

Paradoxes of Interactivity / The Co-Evolution of Humans and Machines: A Paradox of Interactivity / **I. Rethinking Interactivity** / Does the Body Disappear? A Comment on Computer Generated Spaces / Transparency and Opacity: Interface Technology of Mediation in New Media Art / Where the Action is: Distributed Agency between Humans, Machines, and Programs / Surface, Interface, Subface: Three Cases of Interaction and One Concept / Double Cross Playing Diamonds: Understanding Interactivity in/between Bigraphs and Diamonds / **II. Interplay between Art, Science, and Technology** / Where Art and Science Meet (or Where They Work at Cross-Purposes) / Time, Magma, Continuity: Some Remarks on In-Formation and the Fabrication of "Poiēsis" / Implications of Unfolding / UNORTKATASTER: An Urban Experiment Towards Participatory Media Development / Modelling and Analysing Expressive Gesture in Multimodal Systems / **III. Interactive Media Performances: Past, Present, and Future** / Interaction Computer Dance: The Resonance Paradigm 1900/2000 / Staging of the Thinking Space: From Immersion to Performative Presence / From Interactive Live Electronic Music to New Media Art / Extending the Musical Experience: From the Physical to the Digital and Back / Virtual Musical Instruments and Robot Music Performances / **Perspectives for Media Theory, Human-Computer Interaction, and Artistic Investigations**

[transcript] Cultural and Media Studies

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1. Introduction

The term “media art” will be used here for artistic activity which either uses or schematises digital technology interactively. Media art begins where the traditional film genre ends: with interactive and process-related digital narratives. The cinema builds up a relationship between audience and presentation, and the viewer is promised a collective experience. By contrast, interactive storytelling offers the observer an individually tailored encounter, where the YOU_ser¹ is navigating the story. Based on rules of staging, media art conjoins with other cultural forms of expression such as performance, dance, theatre, film, architecture, sound, design or fashion. Media art gets its poetic strength from the new possibilities of *interacting with its audience* and from the cross-over between cognitive *science*² and *arts*. In the last two decades, the authors have carried out media art research in institutes like Art+Com³ in Berlin, the Academy of Media Arts in Cologne and currently the Fraunhofer Institute IAIS near Bonn.

Up until today, the use and maintenance of media art has been technically challenging. Hardware and software are changing constantly, and the works of art would have been adapted for every new ICT⁴ generation. Therefore many works of media art from the 80s and 90s can no longer be seen. If not restored by the artist, the works are unlikely to be restored by a museum or a gallery, for financial reasons or because of lack of competence. Nevertheless, no other art form is so close to our present day electronic world, and it therefore deserves greater attention. Interactivity, narrativity and digital scenographic audiovisual production are important topics of new media art. In contrast to cinema, interactive media art orchestrates the senses e.g. by staging tactile elements – even virtual ones – on a virtual stage next to visuals and acoustics. Digital storage and statistical procedures make visible what would otherwise remain invisible. Participation of the spectator in processing interactive media art creates awareness and new knowledge (*Erkenntnis*). Our thesis is that interactivity supports performative communication and the creation of performative presence.

1 For interactive media art at ZKM exhibition “YOU_ser” see <[http://on1.zkm.de/zkm/stories/storyReader\\$5591](http://on1.zkm.de/zkm/stories/storyReader$5591)>.

2 Cognitive science is defined as the study of mind or of intelligence. The interdisciplinary study draws on relevant fields including psychology, psychiatry, philosophy, neuroscience, linguistics, anthropology, computer science, and biology. The term was coined by Christopher Longuet-Higgins in 1973 concerning the then-current state of Artificial Intelligence research. See <http://en.wikipedia.org/wiki/Cognitive_science>.

3 In 1988, a group of architects, artists, designers, scientists and technicians, amongst them Monika Fleischmann, Wolfgang Strauss, under the direction of architect Edouard Bannwart, co-founded the collective Art+Com e.V., researching and developing information design and communication technology.

