

Beyond Cinema

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1. Introduction

The ZKM | Center for Art and Media has a history of over 20 years of production in the field of art and media. Established by its founding director Jeffrey Shaw, the institute has a strong focus on the development of alternative cinema formats, such as real-time interactive installations and projection environments. Various productions have been realized for different contexts such as Virtual Reality installations for museums, stage performances and operas, incorporating dome projections for entertainment parks and stereoscopic projections for music concerts.

In order to meet the needs of a professional production and to push the limits of the creative process, the institute developed its own technologies implementing genuine concepts, which have been used as the basis for several major art works of internationally renowned artists like Bill Viola and the Wooster Group. Recent research activities span from interactive video documentary in panoramic environments to mobile devices and storytelling via Augmented Reality.

The keynote will present interactive audio-visual strategies for addressing a public audience in different domains and provide insight into several productions in the cultural context implementing these strategies. Out of the examples presented in the keynote this paper highlights just four works and discusses their strategy of unfolding the trajectory of the audience experience, which is called “narration” in terms of the field of cinema. The selected works show different embodiments of interaction strategies which demonstrate the difference between navigation by focus and by selection.

2. “SonoMorphis”

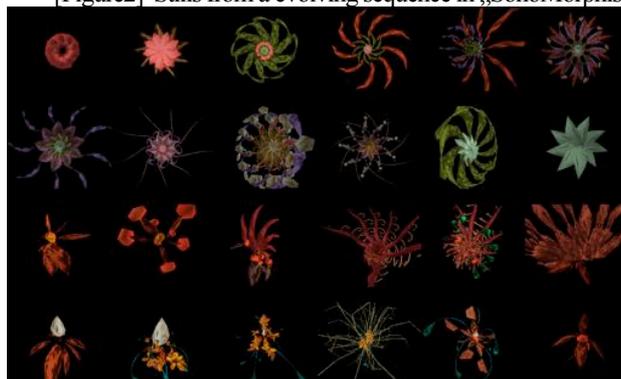
An organic object is projected in front of the visitors. By means of a control mechanism the user can rotate the object in all directions and observe it from various perspectives. Control sliders allow the viewer to vary diverse parameters of the object. The graphics and sound are inseparably linked to each other. SonoMorphis was conceived and realized 1998 by Bernd Lintermann (graphics) and Torsten Belschner (sound). The visuals are projected in stereoscopic 3D, while the audio used a quadrophonic setup. In 2007 “SonoMorphis” was reimplemented for a 180 degree panoramic setup with polarizing stereoscopic projection and a half spherical arrangement of 42 speakers, the so called sound dome of the ZKM | Institute for Music and Acoustics, to achieve a highly immersive and thus improved aesthetic experience (see [Figure3]).

In “SonoMorphis” the interaction follows the evolutionary principle of mutation of the graphic and acoustic structure and selection from generated variants and thus is usually classified as embodying artificial life paradigms [4]. On the visual level, specific formal patterns that have been extracted from the natural world are combined arbitrarily and generate creations that are both familiar and yet have never been seen before. The sound represents the structure of the genom acoustically. The parameters of the object are interpreted from acoustical viewpoints in such a way that a musical structure emerges from them. The idea is to put the sounds and the visible parts of the organic in a close relation: material and shape of the organic are interpreted as different timbres and the spatial position of graphics and sound are correlated in the real space. The sound is evolved in tandem with the image data in real time, deploying a technique known as physical modelling. In this way automatic compositions arise, the results of which are functions of their components and are variable in the details of their contours, complexity, and their behaviors.

[Figure1] Screenshot „SonoMorphis“, 1998



[Figure2] Stills from a evolving sequence in „SonoMorphis“



“SonoMorphis” was implemented on the basis of the procedural modelling system Xfrog as described in [2], which was extended to offer the option to automatically modify a given model description by inserting, deleting, and exchanging (crossover) hierarchies of components. A set of predefined components serves as a "gene pool" of the system. The genome of an instance is composed of copies of these components each of which defines a single structural or shape property of the organic. The connectivity of this set of components determines the final form. There are components which describe the geometry of a single limb and components which arrange limbs according to specific algorithms. Components are designed as such that they incorporate form principles observed in nature, e.g. one component uses the proportion of the golden section to simulate spiral phyllotaxis.

[Figure3] „Sono reMorphed“, Bernd Lintermann, Torsten Belschner, 2007



Visitors interact with the virtual organic via a special interface box with buttons and sliders. They evolve the organic object using the evolutionary metaphor of mutation and selection. Out of six randomly generated mutations users select one, which in the succeeding steps becomes the starting point for new mutations. This way users choose a trajectory through a multidimensional space of countless possible audiovisual structures. The overlapping of visual levels and sound levels produces an open structure that can be continually and endlessly configured in new ways by each viewer.

