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THE DATABASE OF VIRTUAL ART: FOR AN EXPANDED CONCEPT OF DOCUMENTATION

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Abstract

Virtual art is unique among art genres in that it is totally dependent upon storage media and the permanently changing operating systems that support it. This is an entirely new and challenging situation for art conservators and curators. It is not an exaggeration to say that at present an entire decade of art threatens to be lost for all time. Before artworks can find their way into the safe haven of collections, there has to be appropriate documentation. Supported by the Deutsche Forschungsgemeinschaft (German Science Foundation) and the Federal Ministry of Education and Science, the Database of Virtual Art, which can be accessed via the Internet, provides a vitally needed information resource and web-based showcase for media art. The novel, specially developed database model documents in detail the rapid development of this art form and the fundamental uniqueness of contemporary digital artworks; a result of long years of experience and research. In this way the Database of Virtual Art represents a first step toward the systematic collection of our most recent art genre. The web interface allows artists and researchers to post their material themselves so that it also fulfils the function of an information and communication platform where interessees can rapidly gain an overview or do more extensive research.

Keywords: Virtual Art, Immersive Art, Interaction, Preservation, Media Art, Expanded Documentation, Media Archeology

During the last twenty years, interactive installations of virtual art have been on show at festivals[1] and exhibitions and have proved very popular with the public. Further, this new art form increasingly dominates debates on art theory. So far, however, museums and art galleries have neglected to build systematic collections of these artworks. Plans of how to protect or store digital works by well-known artists, such as Jeffrey Shaw, Paul Sermon, Jenny Holzer, or Christa Sommerer that have been exhibited all over the world and received many prizes, are practically nonexistent.[2] Due to the fact that this art depends entirely on digital technology, its storage methods, and operating systems, which are in a constant state of change and development, it is severely at risk. Many artworks, for example, that are not even ten years old can no longer be shown. *Emulation*, the transfer or copying over of old software onto new systems, or *Re-creation*, the new construction of

an HTML site on the basis of the most up-to-date technology, have only limited suitability for communicating at a future point in time the spatial character of virtual art installations or the seminal importance of the interface. As strategies for preserving digital art, their use is also limited for they can only be used, with certain restrictions, for Net Art; for virtual artworks, other, more ambitious strategies will have to be developed. Time is pressing and measures must be taken if we do not want to lose two decades' worth of media art. As reliable documentation is an essential prerequisite for the conservation and collection of artworks, our work as art historians at the Database of Virtual Art is to accompany this process and provide the documentation, which is still the basis of research in our discipline. Information on function, exhibition, construction, technical specifications, collaborators, and financing of these artworks is a prerequisite for collecting and preserving them. Obviously, we are not collectors; we are researchers. The Database serves one of the most fundamental responsibilities of art history — to document art and make it accessible, in the sense of understanding and awareness, to students, researchers, curators, and interested members of the public. Ultimately, any strategically developed policy for collecting this art must needs involve an alliance of artists with art galleries, museums of technology, manufacturers of technical equipment, and computer centers. This was a further reason why the Database of Virtual Art was founded in Berlin; with its new form of organization, it has become a tool for analyzing the art of our "digital present".

Today media artists are shaping very disparate areas, for example, telepresence art, biocybernetic art, robotics, Net Art, space art, experiments in nano technology, artificial or A-life art, creating virtual agents and avatars, datamining, mixed realities, and database-supported art. The object of the Database is to make transparent developments in the field of virtual art and its sub genres (virtual reality, genetic and telematic art)[3] as well as to present the rapidly growing oeuvre of the artists that create it.[4] Many are internationally well-known and also work as scientists at high tech laboratories on, for example, new interface designs, interaction models, or code innovations.[5] At their institutes they combine art with science to create new image worlds and image strategies which, with increasing bandwidth and speed of connections, are becoming more important on the web; they focus the visual future of the Internet experimentally in stand-alone systems. The art of these avantgardists represents a contribution to the culture of our