4 ICT – Information and Communication Technologies

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2. Interactive Media Art as Performative Communication

In the 1980s and 90s, media artists experimented between science and art with the aesthetic potential of process-related image genres. Technological institutes, namely in Germany, the US and Japan, invited artists as researchers. The art historian Oliver Grau (2004) writes: "Internationally renowned exponents such as Charlotte Davies, Christa Sommerer and Laurent Mignonneau, Monika Fleischmann and Wolfgang Strauss, Jeffrey Shaw or Victoria Vesna, work, as a rule, as scientists in research laboratories and, for example, develop new interfaces, interaction models and code innovations. So they set anew the technical limits according to their aesthetic aims and critical messages." Experimentation stands at the forefront of the new telepresence. Via broadband, the Virtual Environment can be accessed worldwide.

In autumn 1991, the authors sent an early version of the Virtual Reality⁵ installation "Home of the Brain"⁶ over the ISDN data lines from Art+Com in Berlin to the exhibition space in Geneva. Visitors in Geneva moved with a data glove through a virtual Potsdamer Platz and the virtual New National Gallery. "Home of the Brain", a virtual exhibition and communication environment, translated the antique Stoa concept of a public place for meeting and discussion into the virtual space. The visitor navigates with a data glove through virtual rooms that are made visible with data glasses. Hand movements activate the citations of four media thinkers who play an important role in the theoretical formation of media culture. They are represented alongside their theoretical concepts by individual thought buildings, literally speaking houses dedicated to Joseph Weizenbaum, Marvin Minsky, Paul Virilio and Vilém Flusser. At the end of the 1980s, the work was designed to reflect the current media discourse.

"Home of the Brain" is staged as an encounter in areas of thought – a Virtual *Denkraum*. The visitor is part of the staging and becomes located in the minds of others. The current discourse is reflected through the medium itself. The virtual space is interwoven with light, shade, colour, texture, words and sound, and all together with movement. The art historian Oliver Grau describes the Virtual Reality installation as media theory put into practice, and a new mnemonic theatre that anticipated the form of communication with networks: "Home of the Brain' therefore emerges as early as 1991 as an early appearance of the epistemic innovation telepresence. As a conse-

5 With the term "virtual reality", communications technology has offered equipment and concepts which allow an entry into the virtual environment. Data gloves and data glasses bring the observer into the setting, as the authors show with "Home of the Brain". See <<http://www.medienkunstnetz.de/works/home-of-the-brain/>>.

6 Fleischmann/Strauss (Art+Com) 1990-1992

quence, the reception of the art work in this way loses its local fixation, the observer does not go to the work, to the panel, panorama, cinema film etc., however, the work does not come exclusively to the observer.”⁷

3. Origins of Virtual Reality

When we started our research in 1988, there was a virtual void. We were thinking about computational models. We were looking for the underlying structure, for navigation and orientation in virtual space. There was a need for new paradigms of space and interactivity. How should we deal with telepresence? How should we organise information? How should we link information and interaction with virtual objects? We studied our material and looked for adequate methods. It was “like studying celluloid instead of cinema, paper instead of novels, cathode ray tubes instead of television, hardware instead of software.”⁸ And we concentrated on the interface to explore the role of the senses in mixed reality space.

Virtual Reality evolved from mechanical simulators for the training of combat pilots in the Second World War and computer graphics research in the early 60s. “Virtual Art”⁹, based on Virtual Reality (VR), the making of interactive environments, had nearly no resources in the traditional art world to have recourse to. In “The Ultimate Display”, computer scientist Ivan Sutherland (1965) published the theoretical foundations for VR: “The ultimate display would, of course, be a room within which the computer can control the existence of matter. A chair



Fig. 1. Home of the Brain – VR Installation (1991)

