced together with the images, for which the loudness, pitch and density are essential.

6 Email correspondence between Jeffrey Shaw and Simone Vermaat, 16 August 2004.

7 Interview with Tjebbe van Tijen by Gaby Wijers and Tatja Scholte, 10 March 2006 (translation TS).

8 Ibid.

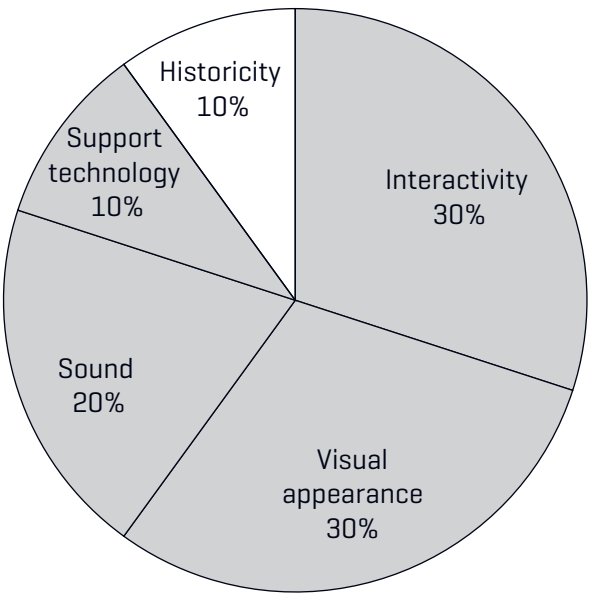
### Step 3. Meaning, values and statement of significance

As risk is defined as the 'the expected loss of value', the initial cultural value of an object or collection needs to be established. Therefore, the next step in the process was to assess the meaning and values and draft a statement of significance based on the information available including the re-installation of the work itself. In order to assess the significance of *Revolution* it was held against the criteria of the Australian model Significance 2.0 (Russell and Winkworth 2009).[9] It is beyond the scope of this article to explain the procedure and criteria used in this model but the outcomes are summarized here. The method assesses significance against four primary criteria (determining whether there is any cultural significance) and four comparative criteria (determining the degree of significance). The first primary criterion looks at artistic/aesthetic values which in contemporary art conservation are often referred to as 'the heart of the artwork'. For *Revolution* these values were particularly recognized in the concept of interactivity and the sculptural 'appearance' as well as in the manner the images and sound are being processed. Its functionality is complex and some parts were custom-made by Shaw and the technicians, such as the audio box (eproms) and a device (comlink) for linking sound and images to the pace of the visitor. The second primary criterion, historic values, was recognized in the (art-) historical period in which media art came into maturity in the 1990s. *Revolution* was furthermore considered to have historical value because of its content; it is full of historical references. Also the role of television in recent history and the particular quality and shape of the monitor are considered to provide an association with certain time periods. The third criterion dealing with informational/research values was in fact introduced by the profound research on the work carried out during *Inside Installations* and the risk assessment. According to the team this value might be considered less significant by future generations. Social values make up the fourth primary criterion. This looks at the current association of a specific group of people with an object or collection. *Revolution* represents the events and happenings organized by Shaw and Van Tijen during two decades of social-artistic experiment. At the time of creation it had a strong association with the artists and art audiences in the 1990s and the involvement of the Dutch government in the art scene of the 1990s could also be considered as a socio-political, historical phenomenon from that same period. Yet in the course of time these social values have become historic values.

Of the four comparative criteria the risk team considered condition/completeness to be paramount. The constituting parts of the installation are integral parts of an 'ensemble' which should have the same look and feel, even if technical elements would have to be replaced. If *Revolution* were to lose its 'functionality', it would also lose its 'identity' as an interactive video sculpture and its metal frame would only be an 'historic document'. Another comparative criterion is provenance, which for *Revolution* is well documented. Because it is part of *Imago* it is still part of a larger contextual ensemble. As long as the information associated with its initial context and exhibition history is well kept, the rich provenance enhances the artistic value. During his twenty-year-long stay in the Netherlands, Jeffrey Shaw produced many site-specific

[9] See for description of primary and comparative criteria, Russell, R. and Winkworth, K. (2009), pp 39-40.

