Project description
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Research project: Virtualization as a preservation strategy for computer based art. An (empirical) study into the Installation I/Eye (1993) by Bill Spinhoven

Coordination: Gaby Wijers NIMk Amsterdam, NL
Researcher: Bill Spinhoven, artist and researcher, NL
Jo Ana Morfin, University of Bristol, UK
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Time span: July 01, 2010 – June 30, 2011
Location: Netherlands Media Art Institute, Amsterdam, The Netherlands
Set up: Case study based research within the project Obsolete Equipment initiated by PACKED and NIMk

Introduction
The project Obsolete Equipment was conceived as a collaboration of the Netherlands Media Art Institute (NIMk) and PACKED, Platform for the Archiving and Preservation of Audiovisual Arts1 together with MHKA Museum van Hedendaagse Kunst Antwerpen (Museum for Contemporary Art Antwerp), and S.M.A.K. Stedelijk Museum voor Actuele Kunsten Ghent (Municipal Museum of Contemporary Art in Ghent), SMA Stedelijk Museum Amsterdam, Museum Kröller-Müller en Instituut Collectie Nederland. The goal of the Project is to explore and examine strategies for preservation and presentation of the culturally significant artefacts of audiovisual heritage threatened by obsolescence of both playback and display equipment and/or alteration of the media.2

Since the introduction of Fluxus art movement of the 1960s and since Nam June Paik’s coronation as an undisputed father of video art, audiovisual media have been evolving and overtaking the art scene rapidly. In the art of today, the ubiquitous presence of audiovisual media is self-evident; those media are hardly to think away from the artistic practice, museum displays and commercial art gallery spaces. Consequently, since the development of new technologies has been followed by always-shorter life cycles of the software and hardware equipment, a new approach to their implementation and maintenance is called for. The dissemination of new electronic media has inevitably brought along the topic of their preservation and therewith the much debatable dilemmas of migration, emulation and reinterpretation of (already) historical installations. These strategies aim at maintaining the becoming rapidly obsolete formats and forms viewable and appreciable for the contemporary and future audiences. As a consequence, the complex issue of drawing strategies for the preservation of the technical heritage in respect of the future generations become a core of various initiatives. One of them is the mentioned project Obsolete Equipment by NIMk and PACKED.

Computer based art has immensely evolved since the first implementation of the computer

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1PACKED is an initiative of argos – centre for art and media, Museum Dhondt-Dhaenens (MDD), Museum van Hedendaagse Kunst Antwerpen (M HKA / Museum of Contemporary Art Antwerp) en Stedelijk Museum voor Actuele Kunsten (S.M.A.K. / Municipal Museum of Contemporary Art - Ghent). Founded in 2005, it became a platform for knowledge colportation and exchange on cataloguing, preservation and distribution of audiovisual art works to the art world and the broader field of cultural heritage. The mission of the PACKED is to act as an umbrella organization for the development and dissemination of knowledge on the cataloguing, preservation and distribution of audiovisual arts and audiovisual documents on art, and to offer related services; ik weet niet of dit nog klopt maar zal het rony vragen

graphics in the early 1970s. The past three decades have seen the radical change towards more sophisticated solutions that modified our understanding of technological borderlines along with the limits of the display standards and aesthetics. Although the preservation of computer-based artefacts owes much to the recent discourses and research that has been done in the preservation of electronic and time-based media in general, the approach to the computer-based installations calls for particular exploration.

The fact that this topic has attracted little notice so far is mainly due to the lack of specific expertise at the institutions in question. A competence in maintaining and preserving those artworks has been a rare and unappreciated virtue at museums and private collections. At times, it is the technical complexity of computer-based art that aggravate the access and understanding of the functionality and specificity of those objects. This results in the fact that only a small number of that works find their way in the collections. Another reason why source code based art has attracted little attention might lie in the fact that the artists play also a role of technicians in reinstalling, adjusting, arranging and maintaining their works themselves. Caretaker and institutions in charge have learned that only by involving artists in a collaborative, synergetic cooperation may they ensure the proper performance of the displays. These collaborations are indoubtably invaluable and much appreciated as a source of cultural, social and technical knowledge. However, taking into account conservation and its attending ethics that have driven the museum domain for last fifty years, it might also become a highly discursive and problematic issue when it comes to change and alteration of what have been considered formally as original, authentic version of an art object.