7 Grau 2004

8 Bates 1991

9 For the history of Virtual Art see Grau 2003.

displayed in such a room would be good enough to sit in. Handcuffs displayed in such a room would be confining, and a bullet displayed in such a room would be fatal. With appropriate programming, such a display could literally be the Wonderland into which Alice walked.” There was the idea of a computer-based interactive fantasy system to ‘go anywhere and do anything’. With goggles and gloves the interface hardware and software problems were solved by Scott Fisher in 1986 at NASA Ames Research and Frederick Brooks in 1988 at the University of California.¹⁰ In our research we used VR as a medium to express an idea, a vision of future communication or about the future city after the Berlin Wall had fallen. The authors’ interactive table installation “Berlin, Cyber City”¹¹ (1989-90) was the origin of the tabletop interface “Responsive Workbench”¹² (1993-94).

4. Space: From Performance Space to Performative Presence

Where did inspiration come from? At first one described only such 3D real-time simulations as Virtual Reality, but then in the 1990s the internet itself was linked to William Gibson’s term ‘cyberspace’ (from cybernetics and space).¹³ With “Johnny Mnemonic” from the short story collection “Cyberspace”, and with his novel “Neuromancer” from 1984, Gibson revolutionised the way people look at technology. But inspiration came not only from technology research, computer graphics and science fiction. Film, theatre, music, literature and pop culture also had an influence on the development of interactive media, virtual art and the creation of transformative spaces.¹⁴ Virtual Reality is the fusion of real-time, space, interface, haptics and movement with image and sound in conjunction with mathematical thinking. In our artistic work we are interested in the perception and reflexion of the current situation of communication technologies. Since 1988 we have been working on cultural interfaces to link real and virtual space. We initiated our

10 For an “American” Timeline of Virtual Reality see <<http://chrishutchison.org/atticaschool/vr/Issues/page31/page31.html>>.

11 “Berlin, Cyber City” was invented by the authors with a team at Art+Com as an interactive table installation with the virtual reconstruction of the city of Berlin. See <<http://netzspannung.org/database/cyber-city/en>>.

12 The prototype of the “Responsive Workbench” was invented by the authors under the direction of Wolfgang Krueger and with the team at GMD – the German National Research Centre for IT. See <<http://netzspannung.org/database/responsive-workbench/en>>.

13 For the term “Cyberspace” see on Wikipedia <<http://en.wikipedia.org/wiki/Cyberspace>> and ARTE Portrait 2005: Dream – William Gibson. See <<http://www.arte-tv.com/de/kunst-musik/tracks/Diese-Woche/20050203/804294.html>> (last access: June 2008).

14 Packer/Jordan 2002

own Labs¹⁵ to study and produce the interlinking of art, technology and science. In transdisciplinary teams we find the patterns that make a difference by using the epistemologies of each discipline to drive inquiry. We take theories and methods which exist independently of several disciplines and apply them to organise and understand different areas for the purpose of achieving new insights.

The VR installation “Home of the Brain” relates to concepts of the avant-garde theatre, such as Samuel Beckett’s “Quadrat”, where people react to one another and build up relationships by walking on predefined paths. We were inspired by the late Klaus Michael Grueber, the wanderer among the stage directors, who used unusual public spaces to appeal to the audience. The theatrical performance installation “Rudi” (1979) dealt with forms of remembering. The setting, near the – at that time still existing – Berlin Wall, in the prestigious Hotel Esplanade¹⁶, became a stage and exhibition space for an outstanding performance. It involved a tour through the house that sets thoughts into motion, although hardly anything in the space moves. An actor sits in front of a fireside and read out Bernard von Brentano’s 1934 novel “Rudi” in a monotonous voice and with many breaks – loudly. Parts of his reading were transmitted into the other rooms of the hotel through loudspeakers. The audience moved around as if in an exhibition in order to incorporate the idea of spatially performed information related to the voice, movement and stage. There was no linear narrative structure to follow. It was not clear: Is this reality, theatre or a museum? The borders of real and fictional space blurred and became one (mixed) reality. The audience was part of the concept of an aesthetic experience. It impressed and unsettled the people of Berlin in the ruins near Potsdamer Platz. The merging of theatre and museum in “Rudi” transferred the visitors into a situation of in-betweenness.¹⁷ The VR environments “Home of the Brain” or the subsequent “Murmuring Fields”¹⁸ refer to fundamentally different notions of space: the *performative presence* of becoming in the virtual space and the *physical presence* in the space of performance.¹⁹ During the press conference where “Home of the Brain” was presented with the Golden Nica of the Prix Ars Electronica in 1992 in Linz a visitor explored the VR environment. He moved his whole body as if he were