events and installations of which only a small number of physical works have been preserved. This is a reason why *Revolution* answers to the comparative criterion of rarity/representativeness. Within the cultural context of the Netherlands, it is even his only work in a public collection. Finally, the interpretive capacity (usability and relevance to the organization's mission) could in this case be related to the possibility of the work to still give the visitor the meaningful experience as originally intended, thus enhancing artistic, historic and research values. Based on the assessment against these eight criteria, a statement of significance could be drafted and quantified.
The 'value distribution pie' ❷ shows how the various values and features con-




❷ Value distribution pie for Jeffrey Shaw's *Revolution*. Artistic/aesthetic values in gray; historic value in white.

tribute to the total significance of the installation. The two main values are artistic/aesthetic, covering 90 per cent of the total significance, subdivided in the identity determining characteristics: interactivity, visual appearance, sound and support technique. By considering what would remain if one of these characteristics were lost, its contribution to the total value was determined. Likewise, by considering what would remain if the entire interactive functionality (and thus experience of the work) were to fail, it was determined that the leftover sculptural 'corpse' of the metal frame holding the non-functional components still contributed historic and documentary values to the extent of 10 per cent of the total significance.

### Step 4. Linking tangible and sensorial aspects to significance

During the next step the above-mentioned values were linked to the components determining the 'look and feel' of the work. For example, the experience of sound, image and motion could directly be related to the resistance of the push bar, the loudness of the sound, the rate of the images, and the brightness and calibration of the monitor. An additional basic requirement is a well-functioning support technology. Together, all these factors form a

complex of interdependencies (both tangible and intangible) that should be taken into account in order to estimate the impact of expected changes in the future. During the case study a description of all components had been made and several guidelines had been put together. These overviews as well as discussions in the risk team served as a basis for the assessment of a 'loss of value' in case one of the elements would fail. For example, if the eprom audio box (linking sound to image and motion) were to fail, the interactivity would be affected severely. Based on the assessment, elements which are responsible for the interactive experience (tracking wheel, decoder, Comlink, eprom audio box, laserdisc and player, monitor) were considered to be vital for the experience, look and feel of the installation and gained a different status from the support technology (PC, keyboard, floppy disc and cables).

### Step 5. Identification of risks

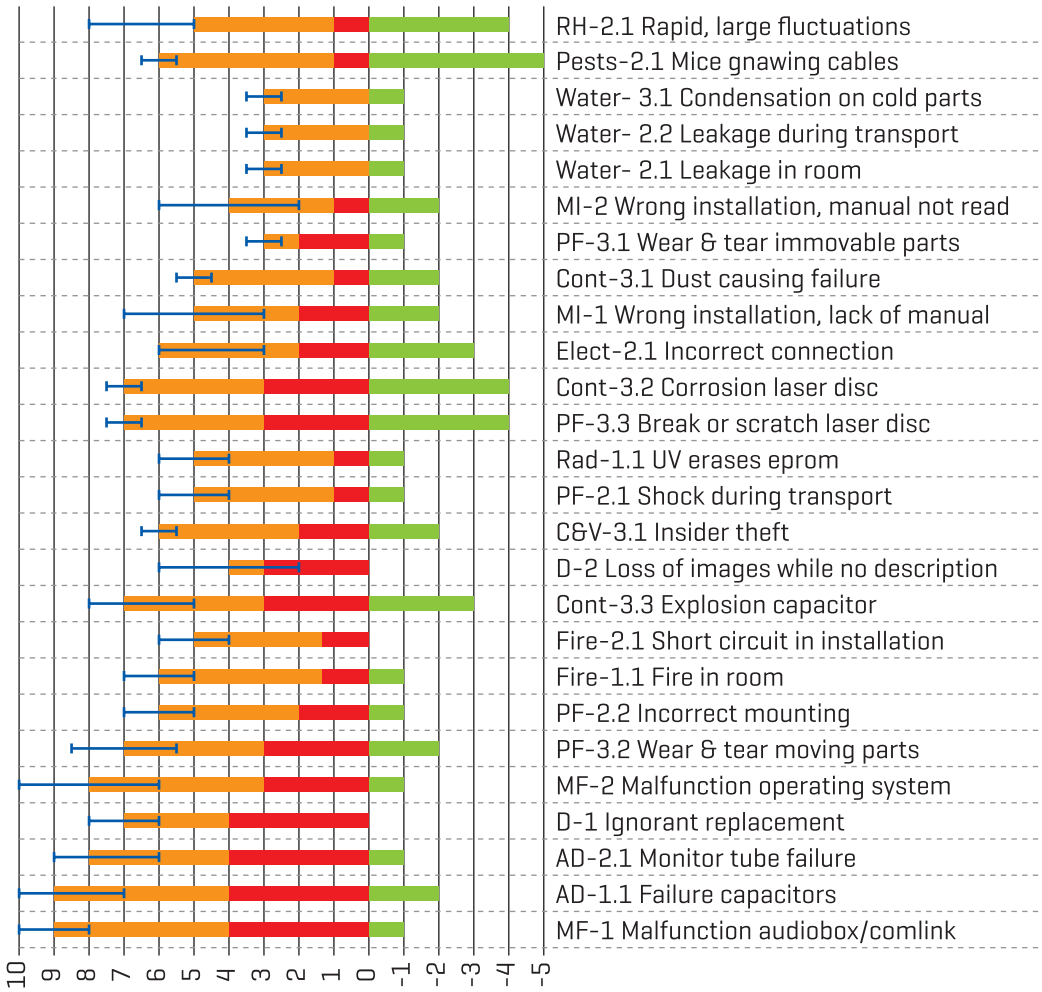
For a proper risk assessment it is important to identify all relevant risks. Experiences from the past and condition surveys give a good starting point for their identification, but in many cases it is the unfamiliar and the invisible threats that pose the biggest risk. During the workshop risks were identified by combining two common approaches: hazard-based identification (using Michalski's and Waller's ten 'agents of deterioration'[10], developing a scenario from source to effect) and fault tree analysis (working back from adverse effect to sources). The exercise resulted in the addition of 'electricity' and 'autonomous decay' to the list of agents. The intangible agents were divided into 'dissociation' (effecting conceptual integrity), malfunction (effecting functional integrity) and mal-interpretation (effecting conceptual and contextual integrity). For the risk assessment a brainstorm session was conducted with the team in order to list what could go wrong and cause loss of value to *Revolution*. This list was brought back to the 40 most relevant risks of which 26 were fully analysed and quantified.