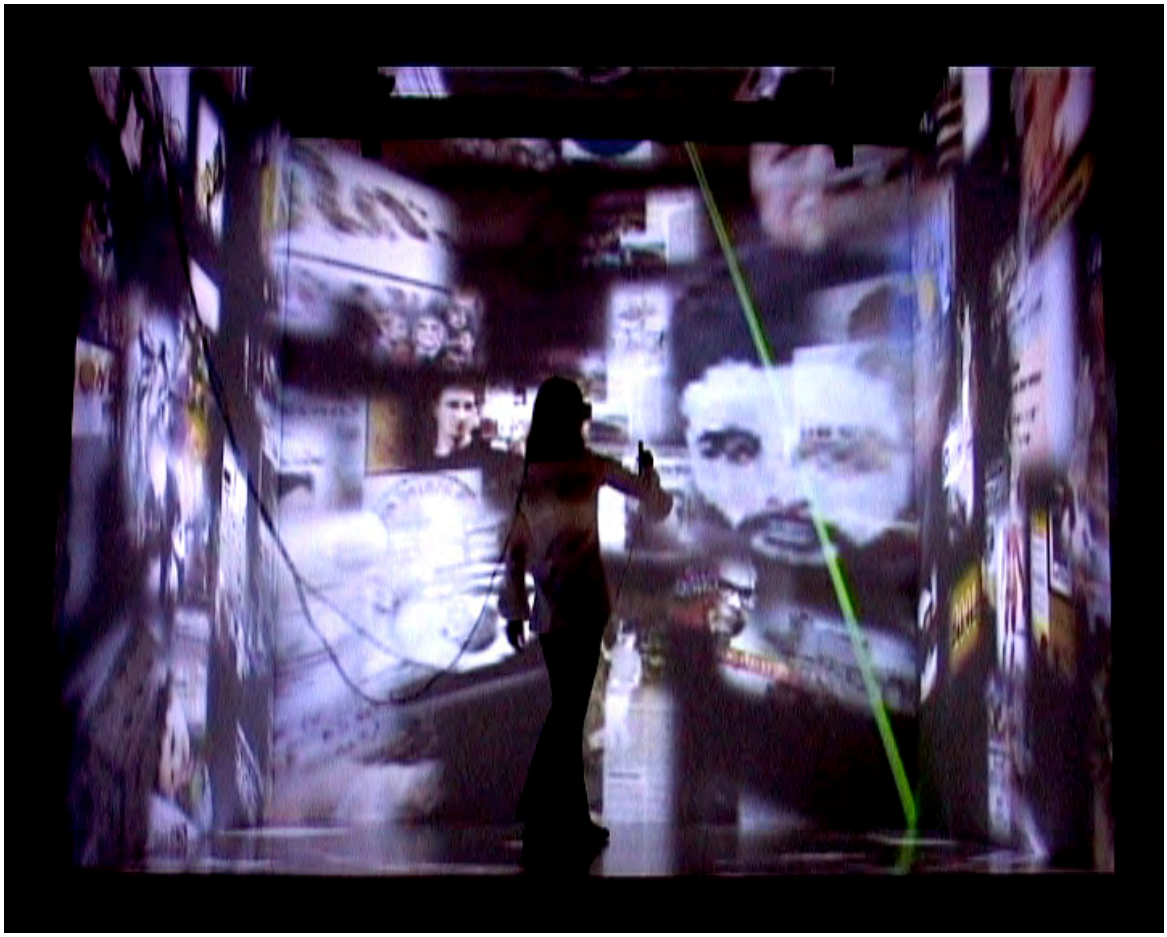
digital age that cannot be overestimated; to allow it to be lost would be gravely irresponsible.

The Old in the New and the New in the New

Traditionally, concepts of artworks and their documentation have been oriented on the material presence of the artifacts, corresponding to static models of documentation. Today's digital works of art, however, are processual, ephemeral, interactive, multimedia, and are fundamentally context-dependent. Because of their completely different structure and nature, they require a modified, expanded concept of documentation.

A seminal feature of virtual art — and its precursors, which can be traced back to antiquity and are, as yet, little researched — is that it encloses the observer in a 360° image space, which is temporally and spatially homogeneous or at least completely fills the observer's field of vision, to produce an impression of immersion in the image. It is an illusion space, which is determined as a rule by perspective, image definition, realistic colors, light, proportions, and converging media.[6] In addition, increasingly other senses besides vision are addressed through the use of sound, simulated odors, or haptic experiences. Immersive art makes a direct appeal to the emotions and stages moments with a Dionysian quality. For the observer, its form excludes the possibility of comparison with any elements that might detract from the illusion. Over the course of its history, immersive art has often formulated propagandistic image statements and it works deliberately against distanced and critical reflection. However one may view this, it often serves to produce a playful detachment of the observer from his/her surroundings with ensuing transformation of consciousness. Immersion arises when perception of artwork and advanced image technology, the message and the medium, converge almost completely. In this way it makes full use of the suggestive potential of the images shown, takes them to extremes and thus represents a core phenomenon of the contemporary science of images that is currently in the process of becoming established worldwide.[7] In the rapidly changing landscape of media technology, the idea of 360° images remains a continuous phenomenon in art and media history up to and into the 21st century. Almost without exception, each new image medium has had a 360° arrangement to achieve

maximum effect. A salient feature of the historic development of media is the changing large-format immersion spaces, which integrate the observer physically in their spaces: rooms with 360° frescoes, the panorama, Stereopticon, Cinéorama, Omnimax and IMAX cinemas, and the present-day immersive strategies of digital art as produced, for example, in the CAVE