15 First Art+Com, later the Fraunhofer MARS Exploratory Media Lab. See <<http://netzspannung.org/about/mars/projects/en>>.

16 The famous Hotel was damaged in the Second World War, but still became the scene of famous films. Today, the preserved parts of Hotel Esplanade can be visited in the Sony-Center at the Potsdamer Platz, where they were transferred in 1996 by means of complicated technology. See <[http://de.wikipedia.org/wiki/Hotel_Esplanade_\(Berlin\)](http://de.wikipedia.org/wiki/Hotel_Esplanade_(Berlin))>.

17 Fischer-Lichte 2008

18 Fleischmann/Strauss 1997-99

19 Gemeinböck 2004

swimming around the virtual objects. He represented an in-betweenness of being in both spaces – the real and the virtual.

5. Time: Film as Seismograph of Nonlinear Image and Sound Concepts

Experimenting with Virtual Reality in the 80s and 90s, artists and scientists felt still influenced by the Apollo space-flight program undertaken by NASA during the years 1961 – 1975. They were affected by films such as “2001: A Space Odyssey” or “Powers of Ten” presuming the non-linearity and the endlessness of space that was first experienced with Virtual Reality technologies – but then interactive and in realtime. “2001: A Space Odyssey” by Stanley Kubrick²⁰ is a science fiction epic and was flavour of the moment in 1968: America was in space fever. The film is not only a future vision about contact with aliens and the endlessness of space, but also about the questions of life that are often interpreted by artists and philosophers: “Where Do We Come From? What Are We? Where Are We Going?”²¹ In an interview Kubrick said that he “tried to create a visual experience, one that bypasses verbalized pigeonholing and directly penetrates the subconscious with an emotional and philosophic content.”²² Instead of using much dialogue,²³ Kubrick achieved his goal by using music and sound atmospheres essentially by Gyorgy Ligeti, Richard Strauss and Johann Strauß. The film begins with a black image and Ligeti’s “Atmosphères” (1961). In this piece melody and rhythm are blurred beyond recognition through the creation of sound complexes. It concentrates on the texture of the sound. The work is, as Ligeti said, “just a floating, fluctuating sound, (...) You hear a kind of impenetrable texture, something like a very densely woven cobweb.”²⁴ Ligeti’s works create the suitably weird sound effects for the more “far out” trips of the film.²⁵ A feeling of hallucination was created, only with sound and images.²⁶ Critics characterise the film as being

20 Interview with Stanley Kubrick “2001: The space odyssey” explaining a treatment of the film can be found on the internet by New Media Giants. See <<http://www.kubrick2001.com/>> (last access: June2008).

21 This was the title of Paul Gauguin’s philosophical painting from 1897/98.

22 Stanley Kubrick by Eric Norden. Playboy Magazine. September 1968

23 There are only 43 min. in this film of 143 min. length.

24 For Program Notes of San Francisco Symphony see György Sándor Ligeti, San Francisco Polyphony. See <<http://www.sfsymphony.org/music/ProgramNotes.aspx?id=28950>>.

25 György Sándor Ligeti, San Francisco Polyphony. See <<http://www.sfsymphony.org/music/ProgramNotes.aspx?id=28950>>.

26 Kubrick used more than 33 min. of Ligeti’s “cluster sound”. Though he did it without the composer’s knowledge or permission, the film created a constantly growing international interest in Ligeti’s music, not only in the classical but also in the popular world.