### Step 6. Expected loss of value and recoverability

To quantify 'the expected loss of value', risk is expressed as the product of its probability (how often or how soon a loss may occur) and its consequence (how bad the loss will be). For each of the identified risks the most likely scenario was developed, describing cause and effect and the pathway in between, taking into account factors that might magnify or mitigate the final impact. For each scenario the probability was given an A score between 1 (unlikely) and 5 (almost certain). Similarly the consequence was given a B score between 1 (minute) and 5 (total loss). Preservation of media technology is a proactive process which never ends. Replacement, reformatting, migration and emulation are ways to prevent loss of essential values and are, if they meet the right conditions, accepted practices in conservation of contemporary art (Keene 2002). These strategies have a strong influence on the ultimate loss of value. Therefore, an additional element was incorporated in assessing the risks: recovery of 'lost values', taking into account both technical possibility of recoverability and costs, for which a C score was given between 1 (small recovery possible or full recovery at great expense) and 5 (full recovery possible at low cost).

[10] Michalski and Waller work with ten agents of deterioration: physical forces, fire, water, thieves and vandals, pests, contaminants, radiation, incorrect temperature, incorrect relative humidity and dissociation.

For all 26 risks on the shortlist, it was estimated how soon a material change or failure of components would happen and an A score was given. Secondly, the expected loss of value was assessed by considering which characteristics would be affected and how bad this would be in terms of taking a bite out of the 'value distribution pie' ❷, so that a B score could be given. Adding the A and B scores gives the 'magnitude of risks' (the positive red and orange bars in ❸. This magnitude of risk was corrected with recoverability (subtracting the C- core). For example, a blown fuse can easily be replaced against low costs, while an obsolete and broken laserdisc cannot be recovered. Recoverability therefore needs to be specified for each of the components and set against the other two scores, (the negative green bars in ❸).




❸ Magnitude of risks with A score in red, B score in orange and C score as negative in green; ranked from highest to lowest score for the total magnitude of risk. Blue bars indicate the uncertainty factor.

Finally, the factor of uncertainty with which the calculated risk might happen will influence the decision-making based on a risk assessment. Big risks with a small uncertainty will ask for immediate action, whereas risks with a large uncertainty may require more research and increasing certainty before action is taken.