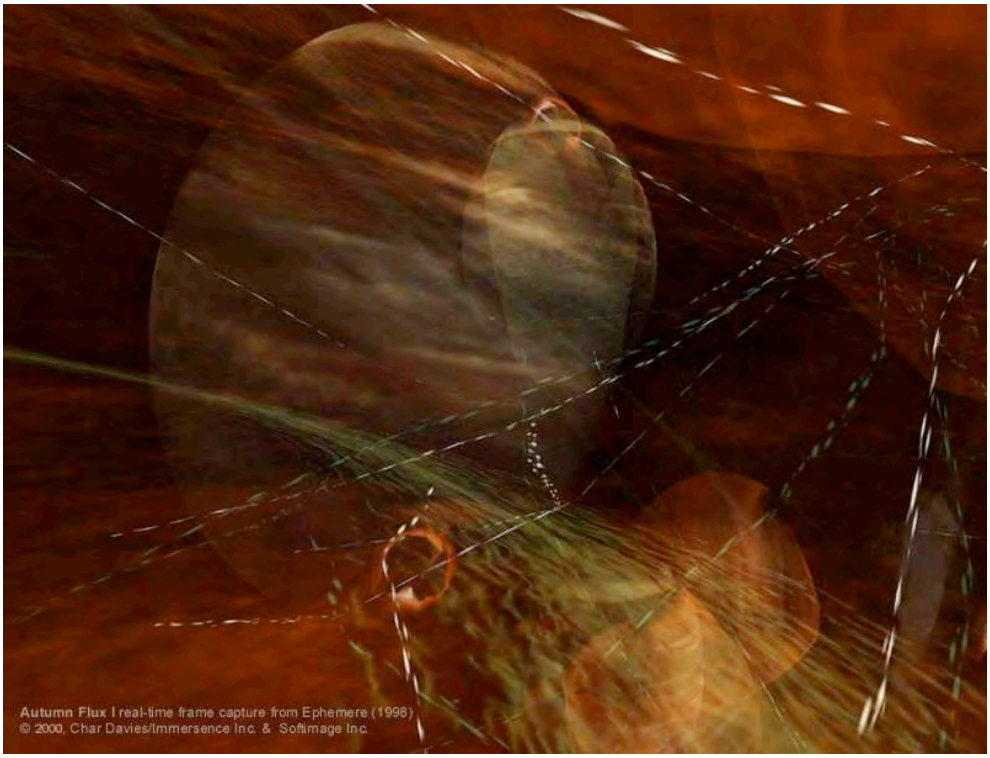


Sommerer/ Mignonneau, *The Living Web*, 2002

At the other extreme, there are the devices which are positioned immediately in front of the eyes: the peep-shows of the 17th century, stereoscopes, stereoscopic television, the Sensorama, and now the HMD (Head Mounted Display).[8] These historic examples of immersive art will be added to the Database at a later stage of the project with a view to making comprehensive material and a new instrument for analysis available to historians of image media and their art.

What are the essential parameters in a concept of documentation for computer-based virtual art as distinguished from its predecessors? Today, in a finely meshed alliance

between science and art, media art explores the aesthetic potential of developments in advanced image technology. Prominent representatives of virtual image culture, such as Charlotte Davies :



Charlotte Davies: Ephémère, 1998.

Monika Fleischmann,

Paul Sermon :

Paul Sermon, *Telematic Vision*, 1992.

or Christa Sommerer :

Sommerer/ Mignonneau, Verbarium, 1999.

are engaged in basic research, combine art and the natural sciences in the service of today's most complex technology for generating images.

In the early 1990s, high performance computers became commercially available and, for the first time, it was possible to create graphics of naturalistic three-dimensional bodies with up to 500,000 polygons. Complex worlds of images were created that endeavored to disguise their origins as, for example, Charlotte Davies' Virtual Reality installation *Osmose* created in 1995, which shows the observer many simulated objects from nature. To date, *Osmose* has been the subject of around 70 articles in specialist journals; to date, no other contemporary artwork has sparked such interest in scientific circles.