“hypnotically entertaining, and it is funny without once being gaggy, but it is also rather harrowing.”²⁷ The film’s well-known fanfare and title music, “Also Sprach Zarathustra, Op. 30” is a tone poem by Richard Strauss, composed in 1896 and inspired by Friedrich Nietzsche’s book of the same name from 1883/1885. The title sequence begins after the black image with the Earth rising over the Moon, while the Sun rises over the Earth. “Thus Spoke Zarathustra” was used in similar situations such as the TV coverage of the Apollo Moon missions and landings in the late 1960s and 1970s. For the space scenes Kubrick filled the vacuum of space paradoxically with “The Blue Danube”, the famous Waltz by Johann Strauss Jr.: “it certain[ly] suggests the dance of space craft under the slow inexorable influence of Newtonian gravity and mechanics. The Space Station pirouettes, while inside a member of the cabin crew demonstrates walking under zero gravity conditions while objects like pens float off.”²⁸ Although the film does not adhere to the audience’s usual expectations – there is no action, no plot and no resolution – “2001” became one of the most successful films ever and a classic of cinema history. Alongside the lack of a plot, the characteristic of boundless und bottomless *floating in space* is similar to the sense of space in Virtual Reality, and the structure of Ligeti’s music is reminiscent of *interwoven* algorithms.

Another example of seismographic, self-proclaiming new image concepts is the nine-minute film structured as a documentary, “Powers of Ten” by Charles and Ray Eames, which likewise arose in 1968 within the context of space research. It demonstrates *zooming* and *scaling* – further design principles of interactive media. The film takes the audience on a journey, which begins with a picnic on the seashore in Chicago and leads to the edge of the universe. Every ten seconds we can see the starting point of the journey from a distance ten times further away from the earth, which then can only be seen as a point of light between many others. On the return journey, the view is enlarged, with breathtaking speed, tenfold every ten seconds. The camera shows the sleeping picnicker, then reduced to the view of his hand, then into his hand, and ends up on the inside of the cells of one of his DNA molecules. Charles and Ray Eames, with this film, give an idea of the relative size of objects in the universe. They show how a single idea can reflect a universe of thoughts. Questions of measurement shape our understanding of the world. Knowledge of *measurement* and *scale* – as shown here – change the perspective of all things. Both films from 1968 are very much supported by atmospheric sound. In both, the earth is seen from space and here it was seen for the first time as a vulnerable global home worthy of protection. This perspective gave us a feeling for our place in the universe.

27 Gilliat 1970

28 “2001: A Space Odyssey – Original Soundtrack” online available <<http://www.mfiles.co.uk/reviews/2001-a-space-odyssey.htm>>

6. Locative Media for presenting the World

Locative Media is a new form of land art, where artists reflect e.g. on surveillance as a new form of presence. Networked Nature, or Locative Media, has a history that predates that first satellite launch in 1978. Bleecker and Knowlton (2006) write about the origins of GPS-Enabled Locative Media: "For instance, the 'Earthworks' group exhibition in October of 1968 in New York may count as a canonical point in the history of such geography and land form inspired art works. There is a distinction to be made of motivation as well as technique, which is what we mean to draw out by demarcating pre-satellite from satellite-enabled locative media. (...) It is painfully ironic that, in a time when public funding for art in the U.S. has evaporated, locative media artists are able to "piggy-back" on the U.S. Department of Defense, in a fashion, appropriating GPS technology for creative purposes. (...) Consequential financial, political and creative-capital investments are one of the drivers of interest in the digital territorialization of physical geography, thereby establishing it as an interface for electronic media experiences. Through this territorialization, real-estate has become virtual-estate."²⁹