Project’s set up

The project was initiated by Gaby Wijers from the Netherlands Media Art Institute in Amsterdam within the Obsolete Equipment project a collaborative initiative involving PACKED and a number of Dutch and Flemish museums. It consists of two parts, a case study based research and a research into the virtualization as a preservation strategy for computer based art.

The central position in the project’s set up assumes the research and the preservation activity by Bill Spinhoven. Spinhoven’s artistic oeuvre involves various implementations of interactivity and computer technique along with digital and kinetic media. The artist and, in the same time, the author of the artwork to be discussed, explores the possibilities of the preservation of computer based installations. On the example of the installation entitled I/Eye (1993, in distribution at the Netherlands Media Art Institute) he attempts to technically investigate ways of maintaining and preserving the computer-based artefacts threatened by obsolescence. Practically, his research will include the conservation of the I/Eye, the production of its virtualized version, the creation of a web-based version including all services along with a virtualized version of (his) another installation, and a virtualization model available for other artists.

On the part of the theoretical and (art) historical approach (including technical history), the project is conceived to become a synthesis of the case study examination from two fairly heterogeneous perspectives. Hereto, two research positions concerned with conservation of new media will be confronted and evaluated. Worthy mentioning, through the participation of two PhD candidates, the research within this project became a part of doctoral dissertations at the University of Amsterdam and at the University of Bristol; it also contributes to the current

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discourse on conservation practices and their documentation in the domain of new electronic media.

Jo Ana Morfin and Hanna Barbara Hölling undertook the research from two points of departure dictated merely by their specialization and the research questions of their thesis.

Jo Ana Morfin, PhD researcher University of Bristol, represents a research position that emphasises the issues related to the documentation strategies and their implementation in institutional practise.

Another, alternative research position is represented by Hanna Hölling, a PhD researcher at the University of Amsterdam. Hölling commenced her research as a conservation practitioner with founded theoretical background and experience in institutional conservation. Her practical approach was subsequently transformed into a reflective research and articulated in form of a collaborative participation within various transdisciplinary conservation project, such as the (latest) New Strategies in the Conservation of Contemporary Art | NEWs at the University of Amsterdam, University of Maastricht and ICN Instituut Collectie Nederlands. The shift between the participative involvements in the professional field to the more distant, reflective, observatory attitude features her present activities. Hölling’s research is based on reflecting various interdependencies between diverse actors such as conservation professionals involved in the life of the artefact and shaping its transformation. She explores how artefacts obtain the status of a conservation object and how conservation narratives are created. Hölling reviews the existing conservation theories and ethics and explores the possibilities of their adaptation to the transitory character of new media. Within the research conducted on the I/Eye by Bill Spinhoven she questions the term of object’s originality and the notion of authenticity in the realm of computer based art preservation.

The awaited outputs of the project
The project is conceived to prove the applicability of emulation and virtualization as preservation strategy for obsolete interactive computer-based artworks. Following this, the artwork’s dependency on an older, obsolete system, would become irrelevant. In terms of sustainability, this approach seems to offer a long lasting solution for the maintenance of many specific computer-based installations. In this way, the access to the artwork might be ensured and, moreover, a certain portability of the data might be enabled. This could become significant when taking into account the permanency of the reoccurring obsolescence that will in the same way affect new technologies as it did the technologies of past decades.

The virtualized version of I/Eye may serve as a master for other computer-based works by Bill Spinhoven and, subsequently, may become a strategy for preservation of further artefacts from the NIMK –Montevideo/TBA collection. Thinking further, the reviewed results of this enterprise may offer a possibility for preservation of computer-based artefacts in various media art collections on a more global scale. Counting with positive results, a pioneering role of the project may certainly be assumed.