As digital images are not dependent on any one display medium, virtual art can be exhibited in a variety of formats on very different apparatus: on HMDs, in CAVEs, large screens, or, as in the case of Paul Sermon's *Telematic Dreaming*, simply on the sheet of a bed. Through computation in real time, that is, 20–30 images per second, the fleeting image spaces achieve the effect of actually existing. Real-time computing is also the

prerequisite for the processual variability of the work and thus for the interaction of the observer with the image space. Interactivity not only blurs the distinction between author and observer but with it, also the status of the artwork and the function of exhibition. Although the work, or image space, cannot be "created" either aesthetically or technically without the actions of the observer, in fact this latter can only exert influence upon the artwork within the framework laid down by the artist in the program, according to the multiple choice method. Increasingly, such works are not the work of a single artist but the product of collaboration between a team of specialists.

The first examples of virtual realities on the Internet can be experienced in the panorama format Quicktime VR and VRML, which expands static web images into a third dimension. These prostheses seem to express the desire for worlds of illusion on the web. Illusions, which at present are represented more convincingly and have more radical theoretical implications in installations of interactive art, will move into the Internet as soon as download speeds, bandwidths, and compression solutions reach adequate performance levels.[9] We are witnessing at present the transformation of the image into a computer-generated, virtual, spatial image that appears capable of autonomous change and represents a total, life-like, visual and sensory sphere.

The software developed by these artists creates new techniques of manufacturing image spaces, like the Radiosity process or the program Softimage, co-developed by Davies. Software, the code, also creates the artificial creatures that populate the virtual spaces, agents that act autonomously like subjects, react to the observer, and enhance the feeling of actually being inside the image space.[10] The integration of representations of bodies within the image space — avatars, which follow the movements of their users like puppets — can enhance the immersive effect even more. In this way, our senses and the communication system of our bodies can enter into processes of give and take with every imaginable kind of simulated creature.

Besides interactivity, in the virtual work of art it is design of the interface, the intuitive or "natural" interface, that is the main artistic achievement; it may be either emancipative or manipulative for these two alternatives are very closely linked. The interface is the variable point of contact with the computer; its profile and design are freely determined, it

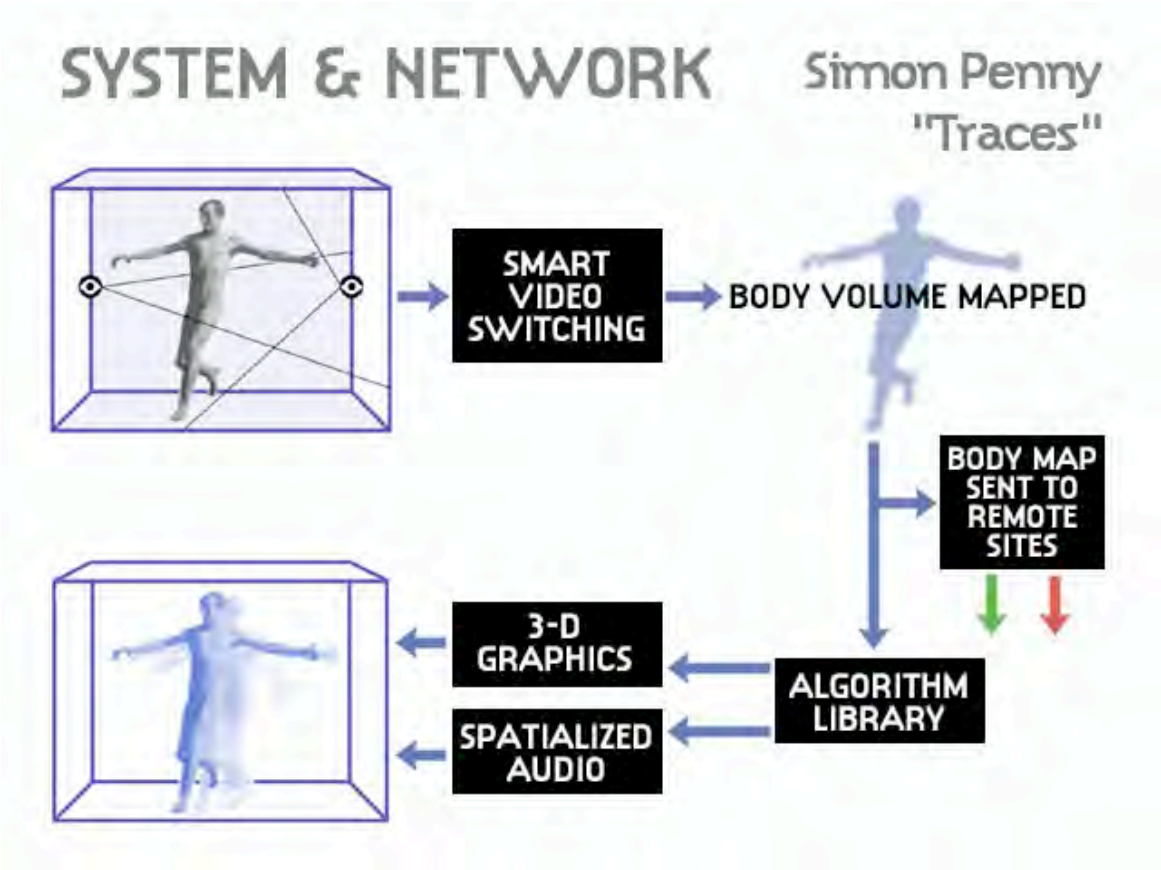
connects hard and software[11], and thus determines the character and dimensions of the interactions and essentially the level of psychological absorption in the digital artwork — the immersion.