In 1996 Art+Com presented TerraVision³⁰, a self-contained, Virtual Reality, 1-to-1 representation of the Earth. A stylised globe was the interface for the audience to zoom in on any location in the world and obtain minutely detailed pictures. Ten years later this kind of system was online: In July 2005, the search engine Google, with "Earth", created the possibility of a virtual world tour by satellite picture, with zoom function. Chip Online wrote: "The digital globe makes zooming from space to home town possible."³¹ In this way, the filmic archetype "Powers of Ten" is now directly available for every computer user. The online globe offers a 3D map of many parts of the earth, in that it compiles satellite and aerial photography of towns and industrial areas. The victims of the hurricanes in New Orleans and elsewhere used "Google Earth" in order to form a picture of the destruction of their homes and neighbourhoods. "Google Earth" picks up on the idea of scaling, in order – it appears – to get to grips with the world: regarding its weather systems, its economy and global totality. Satellite images send views from a great distance and create a distanced point of observation. These images, which seemingly extend our sight limitlessly, suggest definitions such as: total surveillance, total overview. These are global positioning systems of complete visibility of time and space.

29 Bleecker/Knowlton 2006

30 The project was started by Uli Weinberg at Terratools. See <http://www.artcom.de/index.php?lang=en&option=com_acprojects&id=5&Itemid=144&page=6>.

31 More about Google Earth in "Chip Online de" see <http://www.chip.de/downloads/c1_downloads_13015193.html>.

7. Presence: Models for Interactivity

The idea behind the narrative form “film” is to represent events and tell stories arising from researching the realms of the psyche. Where film ends, the digital and interactive, process-related environment begins. Media artist Simon Penny (1995) differentiates the difference in perception of a painting, a film and of interactive media art as follows: “A painting is an instance of representation. A film is a sequence of representations. Interactive artworks are not instances of representation, they are *virtual machines which themselves produce instances of representation based on real time inputs.*”

The theatre, with its abstracting stage and real-time input, appears a better role model for interactive concepts than film, with its ready-made images. “Home of the Brain” was conceived as a digital memory space and as a venue for battles of spoken words. The theatrical paradigm stands for the positioning of information in space and for animating the audience. Nonetheless, visitors understand their virtual observer perspective in “Home of the Brain” as if they were walking through a film. This is because this virtual surrounding could only be experienced as an individual with data glasses and data gloves.

The return channel for the virtual meeting with others was technically only realisable a few years later with “Murmuring Fields”³² (1998-2000), an audiovisual soundspace for several interactors on stage. We had built a shared environment for real-time interactive performance. So the virtual space became not only metaphorically virtual, but also physically real, an accessible and tangible sound. For “Murmuring Fields” we developed a mixed reality³³ method for the penetration and superimposition of physical and electronic space. Data space and stage space are interconnected with one another and overlap by means of an optical tracking system. Two dancers utilise the interactive sound space of different sites. With their bodies in action, they employ the soundspace as an instrument. They play with words, images and sounds, and they oppose the system with their bodies in order to avoid being overwhelmed by technology.

In “Murmuring Fields” digital information – sounds and figures – is located in the space as if the room were furnished with data.³⁴ Every movement of

32 Murmuring Fields is documented on the online media art archive netzspannung.org <<http://netzspannung.org/database/murmuring-fields>> and on MedienKunstNetz <<http://www.medienkunstnetz.de/works/murmuring-fields>>.

33 Mixed reality (MR) (encompassing both augmented reality and augmented virtuality) refers to the merging of real and virtual worlds to produce new environments and visualisations where physical and digital objects co-exist and interact in real time. See <http://en.wikipedia.org/wiki/Mixed_reality>.