The expected output of the project foresees the completion of a comparative study on application of different preservation strategies to one installation, the I/Eye. It is planed to recover and present one of the older versions of the I/Eye (the term ‘original’ will be here avoided by purpose due to its discursive nature) together with its emulated/virtualized, hardware dependent version. Following this, its virtualized version run on a browser, that is,

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4 New Strategies for Conservation of Contemporary Art www.newstrategiesinconservation.nl, a multidisciplinary project that aims at examining the character and behavior of recent and contemporary artworks in the light of conservation theories and ethics (cooperation of the University of Amsterdam, University of Maastricht, Intituut Colectie Nederland | ICN 2009-2013)
web-based, system-, and (possibly) market independent will be run. Within the time span of one year, these three strategies will be conceived, scheduled and practically applied to the artwork. The expected result of this effort will allow empirically exploring the impact of the mentioned strategies on the appearance and behaviour of the installation. Pros and contras of these approaches will not only be theoretically, a priori evaluated, but they will subsequently be proved on the physically given object.

The presumed output of the project involves the research into the term of loss as a result of artefact’s obsolescence but also as a result of the undertaken preservation processes on the artefact. The question of how conservators compensate for this loss and which strategies may be followed in the further presentation of the artefact, are in focus of this project. Capturing audience experience and its practical feasibility in form of designing questionnaires and blogs/exchange online platforms are expected output’s prospects.

Moreover, the project’s objective is to improve and adapt the existing preservation vocabulary to the specificity of computer-based artefacts. The term of emulation and migration will be discussed in relation to virtualized data, and terms such as originality and authenticity will be focused. Further, more theoretical approach will reflect on the concept of biography - the core concept of NEWS - and explore the material and conceptual nature of the conservation object. Artist’s intension along with an ongoing, dynamic process of work’s creation and alteration will be brought into a focus. The manifold meaning of the term version, that is, one of several possible incarnations of an idea or a physical object, will be discussed on the example of the given computer-based artwork (by Hanna Hölling).

The project aims to complete the gapless documentation of the installation since its creation in 1992, its presentation in course of various exhibitions (Munich 1993 and Montevideo gallery at the Spuistraat 1994) and its subsequent acquisition in 1994 by NIMK – Montevideo/TBA. Here, a particular emphasis will be put on institutional life of the installation including the acquisition and distribution practises of the NIMK – Montevideo/TBA and, additionally the parallel existence of a number of versions that were/are acquired by collections (e.g. DASA) and displayed in diverse art exhibitions, at times, simultaneously.

The project will result in publication in form of articles in professional magazines mandated with the dissemination of the knowledge in the field of heritage conservation.

**The time span of the project**

The time span of the project is set for the period 2009 – 2011, whereby the emphasis on preservation of computer based art is scheduled for the last year of this period.

The initial phase of the project is devoted to the exploration of the manifold technical history of the installation. An interview with the artist and gathering materials on the subject is planed. The first presentation of the emulated and virtualized version has been scheduled for February 4, 2010 and will involve expert meeting on the topic of the virtualization of computer based art as well as on the capturing of audience experience.

The following phase of the project in spring 2011 will involve the evaluation of the virtualization results in practice as well as the evaluation of the data gathered from the

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5 Bill Spinhoven: ‘(…) Normally, when we talk about virtualization we talk about virtualized computer. Nowadays the idea is hat the virtualized version runs on a browser, system- and marker independent. This is a way to lessen the pain of a system dependency (…)’ Interview with the artist, NIMK – Montevideo/TBA, Amsterdam, 13.09.2010.

It is planned that the artist will produce a third version of the work, that is a web-based instance of the installation and will deliver a proposal for virtualization of other computer-based artefacts. A publication of the entire research and its results is expected in June 2011.

**Research questions**

The project aims to explore the array of diverse possibilities for preservation computer based, interactive installations. One of the strategies explored within this framework is the process of virtualization. Virtualization will be conducted by means of emulation/migration of the code and the operating system into a new environment. The new version will be run by means of virtual machine on one of the more recent computer systems (e.g. Windows 7-?). Following this, a second type of virtualization by means of transferring the data into a new, hardware independent environment of a web-based server will be taken into account. Depending on the outcomes of diverse virtualization processes conducted on the artwork I/Eye, a basis for the future preservation of artefacts that are characterized by similar behaviour and by a comparable technological framework is expected to be delivered.