In Genetic Art, for example, Bernd Lintermanns installation *SonoMorphis*, the scenic image worlds created on computers now convey the impression of being alive

Bernd Lintermann, *Sono Morphis*, Jahr 1999.

This work is generated by computer programs that simulate evolutionary processes. In SonoMorphis, an installation by Berndt Lintermann of the ZKM, users create generations of new biomorphic bodies based on genetic algorithms but these are set in permanent rotation. With the aid of an interfacebox, we can select from six possible mutants, which then become the basis for further variations. In addition, selection is possible via the Internet. The recombination of the physiognomies, the marrying of visuals and acoustics leads to automatic sound compositions, which are also functions of the complex contours of the 3D images, variations in resonance.

Global access and exchange of images, which is enabled by data networks, in conjunction with the technique of telepresence represents a new epistemology communicated by media: in *Traces*, the Australian artist and scientist Simon Penny links up three CAVEs installed on three different continents and allows the visitors in different parts of the globe to interact with each other as plastic, hologram-like traces

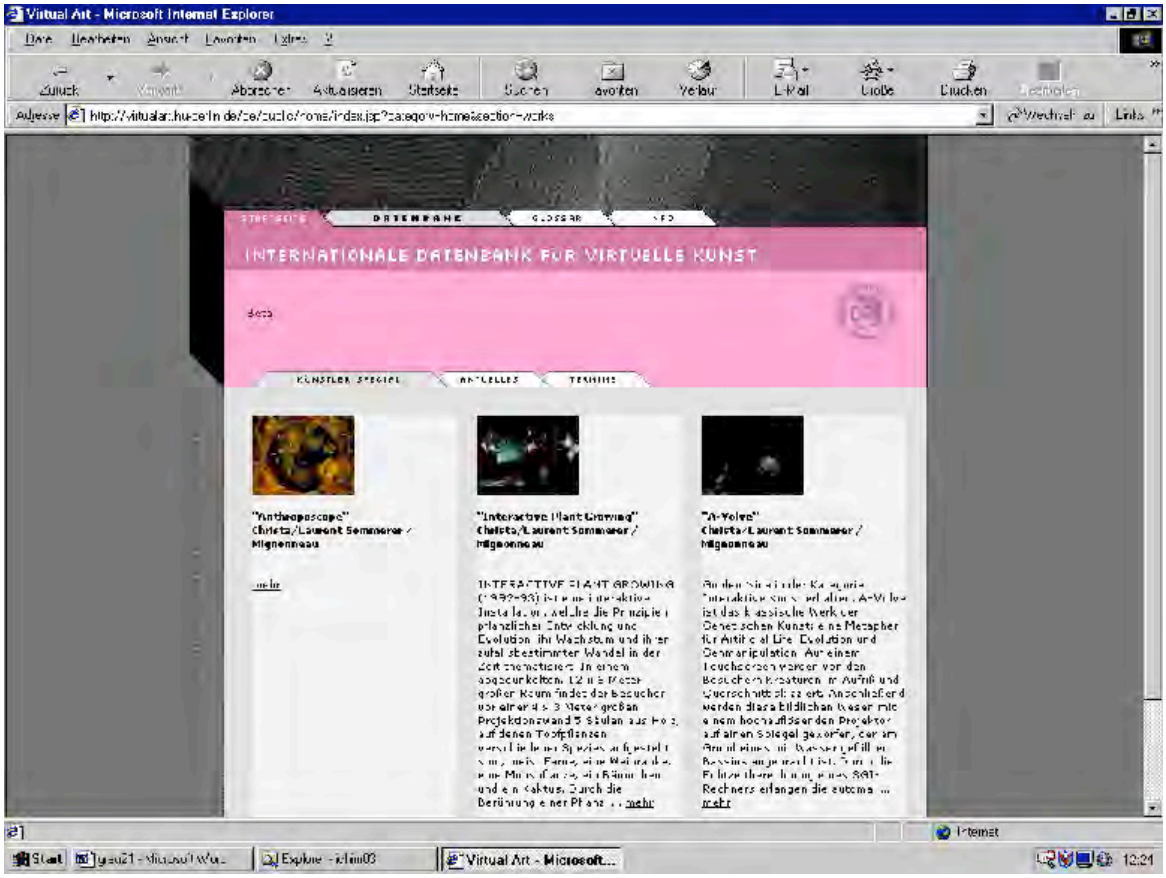


Simon Penny, *Traces*, 1999.

Although ultimately the technology constrains the artistic outcome, the artist has a wealth of options at his or her disposal, which can bring about a metamorphosis vis à vis the observer: new spaces are coming into existence for the interactive, processual reception of art, which cannot be represented by older models of computer processing.

Expanded Documentation

This analysis of virtual art, on which the German Science Foundation project *Immersive Art* is based, forms the substrate of our concept of expanded documentation. In the course of putting the changing concept of a work of art, sketched above, on the firm basis of systematically organized documentation, and thus prepare the ground for conservation of art that is at risk, the idea came about of creating the Database of Virtual Art with as a web-based application[12] :



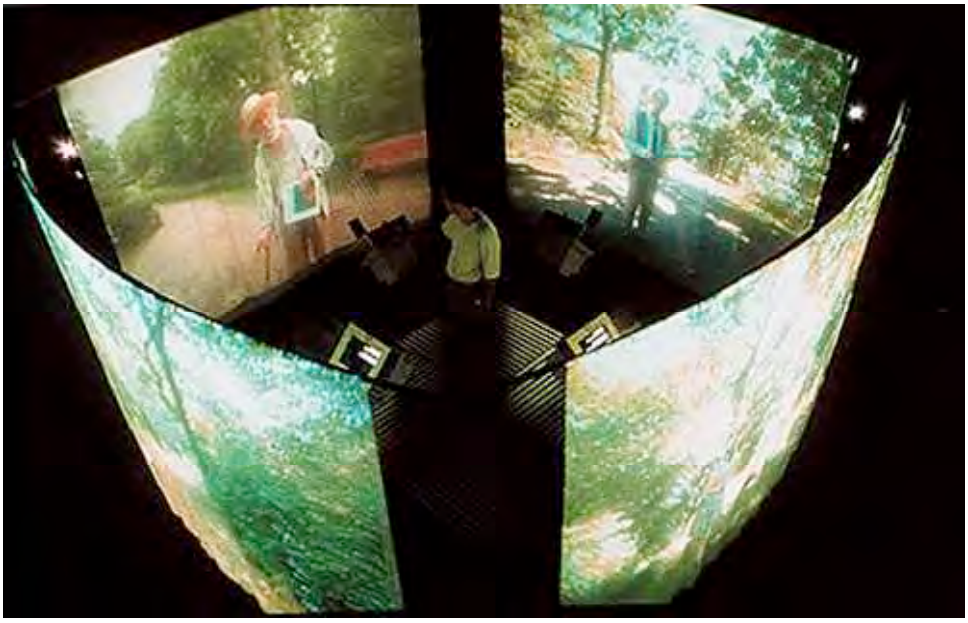
Database of Virtual Art, screenshot, 2003.