34 Strauss 1999

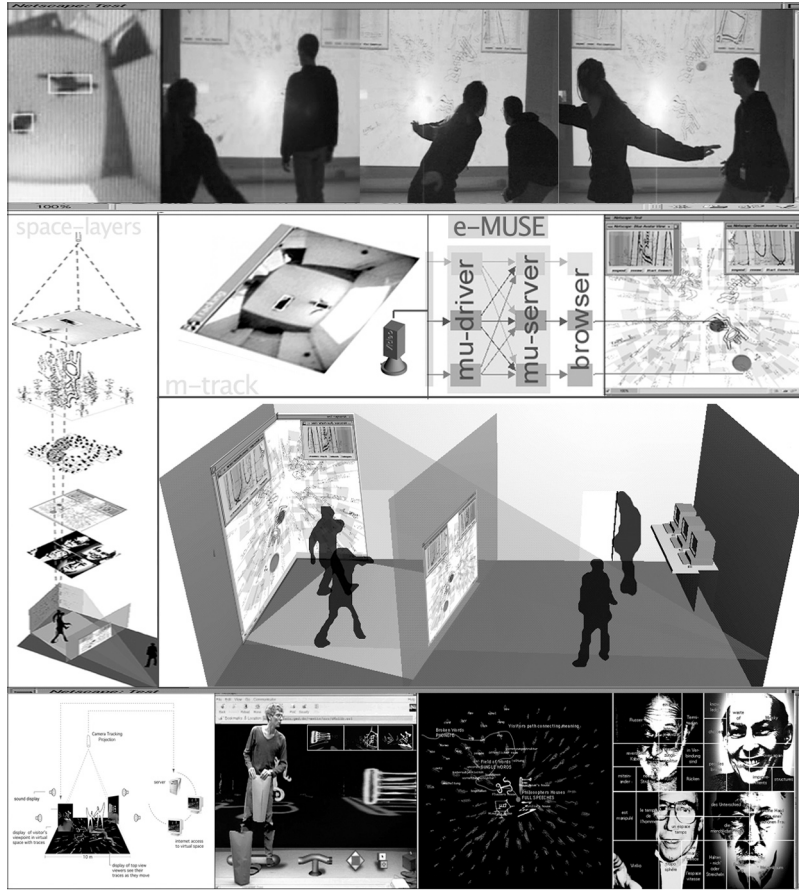


Fig. 2. Murmuring Fields – electronic multi user stage environment (1991)

the body is captured with an optical body-tracking technique.³⁵ Movement is transferred from real space into data space, and translated into a sound collage. Spoken texts are broken up into words and syllables. Movement in space creates movement in the text. Two interactors produce text samples by Joseph Weizenbaum, Marvin Minsky, Vilém Flusser and Paul Virilio – our keen thinkers from the earlier work “Home of the Brain”. “Poli-tic-tic-tic”, says Flusser’s voice as a performer bows backwards and forwards and thus interprets a part of Flusser’s words: “Youngsters at the terminals; they turn their backs to politics and turn to each other.” This passage, from an interview

³⁵ Body-Track is part of the eMuse-Systems, which were developed as a production system for “Murmuring Fields” (Strauss/Fleischmann 2007).

with Vilém Flusser in 1990 on Austrian television, was sampled and built into the sound database. The dancer triggers syllables with her body and forms speech. She plays with the meaning of the concepts. Text is translated into a texture of sound and movement. Theatre Scientist Martina Leeker sees that “in such information-technological modifications of theatre and stage (...) the internalisation of thought and imagination are overridden inasmuch as the actors become bodily involved. The externalisation of thought and imagination through new media forms allows the mental ‘Mixed Reality Room’ to develop, and at the same to operate alongside our written cultural heritage.”³⁶ In “Murmuring Fields” movement of the body moves sound and image. The art historian Oliver Grau judged that with “Murmuring Fields” a new type of space of mind had been created.³⁷

8. Media Art as Public Thinking Space

The question of how digital information can translate not only the metaphorical virtual, but also the physically real, into accessible and understandable domains marked the passage to media architecture. By this we understand an architecture which connects people, space and data with one another. It creates an extended area of activity. Our first experiment interlinking data and virtual space resulted in “Home of the Brain”, an immersive environment for a single person. Connected to this work we developed “Murmuring Fields”, a sound environment for two performers on a public stage. With “Energie-Passagen”³⁸ (2004) we explored data connected to public space with an audience passing by day and night. It was strolling through news: promenading through information space. This model of public space was possible for us, following the inclusion of text and natural language, after our research and development of linguistic tools. The project “Energie-Passagen” is about reading and describing the city. It schematises public and private interest in information. This public installation offers the possibility of association, filtering and choice of a flow of words, which allow participant-oriented opinion formation and therefore a public interactive thinking space (*Denkraum*).³⁹