The first phase of the project, however, will primarily attempt to answer the question if the original hardware and program are still operable and able to be activated. The recovering of one of the historical appearances of the I/Eye will involve the activation of the historical equipment, - ARCORN computer and a RISC OS 3 program (1994). This ‘older’ version of I/Eye will be presented side by side with the emulated version. The viewer, layman and an interested professional will be confronted with two different results of preservation of the installation at the same time and at the same place. This is taking on the tradition initiated by The Guggenheim Museum in New York in 2004 during the exhibition **Seeing Double. Emulation in Theory and Practice** (2004) that highlighted a number of case studies researched and elaborated by the Variable Media team. Following the idea of the Guggenheim, NIMK will showcase the early version of the I/Eye with its endangered media installed side-by-side with the emulated version. By this mean the visitors will be offered a unique opportunity to make their own judgment whether the emulated work captured the ‘feel and look’ of its predecessor.

The main research question of this project is whether virtualization may become an adequate method to enable audience to experience computer-based installations in times when the formats have already become obsolete and whether it offers an option for their preservation for the future. Further, is the inevitable loss of authentic condition or original elements in this process acceptable and weather can it be taken into account having in mind the operability of the artwork as an inherent property of such dynamic electronic media? How can the integrity of the object be bewared nonetheless the inevitable change brought along with emulation, virtualization and/or migration? 

In the above-mentioned strategies for preservation of I/Eye, not solely the reconstruction of its experience and technological set up will be crucial. The audience and the ways in which it

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7At the time of writing this research proposal, there is a discussion running on the possibilities of migration of the computer and software components. The results are expected later in early days of 2011.

8Moreover, at the same time, a more updated version of a hardware and contemporary implemented operating system (Windows 7?) was conceived as a preservation strategy for another version of the I/Eye at the DASA collection in Dortmund, Germany.

9The integrity of the artwork may be divided into conceptual and aesthetic one. Conceptual integrity refers to the relationship of the work to the process or technology employed and the spirit in which the work was made. Aesthetic integrity relates to the look and feel of visible components and the outputs of the system (i.e. qualities of the sound and image) [http://www.tate.org.uk/research/tateresearch/tatetpapers/05spring/laurensen.htm](http://www.tate.org.uk/research/tateresearch/tatetpapers/05spring/laurensen.htm), accessed 20.10.2010.
appreciates and comprehends the installation plays a significant role in reconstructing its *behavioural characteristics*. Thus, a particular emphasis will be put on *audience experience* and the possibilities of capturing it. An additional section in the documentation will involve the issue of how the audience interact with the artwork. The possibilities of capturing audience experience might involve diverse types of audience interaction, such as auditory or visual, issues related to the location of the object and of the viewer (inside or outside the gallery space), a particular position of the viewer towards the object. The interaction synchronicity may be scheduled, that is, it might need to take place in a specific moment in time, or it might be experienced by any interacting user at any time. Moreover, the characteristics of the viewer itself ought to be taken into account, such as individual and group user or audience, professional and lay user. The interaction itself may have observational, navigational, participatory or intercommunicational character. Last but not least, the object might be co-authored by the viewer itself.

Audience experience research on I/Eye will give also information in benefits and drawbacks of reconstruction and virtualisation as a preservation/exhibition strategy and can be used to find a way to gauge the success of such endeavours, and the criteria to evaluate the results. Furthermore we gain information and a dialog about the ways to compensate for these losses (types of documentation, interviews) and the roles played by the various stakeholders in the process, i.e. artists, conservation professionals and technical assistants and collaborators?

**Conservation strategies**

Audiovisual artefacts, and in this particular case computer based works, are subject to ongoing thread by the insufficient/limited durability of their equipment and media. The vulnerability to inappropriate, faulty utilization is characteristic for those media has a specific quantity in comparison with traditional media implemented in artistic practises. Also, the rapid progress of the technological development renders a few years old systems incompatible with new environments in a reciprocal manner of continuous recurrence.

Diverse strategies for collections of media art have been established by leading media institutions such as NIMk in Amsterdam or ZKM in Karlsruhe. Migration of audiovisual data is one of the most widespread practises in conservation of various historical videotape formats. The research around the possibilities of preservation audiovisual arts distinguishes the strategies as storage, migration, emulation and reinterpretation. Although, it is worthy mentioning that all these strategies may refer both to the display equipment and the program itself; they may also be developed and conducted independently from each other.