3. “CloudBrowsing”

The interactive installation “CloudBrowsing” (2008-09) by Bernd Lintermann, Torsten Belschner, Mahsa Jenabi and Werner A. König lets users experience web based information in a new way: the installation turns browsing the web into a spatial experience within a panoramic projection environment [5, 6]. Search queries and results are not displayed as text based lists of links, but as a dynamic collage of images and sounds. The content based relations as well as the history of the searches and the information retrieval are not only visualized through a landscape of images, but also through a dynamic soundscape that changes accordingly. In the first version of the project, the user browses the free online encyclopedia »Wikipedia«, which is compiled by a global community and thus exemplifies the collective knowledge of the Web.

“CloudBrowsing” is conceived as a visual recommendation system with a spatial history. It is visually inspired by “T_Visionarium II”, an interactive installation which explores new ways of digital narratives [1, 6]. Entering the panoramic space, the audience is surrounded by hundreds of images, some of them are bigger and subtitled, others are smaller and partially occluded by other images. Some part of the screen is covered by a web browser displaying a web page similar to a web browser on a desktop computer ([Figure4]). A pedestal in the middle of the space hosts a user interface, which the audience can pick up and use as a pointing device. It houses an iPod touch with a custom application offering additional functionality like a searching for key words or exploring topics via cover flow ([Figure5]).

[Figure4] Interactive Installation „CloudBrowsing“



[Figure5] User Interface



The images populating the screen are extracted from Wikipedia entries and they functionally are references to them. When the user clicks on one image, the corresponding Wikipedia page is loaded into the browser. In parallel a search query delivers URLs of Wikipedia pages which are semantically related to the chosen page. These corresponding Wikipedia pages are examined searching for illustrating images and - if the legal restrictions allows to use them within the installation context – the images are downloaded and they appear at the edges of the browser. This creation principle implicitly defines a degree of relationship for each pair of images: from none to directly related, and all images permanently rearrange by means of a force field encoding this degree of relationships. Thus the spatial proximity of two images reveal their relatedness to a common topic.

Since new images appear close to the browser and are pushing the existing images sideways, the horizontal position of an image is also an indication of the time span, that the image was not in focus. Images related to topics which were recently in focus are more close to the browser window than others. This way the images serve as a spatial browser history creating a collective memory of topics users have browsed in the past. Images which have not been in focus for a longer time are pushed back in the visual layer, are shrunk and get even less contrast and brightness to support the user focus on his topic of interest. If the user focusses on one image for some seconds, the image comes to the front and all images related to it do the same while being gently highlighted.

Like in “SonoMorphis” the user navigates through a large information space from a choice offered by the system. Whereas in “SonoMorphis” the offered variations are filtered by syntactical restrictions, in “CloudBrowsing” the system tries to compute semantically relevant offers, which can be termed “recommendations”. In the first implementation a web search engine (Yahoo! BOSS API [8]) was used to retrieve relevant recommendations, a later implementation employs techniques of semantic text analysis, e.g. Latent Semantic Indexing (LSI) and Term Frequency – Inverse Document Frequency to quantify semantic relations between arbitrary texts. It has been used to navigate the collection database of museums.

“CloudBrowsing” is designed to support the user in finding an interesting trajectory through a large information space by attempting to be smart regarding the generation of new offerings. While the number of offerings seem to be limited to a nearly trivially amount compared to the complexity of the information space, the system does not confuse the user with complex information changes. It rather gives him orientation by surrounding him with a slowly changing collective memory of users interests in the past.

4. “40+4 Art Is Not Enough! Not Enough!”

“40+4 Art Is Not Enough! Not Enough!” is a research project created by curator Davide Quadrio, filmmaker Lothar Spree and video artist Xiaowen Zhu. The project puts together a series of questions, personal, public, irreverent and naïve, to understand what is going on in the mind of the artists, who are the pillars of the contemporary art scene in Shanghai, especially in the wake of an

alienating globalization and commercialization. Forty artists who work and live in Shanghai are interviewed to consider the role of the artist in relation to the external world, the social consequences of their work and the international market's effect on traditional modes of artistic production. All the forty artists interviewed were asked the same questions, twenty-seven in total.

Starting in 2008 the project was presented as a non interactive four-channel video installation. A recently conceived interactive version is going to be on display in the exhibition "Move On Asia - Videart from Asia 2002-2012" at the ZKM in Karlsruhe in spring 2013. In this new version a high resolution panoramic screen is used to organize the video material in different ways and to allow an audience a non-linear navigation through the documentary material (see [7]). The videos are arranged on a regular grid, each tile is either showing a complete artist's interview, or assembling the answers of different artists to the same question. Additionally two vertical bands of keywords are overlaying the grid, scrolling from top to bottom. The user interacts via a pointing device with a built in iPod Touch, which basically uses the gyroscope to detect the pointing direction. Thus on the same screen the user can focus on a single artist's answers, listen to collections of answers of motivated by a question or to answers dealing with a specific topic.