The starting point of “Energie-Passagen” is texts from mass-media daily news. An automatic computer technique analyses the daily newspaper and reduces it to the 500 most-used keywords. In this case it was the “Süddeutsche Zeitung”, which was analysed over four weeks by a semantic tool. The filtered terms appeared as a large screen-projected “flow of infor-

36 Leeker 2000

37 Grau 2004

38 <<http://energie-passagen.de>>

39 The notion of the German *Denkraum* refers to Aby Warburg and Hanna A. rendt.

Fig. 3. Energie-Passagen – interactive installation in public space (2004)



mation” in November 2004 in front of the “Literaturhaus” in Munich. Visitors could choose definitions on-site and “interpose” them into the flow. In this way text movements are set into motion, which allow connections between the definitions to emerge. The definition network creates new meanings, which differentiate themselves from the original linear texts. Computer voices react directly to the intervention of the visitor and accompany him or her as multi-voiced echo. In addition, a world map visualises the journey, which then takes the chosen definition through the geographic landscape of the news. The visible result of the visitors’ preferred words is the “Living Newspaper”. Its dynamically generated choice is projected within their original sentence onto the “information cube”. The deconstruction of the newspaper, which results from the fragmentation of its original contents, leads to an unaccustomed reading and understanding. The artificial voices of the flow invite the discovery of new sense correlations. The spectators find themselves in an aura of speech and luminous symbols. It creates an atmosphere of liveness between audience and place that allows immersion (consumption) as well as reflexion (evaluation).

Words in motions set the visitors’ own associations free. This unusual view of familiar daily news leads to

surprising actions and reactions. Every day and evening of the four weeks, the on-site public discussed their own associations related to the daily news reports. An especially pleasing aspect was the discussions with older visitors, who felt themselves involved in the current developments and enjoyed

being able to experience something other than established forms of art. With “Energie-Passagen” we schematise speech in public space. The work shows how meaning can emerge through deviation, and offers the on-site public a sensual, tangible space for action, which sets free new potential for communication. Communicative performance and performative presence emerge through interactivity of audience and virtual space. The greater part of the approximately 4000 on-site visitors to the installation were between 50 and 70 years old. During the one-month duration of the installation there were a further 3,000 internet visitors, some of whom also sent comments.⁴⁰ More than four years later, in June 2008, there have been nearly 50,000 visitors who have seen the installation on the internet.⁴¹ The audience on site creates performative presence. The interactive spectator online creates a different form of performative presence with the web installation.

9. Conclusion

Film lives from its heroes, whilst the interactive players can themselves be actors and heroes – even in an art installation. Film needs an audience which gets inside a story and loses itself in it. This narrative art usually requires a plot, which includes a storyline and action. Normally, a plot is characterised by a beginning, middle and an end. This rule does not apply to interactive stories. Interactive media art assumes that observers are themselves active. Thus, the activity of participants can be interpreted as communicative performance. One’s own participation is a precondition for the experience of story and plot.

The core of the interactive plot is not about the communication of one single reality, but lies in differing viewpoints and positions based on hyper-text structures and generative processes. The interactive performance is more about the volatile association of thoughts than the linear narrative of a film. As an analogy, one can describe the process of the exposure to interactive installations as thought in action and action in thought. This in turn indicates making visible the activity of thought processes. Communicative performance and performative presence evoke the atmosphere of the artwork as a thinking space (*Denkraum*).

A shortened re-working from Medienkunst im Aufbruch – Geschichten erzählen von interaktiv bis reaktiv, ed. Klaus Rebensburg, Aachen: Shaker 2005, pp.65-84

40 Visitors’ comments: see <<http://www.energie-passagen.de/presse2.html>> (last access: June 2008).

41 Energie-Passagen as a web installation: see <<http://www.energie-passagen.de/webinstallation>> (last access: June 2008).

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