It registers artworks not only in terms of their construction, components, settings, and where they have been exhibited, but also their technical specifications. In addition to conventional essential data, the Database records:

- Biographical and bibliographical information about the artist, including inventions and awards
- Work and lists of exhibitions (title, date location, funding)
- Graphic images of the installation's structure
- Digital image documents (in various formats, JPG, GIF, TIF, etc.)
- Information on the software used (programs, file sizes) and hardware configuration.
- As video is able to document the processual nature of such interactive works, we have strategically integrated this medium into our concept (material received from the artists on VHS, PAL, NTSC, DVD, or digital files is streamed in QuickTime format)
- Technical instructions (blueprints)
- Type of interface and display
- Audio documents, interviews, visitors' comments, 'oral history'

- References and literature about the artists
- Information about the technical staff
- Institutions of media art
- Subject index
- Copyright

Our main goal is to document the works within a context of complex information and, at the same time, to allow users to find individual details quickly. In addition to statistically quantifiable analyses and technical documentation, the Database also presents personal connections and affiliations and funding information, where the idea is to reveal interests and dependence. In addition to searches of themes, the Database will also admit questions of gender, track the movement of technical staff from lab to lab, technical inventions pertaining to art, the destinations of public and private funds allocated to research, and, through the thematic index, show reminiscences of virtual art in the forms of its predecessors, for example, the panorama :



Courchesne, Landscape One, 1997.

The Database represents an important instrument for research on contemporary art, its integration within art history, and its analysis. The artists, from whom we receive material, give us their permission to publish this on the WorldWideWeb so that questions of copyright do not arise. It is a resource that facilitates research on the artists and their work for students and academics from all over the world, who, it is hoped, will contribute to expanding and updating the information it contains. This useful system can, naturally,

also be applied to other art forms, for example, installations, multiples, films, and video. In this way, documentation changes from a one-way archiving of key data to a proactive process of knowledge transfer.

Cooperating Institutions

During the initial stage of the project, we were successful in establishing interdisciplinary cooperation with art academies and research laboratories at home and abroad, who are also aware of the urgent problems concerning the preservation of digital art and thus support our work at the Database of Virtual Art. Our partners include:

- International Academy for Media Arts and Sciences, Nagoya, Japan[12]
- Stanford University, Stanford, CA, USA[13]
- Fraunhofer Institut, Bonn, Germany[14]
- Kunsthochschule Weissensee (Web design), Germany[15]
- Centre for Advanced Inquiry in the Interactive Arts, Newport, Wales, U.K.[16]
- Zentrum für Kunst und Medientechnologie (ZKM), Karlsruhe, Germany[17]
- Advanced Telecommunications Research Institute, Kyoto, Japan[18]
- Intersociety for the Electronic Arts (ISEA/Leonardo)[19]
- ART&TECH Institute, Linz, Austria[20]
- OLATS Database, France/USA[21]
- La Fondation Daniel Langlois[22]
- ARTE television[23]

Target Groups

Particularly through the cooperation with our national and international partners, we are able to address interested groups and parties directly. There are a variety of interest areas; a main focus is the goal of promoting interdisciplinarity:

- Users involved in art and culture, museums, theaters, and art galleries
- Researchers and students of humanities and sciences
- Media designers and technicians
- Creative workers in areas such as architecture, photography, literature, and design
- Journalists and editors of all media

- Educators and teachers at schools, academies, colleges, etc.

archives and libraries

- Professional groups with special interests

Technical Data

The Database uses PostgreSQL, at present the most advanced open source multiuser database.[24] This has the advantage that there are no costs for software or overheads, development remains in the hands of the university, no dependency on large or small commercial firms, and no complicated copyright issues. Our web pages are developed with JAVA's JSP technology. With these technologies we have created a browser-based editing and publishing environment. This solution allows editing, server, and database to be platform independent. The web interface, shortly to be completed, will structure and separate input so that artists will be able to post their material themselves with only minimal support from the project. This method of collecting material is likely to lead to a great increase in the amount of data. QuickTime video files are made and integrated on G4 video editing suites using compression and editing solutions such as Media-cleaner, FinalCut, and Soerensen. The streaming server is powered by Darwin. Further workplaces (G4) are for web design and data collection, plus a SUN-server, which runs under apache/tomcat.

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1 Ars Electronica, European Media Festival, Siggraph, imagina, Interactive Media Festival San Francisco, and the Biennale festivals in Kwangju, Lyon, Nagoya, and St. Denis as well as V2, Rotterdam.