In terms of navigation, all information is accessible at the first level, since all the movies are reached with a single click. In contrast to "SonoMorphis", where the user is offered only a small window in the navigable space (go to one of six forms similar to the current one), in "40+4 Art Is Not Enough! Not Enough!" the complete information is virtually unfolded around the user, and he/she just focuses on information according to their interest. One could argue, that this makes sense only in cases where all data sets fit onto the screen, but in fact in "40+4" the whole grid of tiles slowly shifts from the left to the right, continuously offering additional material, since not all of the 67 tiles fit to the screen's real estate.

[Figure6, Figure7] Installation „40+4 Art is not enough. Not enough!“, © Davide Quadrio, Lothar Spree, Xiaowen Zhu



The notion of total presence of all the material at the same time is perceptually supported by the dynamic treatment of the video and audio. All the videos surrounding the audience are playing simultaneously, but in each video, the visual frame changes only every second. Within this second the current image frame is cross dissolved with the image frame one second later. The result reminds to a slow motion video, whereas this method preserves the authentic time of the interview. All the videos surrounding the user are treated this way, thus preventing the user from being distracted by a permanent stimulation of the peripheral vision. Likewise the audio tracks of all interviews are playing simultaneously with a low audio volume, the user focus just changes the audio volumes. Hovering or clicking on a video rises the audio level and lets the video play in normal frame rate. Un-focussing lowers the audio level and rises all others resulting in a babble of voices.

The users experience is not a navigation from data set to data set, his trajectory through the content is rather determined by orientation in the totality and focussing on the specific.

5. "THERE IS STILL TIME .. BROTHER"

"THERE IS STILL TIME .. BROTHER" is an interactive panoramic installation created in 2007 by The Wooster Group and developed with Jeffrey Shaw for his Interactive Panoramic Cinema. The Wooster Group, founded in New York in 1975, has greatly influenced international theater. The ensemble combines classic and modern theater texts with new media and reflects the elements of theatrical performance and strategies as well as the role of the actor respectively the performer.

In this work for a panoramic projection environment, visitors can interactively create their own view of a complex theatrical scenario. It is based on the paradigm of interactive cinema, which was conceived by Jeffrey Shaw and unveiled the first time in 1995 with the installation "PLACE-A USERS MANUAL" [3]. The basic idea is, that within a panoramic screen, a user controls a window to a virtual world by rotating the window along the screen. In "THERE IS STILL TIME .. BROTHER" this paradigm works within the framework of a full 360 degree high resolution video. For this setup the Wooster Group designed a performance which orbits in multi-center and simultaneous game actions on the subject of war, weaving quotations and style elements of the media, culture and offers a network of events and stories for interactive exploration.

In the panoramic space the audience sits on rotatable chairs in order to follow the movie comfortably. But one can not see the whole panoramic movie at once: in the middle of the space is a chair which is controlling the potitioning of a window, which is continually moving horizontally through the panoramic projection. Within the window the movie looks sharp and in focus, everything outside is blurred ([Figure8, Figure9]). This setup transfers aspects of the human vision system - specifically the peripheral vision - to the projection environment. The user edits the movie literally by means of his perceptive focus.

Audio is treated analogous to the visuals: action which takes place within the window is risen in volume, everything outside is lowered most of the time. Exeptions are ambient sounds or featured events, which might turn the user's focus around to another location on the screen within the 16 channel audio environment.

Because only a portion of the performance is visible at the same time, the exploration of the film takes a multiple of the length of the original recording. Each visitor navigates just as the "director" of the 20-minute film. The simultaneous performance of the Wooster Group is superimposed by the visitors with their personal focus and dramaturgy. Each viewer creates his own version of the piece, each time discovering new details. The game play in turn is led by the inherent dramaturgy of the Wooster Group's piece.

[Figure8, Figure9] Installation „THERE IS STILL TIME .. BROTHER“, © The Wooster Group



4. Conclusion

This paper presented four artistic works created for panoramic environments and discussed their strategies of unfolding the trajectory of the audience experience in a narrative space. The works exemplify the subtle difference between navigation by selection and navigation by focus and moreover mixtures of these paradigms. While the navigation by selection allows for a smart guidance by the system, the navigation by focus supports the audience with its orientation within the narration, the viewer gets "the big picture" and can quickly change the subject of his interest.

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