*Storage* implies the preservation of the artwork in the form it entered the collection. The ‘original’ form of the artefact is rendered by means of ‘stand-by’ condition. The major disadvantage of storing obsolescent materials is that the artwork may loose its operability once these ephemeral materials cease to operate. *Media artefacts*, as it has been widely acknowledged, do not survive the passage of time being simply ‘stored’; the necessity of their continuous re-installations and refurbishments became one of the strategies for protecting them from the obsolescence of their technological parts.

Spinthoven’s installation may not be preserved in the storage. The operating program, the code and the hardware will stop to be operable as soon as the implemented software and hardware

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12 This attitude has been articulated by Jill Sterett in: Sterett, Jill, Art on View, in: Artpress. Art Technologies. Conservation and Restoration, Fevrier/Mars/Avril 2009, pp. 63-64.
versions will be substituted by newer ones. An efficient way to maintain the installation in its full functionality may involve keeping on re-installing it continuously and developing strategies to minimize loss incontrovertibly caused of these processes.

*Migration* as a preservation strategy relates to the upgrading of the audiovisual information and the playback and display equipment. In reference to data, migration means to copy digital information from outdated media, that is storage media and software formats to new, fresh, current media and formats. Other interchangeable, if not precisely synonymous terms include converting, copying, refreshing, reformatting, and transferring. The major disadvantage of this strategy is that the primary appearance of the artwork may change when the carrier changes.\(^\text{13}\)\(^\text{14}\) The *look and feel* of the installation might be endangered.\(^\text{15}\) The migration is also a process in which we ought to a priori comprehend not only the technological and cognitive processes of frame-making but also the mental map of the artist and technician.\(^\text{16}\)

For the reason that *I/Eye* may simultaneously undergo the process of migration as well as emulation, the latest shall be explained here first.

*Emulation* means the attempt to imitate the original appearance of the work in its version considered as original. The imitation should be conducted as true and as close to this version as possible. To emulate is to devise a way of imitating the original look of the piece by different means, for example by implementation of new or other playback and/or display equipment. The term can be applied generally to any refabrication of an artwork's components, as is the case with the refabrications and reconfigurations that are essential to the preservation of Conceptual, Minimal, and performative art. In the digital media realm, however, emulation has a specific definition. An emulator is a computer program that "fools" the original code into assuming that it is still running on its original equipment, thus enabling software from an out-of-date computer to run on a contemporary one.\(^\text{17}\) A type of emulation called *hardware for hardware* consists of a refabrication or substitution of an artworks equipment or material. For example, to imitate the physical appearance of the obsolete video monitors in an original video installation by Nam June Paik, reconstructors might custom-build cathode-ray tubes or embed flat screens in old television casings.\(^\text{18}\)

The emulation and migration of the *I/Eye* goes hand in hand. What seems to be a logic process, in the case of computer based art including a sculptural element it might offer a

\(^{13}\) Appearance of the artefact changes if the choice of the artist was fell upon ephemeral, contingent material. It becomes dependent on in the moment and the status in which one sees the work. even when both the original media and the playback equipment are available and fully functional, the appearance of the imagery in a reconstituted installation may vary - not only from one iteration to another, but even over the course of a single presentation - and may or may not faithfully reflect the artist's vision. Real, 2001, p. 213


\(^{14}\) [http://www.eai.org/resourceguide/glossary.html](http://www.eai.org/resourceguide/glossary.html)


number of traps.
The migration of the data is necessary to assure the work’s functionality. The emulation can be comprehended diversely dependent on the point of departure. Emulation of the installation as a whole may be conducted by means of extracting the data form the old system and implementing them on a newer one. To perform the work primer functionality, however, the old version of the computer should be replaced by a similar version that closely imitates it. This process might be classified as emulation of the equipment to the primal version along with the migration of the data.