2 In this connection, I would like to draw attention to the ambitious work being done at the ZKM in Karlsruhe, which, however, does not as yet pursue any systematic strategy of conservation. The Variable Media Questionnaire points a possible way forward. Developed by Jon Ippolito at the Guggenheim Museum New York for the conservation of modern art in general, not media art in particular, it addresses the artists themselves. Guggenheim cooperates with this project and was (www.guggenheim.org/variablemedia). Other projects, such as netzspannung (http://netzspannung.org/), offer interesting forums for artists and industry; however, they cannot provide the same information as our Database. The research initiative PROMETHEUS (www.prometheus-bildarchiv.de), supported by the German Federal Government and with whom we cooperate, is developing an image database oriented on the Dublin Core Standard but its primary function is to put university archives of slides on the web, thus it cannot function for media art. One of the biggest problems is copyright, something which has not been discussed in the public education sector, but is proving to be a major obstacle for such

projects on the web. The Walker Art Center and the Berkeley Art Museum and Pacific Film Archive have also initiated projects in this area.

3 See my book (Grau, 2003), also my essay (Grau, Cambridge MA 2000).

4 Charlotte Davies, *Immersence*: (www.immersence.com); Monika Fleischmann, Fraunhofer Institut, Sankt Augustin: (http://imk.gmd.de/docs/ww/mars/); Maurice Benayoun, *Z-A-Production*: (www.z-a.net); Christa Sommerer and Laurent Mignonneau, *Advanced Telecommunications Research Lab*, Kyoto, (www.mic.atr.co.jp/~christa/).

5 Almost without exception, the most prominent exponents of virtual art participate in our Database project: Christa Sommerer (Austria) and Laurent Mignonneau (France), Christian Möller (Germany), Eduardo Kac (Brazil), Jack Ox (USA), Jane Prophet (U.K.), Jeffrey Shaw (Australia), Charlotte Davies (Canada), Jenny Holzer (USA), Jill Scott (Austria), Joachim Sauter (Germany), Ken Goldberg (USA), Maurice Benayoun (France), Michael Naimark (USA), Monika Fleischmann/Wolfgang Strauss (Germany), Roy Ascott (U.K.), Louis Bec (France), Benjamin Britton (U.K.), Luc Courchesne (Canada), Nadia Thalmann (Sweden), Paul Sermon (U.K.), Seiko Mikami (Japan), Simon Penny (Australia), Simone Michelin (Brazil), Supreme Particles (Germany), Toni Dove (USA), Paul Yuxweluptun (USA), Edmond Couchot (France), Agnes Hegedues (Hungary), Joe Davies (USA), Mika Hakola (Finland), Franz Fischnaller (Italy), Scott Fischer (USA), Rafael Lazano-Hemmer (Mexico), Bernd Lintermann (Germany), John McCormick (USA), Matt Michael Mulligan (USA), Jane Prophet (Great Britain), Dan Sandin (USA), Victoria Vesna (USA), Andrea Zapp (Germany).

6 See my essay (Grau, Magdeburg 2000).

7 This new discipline can be considered to have celebrated its foundation at the congress on Image and Meaning at M.I.T in 2001 (http://web.mit.edu/i-m/). In this connection, the work of W.T. Mitchell, Barbara Stafford, James Elkins, Hans Belting, and Horst Bredekamp has been influential.

8 See (Grau, 2003).

9 (Mirapaul, 1998).

10 Theme 'Code' at the Ars Electronica Festival 2003: http://www.aec.at/de/index.asp; see also Transmediale Festival 2003: http://www.transmediale.de/03/en/03/index.php

11 See (Grau, 2002)

12 http://www.iamas.ac.jp/E/index-html.html

13 http://sloan.stanford.edu/mousesite/MouseSitePg1.html

14 http://www.imk.fraunhofer.de/sixcms/detail.php?template=&id=1187

15 http://www.kh-berlin.de/

16 http://caiia-star.newport.plymouth.ac.uk/PEOPLE/ROY-ASCOTT/index.html

17 www.zkm.de

18 www.mic.atr.co.jp/~christa/

19 http://www.isea-web.org/

20 http://www.ufg.ac.at/evg/public_html/archive/Jahresbroschuere92-93/63-ende.html

21 http://www.olats.org/

22 http://www.fondation-langlois.org/

23 http://www.arte-tv.com/home/homeDe.html

24 (Momjian 2000).

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(http://imk.gmd.de/docs/ww/mars/)

(http://www.kh-berlin.de/)

(http://web.mit.edu/i-m/)

(http://www.imk.fraunhofer.de/sixcms/detail.php?template=&id=1187)

(http://www.fondation-langlois.org/)

(www.immersence.com)

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(www.mic.atr.co.jp/~christa/)

(http://www.olats.org/)

(http://www.transmediale.de/03/en/03/index.php)

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