### Step 7. Risks and preservation options

The risk team assigned the biggest threats for *Revolution* to malfunctioning, autonomous decay and dissociation. The biggest risks for malfunctioning of technical components was failure of the custom-made audio box and its comlink. The lack of schematics of technical functionality is a magnifying factor. Since the urgency is high and the impact is so great, removing this magnifying factor improves recoverability and thus reduces the risk considerably. A major dissociation risk was the loss of audio data kept inside the custom-made audio box. The lack of audio documentation was another magnifying factor for any failure to components responsible for producing sound. If functionality failed, the absence of documentation would make any reconstruction an interpretation of the artistic initial design. Similarly, the laserdisc with 180 images and video of the millstones had no description of what they are, where they came from or in which order they need to be played. Additionally, the laserdisc contains all the other works of *Imago*. This lack of information is a magnifying factor for risks regarding any failure to play the laserdiscs. The risk would be reduced by a proper registration of the images and storage under the right conditions. It would further be reduced by archiving the image database which Tjebbe van Tijen has.

Capturing the audio and image data and transcribing the operating system of the PC into open-source codes would ensure the possibility of emulation in the future. This would recover the artistic/aesthetic value but still imply loss of historical value. Reducing this magnifying factor formed a major part of the parallel case study. The best option for preserving its functionality was analysing all in- and output signals and read out the audio data from the eproms, on the basis of which a plan for its emulation could be drafted (and tested in the simulation). However, even when all (technical) elements of the installation have been properly analysed and documented, the degree of recovery of the artistic/aesthetic value in the future would still depend on the quality of the emulation. Autonomous decay of the capacitors (affecting all electronic components) might in the (near) future result in leakage and consequently total failure of the installation. Since the capacitors have almost reached the end of their lifespan (average 20 years) this has become an urgent major risk. Even though lost values can be recovered by replacing the capacitors, the action might be expensive.

Finally, any failure of the video monitor would cause loss of visual appearance and experience of *Revolution*. There is a good chance this will happen within the next few years. The monitor determines both the aesthetic look of the installation and its historicity; its appearance is determined by its size and position within the metal frame, as well as by the high quality of the screen. Sony monitors of this type are no longer produced and only a few are left in NIMk. Although one of the options would be to replace the inside of the monitor and keep its visual appearance, it is still a matter to be discussed with the artists.

### Step 8. Deciding on the preservation options

The biggest risks have their urgency in common. They are expected to cause a major loss in value within the next few years. Some of the risks are unavoid-

able as they are related to processes that can hardly be stopped or slowed down, such as the autonomous decay of the capacitors. Their reduction can only be achieved by trying to reduce the impact, mostly by being prepared to recover as much as possible of the lost value at the lowest possible cost. In this case study, a major risk was dissociation. Risk reduction requires technical schemes of and data read-outs from the custom-made audio box and laserdisc. The technical analysis and proper registration and documentation will avoid a total loss in the future (which in the case study was followed by an emulated test version). Another preservation measure should be a regular checking of the capacitors and replacing them before their leakage would cause damage to the electronic parts. Oneissue that remains unresolved is the replacement or adjustment of the monitor.

### Conclusion: Reality check

This experiment was based on the risk assessment methodology developed for collections. With a few adjustments it proved to be sufficiently robust to be applicable to installation art. For this occasion, the commonly used scores to assess risks were simplified to 'how fast', 'how bad' and a score for 'how much lost value can be recovered' was added, which worked well. Yet, more experiments should be made before it can be confirmed that this is a useful approach for technology-based installation art in general. Analysing the values attributed to the installation and the relationship between the physical work and its intended interactivity to draw up a statement of significance led to an increased understanding of the identity of the work and made it possible to express material changes and failure in terms of loss of value and to quantify the risks. The multidisciplinary team, and especially the fact that the technician who had been present at NIMk during the creation of *Revolution* was still around, were extremely important for the exercise.

The case study on *Revolution* had already revealed much of its weaknesses and threats. What the risk assessment added to this was a ranking of the threats by attributing numbers to 'gut feelings'. The vulnerability of small electrical parts, such as the capacitors, proved to be far more crucial than expected; their autonomous decay was not considered to be such a big risk before. The inclusion of recoverability in the assessment provided clear insight into the difference between actual causes of failure and the magnifying factors which ultimately have such a strong impact on the risk. Given the inherent limited lifespan of technical components, sometimes the most effective option for risk reduction is embedded in reducing these magnifying factors. In this case, risk reduction was in the proper analysis and documentation of the technique and the realization of the emulated test version. If *Revolution* would fail in the future, which seems to be inevitable, it can be emulated at reasonable costs.

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