If the first appearance of the object is considered, the emulation of I/Eye physical look should strictly adhere to the one primary conceived by the artist. The only viewable device, the TV set, should imitate the TV set implemented during the first show of the installation in 1993. The implementation of the Sony PVM 2130 model that appeared on the occasion of the exhibition The Second in 2004 and from then on most preferred by the artist, would already declassify this strategy as emulation to the primal version. The artist’s personal preference and the development of the installation during the last two decades renders the decision making a highly complex and multilayered issue. Following the logic of the reoccurring versions, the ‘originality’ of the artwork, to which the preservation should adhere, become a contingent and variable matter. In this light, the every occurring version of the installation, including the ‘German version’ (DASA) from 1997 and the colour version from 2005, may become a subject to imitation.

The migrated data should operate much the same as the version presented once on the window of Montevideo (1993). This must be the case if we are to reconstruct the way in which the I/Eye used to look and perform in that time. Considering this, a question arises, however, how doable is the transformation of the almost twenty years old system without the loss or change? Both the artist and the researcher are convinced that the full recoverability of the 1993 version is unachievable. The new system may govern the data at another velocity; also, only a minimal change in the their configuration and properties may give rise to a deviation and thus generate a change in performance of the eye.

The second preservation option involving the extraction of the data and operating system into a new environment, a virtual machine, allows more inventional freedom at the operational level. This option shall result in a slightly modified version of I/Eye imitating the performance and behaviour of the first version. This strategy should allow the migration of the data and operating system encapsulated in a specifically designed environment to different hardware versions. The emulation of the visible hardware equipment would render the esthetical appearance of the installation similar to its initial version.

The third possibility of the future display of the I/Eye may offer its virtualization to a hardware independent environment of a web platform. This strategy changes the physical dependency on a computer hardware. It is solely the artwork performance that would be maintained in the form close to the initial. The results of this strategy may only be evaluated after its practical implementation.

In general, there are as many advantages as disadvantages for every of the mentioned strategies. The emulation of the installation to one of the older appearance will not assure the operability of the artwork in the future. With the development of the computer technique, system may be no more operable within a couple of years. In this case, having the artwork’s emulated version nonetheless the most true to the initial one, does not ensures its existence in the future.

The web-based virtualization offers probably the most durable strategy, as it is independent

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19 To be filled in from the casestudy by Jo Ana Morfin
from the physical equipment. This solution may be migrated at almost infinite numbers of times. It is however the solution that reaches almost the strategy of the reinterpretation due to the fact that it does not maintain the older hardware compilation of the artwork.

*Re-interpretation* of the work is the most radical preservation strategy is the each time it is presented. This strategy is solely advisable under the strict supervision of the artist and in case when neither migration nor emulation are possible.

**Brief record of the installation and its documentation**

**Placing the research within the broader theoretical divagation**

In the broader context, the conception of the artefact in its premature phase will be addressed. The issue of the conception of the installation at the beginnings of *Eye Art* will be discussed. How all those concepts influenced the material manifestation of the artefact and how the material embodiments tend to change over time due to artistic intention and the factor of the obsolescence and alteration of media? How artistic concepts materialize and which materialization ought to be prioritized when it comes to their preservation? Hybrid artefacts (in the technological and sociological meaning) that involve emerging new technologies, which inherent value is change and transformation, will be part of the broader research within this project. The predication will follow logical assumptions of materiality and conceptuality of artefacts, implementing that if artefacts do change over time and have life cycles, the definition of the original or authentic condition should be revisited or, further, suspended. This, however, raises fundamental questions as to the object of conservation, that is, which of many embodiments of a transitory artefact should be taken into account when thinking about their preservation for the future.

Giving the example of electronic media installations, the importance of studying the cultural, historical, and aesthetical context as well as the significance and the origin of singular constituting materials becomes paramount. Artefact biographies created through an artwork’s whole life span and consisting of several installing, dismantling, and storing processes recount the history of the object, that is its concept, its production, an artist’s changing intention, diverse decision processes made on different occasions due to various circumstances, and art handling habits of institutions in charge. Like other objects, artefacts accumulate stories; their significance derives from the individuals and events they are engaged with. The notion of biography based on the conception of the *cultural biography* by Igor Kopytoff, links people and things and explains how values are gathered and transformed.

- This project description is a work in progress, version January 18, to be followed in the spring of 2011-

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20 To be completed based on the files prepared by Jo Ana Morfin
21 Incl. what is *eye art*, an interactive eye following visitors’ movements