book for the electronic arts : Arjen Mulder, Maaike Post (Eds.), V2_Organisatie, Amsterdam 2000

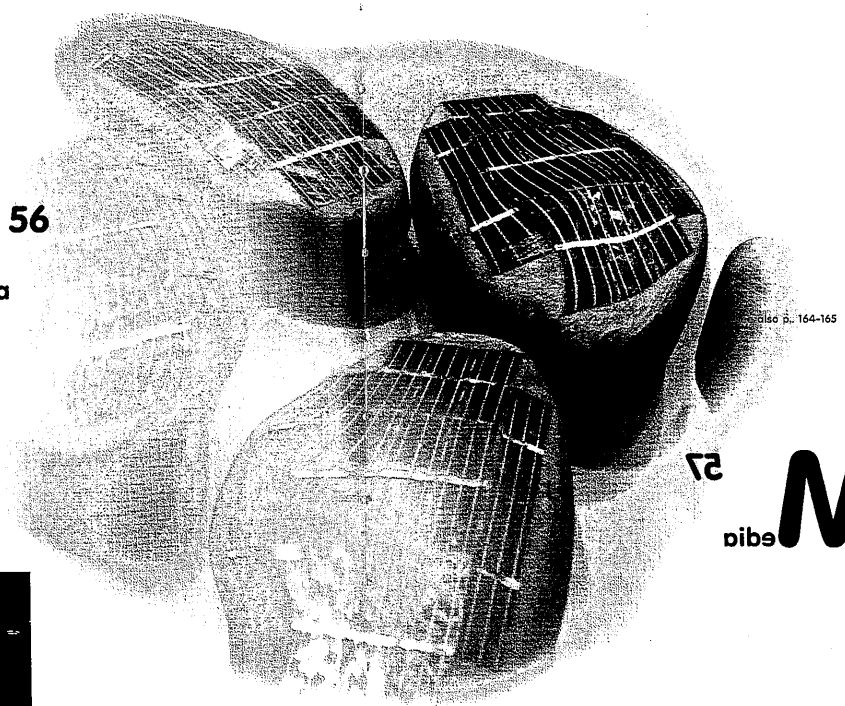
dependent: more autonomous in relation to the images coming before and after, and more dependent upon the observer. Or the other way around: more autonomous in relation to the observer and more dependent upon images coming before and after. The solution was a digital database of images coupled with an interface for endlessly retrieving new images, recombining and transforming them so the same image never appears twice and you never know what the next image will be. Ulrike Gabriel learned how to program a computer, and **Breath** was the first result. In this constellation there is no reason why the breathing-related movements of the belly would shift rectangles and polygons on a screen. Still, the connection between belly and image cannot be denied. Both are one system, connected via the belt and the computer. Mutual autonomy and dependency: again, the definition of interactivity. Because the image wanted to go on and on, Ulrike Gabriel hooked it up with something that never stops: our breathing.

Terrain_01 is a later installation by Gabriel, from 1994. You sit on a chair with a band around your head. Sensors in this band monitor your brain waves and show these on a small monitor beside you. In front of you, under an array of strong lights, is a large round metal plate with thirty free roaming mechanical "pill bugs," about the size of your hand. They are made of something like tin, have solar panels built into their backs and are fitted with wheels. As soon as the lights are switched on and throw a pattern of light dots on the metal plate, the robot animals start to move. They go towards the light and avoid contact with each other. As a group, they demonstrate some interesting behavior: gathering, separation, pairing, panic, backward retreat (fear of being touched). Researchers of animal behavior would have a field day with them.

The amount of light the lamps give off depends on how many brain waves you produce on the monitor. The quieter your alpha and beta waves are, the more light is produced. Initially, when you are just settling down and adjusting to the system you have just become part of, the robots do nothing. When you close your eyes and manage to relax your brain, the lights start to glow and the robots demonstrate their movement tricks. But as soon as you look to see what is going on, your brain waves peak again and the lights go out and there is nothing of any interest to be seen anymore. You control the system as much as it controls you. Only if you succeed in watching the robots without thinking or feeling anything can you see what the robot insects are doing, instigated by you. You must watch completely level-headedly. If you can pull that off, try looking in all objectivity at real animals, your fellow men. Gathering, pairing, fear of being touched, panic – conscious, intelligent behavior is a product of perception. It's all in the eye of the beholder.

see also p. 72

Terrain_01



also p. 164-165

By using simple parameters, like those of breathing or brain waves, Ulrike Gabriel wants to create complex situations, either in images or in reality. Her work tends to become increasingly complex. Take, for instance, the installation **Memory Space** (1999), this time by Ulrike and David Gabriel together, in itself derived from a previous project called **Perceptual Arena** (1995). In **Memory Space**'s constellation, at one side is a text machine where you can type in words which then start to float on a computer screen among previously entered words. At the other side is a second visitor wearing a VR helmet, looking around in a three-dimensional environment. The words entered into the text machine appear floating in the VR space. When the "VR navigator" looks at a word floating by, this same word is then colored red on the monitor at the other side of the installation. The "text writer" can now pull other words from the word cloud towards the word in red. If this word combination is recognized by a database of text fragments that is linked to the text machine a sentence built from fragments in the database is projected onto a large screen above the text writer. Often this produces nonsense; sometimes it is surprisingly apt. While the sentences are being constructed the words in the VR space are being transformed by an image generator into sculptural shapes consisting of sharp-pointed planes. As the navigator you can float towards and around these by moving your head, avoiding looking at the next word that has been entered and may be floating by. What you see as the VR navigator can also be seen by spectators on a monumental screen on the VR side and

r. 56-64

interview Weibel (2001)

PETER WEIBEL (1944) is director of the ZKM (Zentrum fuer Kunst und Medientechnologie) in Karlsruhe, Germany.

You have been part of the movement that created the electronic arts as we know it today, as an artist, a theorist and an organizer of festivals and events. You have witnessed the rise of electronic art from its tentative beginnings until the present day, in which electronic art is an accepted art form amongst others. To start at the beginning, what do you you consider to be the roots of electronic, or media, art?

Peter Weibel, V2 – 1994

I'd like to mention a neglected art movement from the 1960s, the avant-garde film, in which people started to think about the expansion of cinema techniques as an expansion of the function of the image. Usually this art movement is seen in connection with the art movement of the 1920s and 1930s, with visual artists like Marcel Duchamp and Man Ray. From an art historical point of view this may be correct, but the artists from the 1960s, me included, did try to establish an art of the moving image that differed from the field of visual arts. We wanted to separate ourselves from painting, and from the tradition of the image as it was coded as representing something. Even abstract art was still under the Damocles' sword of representation: it didn't represent the outside world, but an inner world, as the artists claimed. We, on the other hand, were interested in the iconoclastic aspect. When Hollis Frampton made the movie Zorn's Lemma, in which he replaced images with letters in a mathematical model, he was questioning what an image represents. More important than any objective or subjective representation for us were the inherent material qualities of the cinema. This starting point not only lead to structural and materialist film, but also to expanded cinema. Our goal was to broaden and expand the cinematographic code in a critique of representation, in a critique of the relation between image and reality.

The models we had for this critique came from three different philosophical discourses: semiotics, mathematical logic, and cybernetics. Semiotically the image in cinema can be described as "iconic" – directly derived from reality, as in mainstream cinema. If you go one step further the cinematographic image can be said to be of a symbolic nature – not only is there an external relation to reality, but also an internal relation to other parts of the film, within the organised structure of cinema. This second, syntactic approach allows the use of a different model than the iconic one, namely a mathematical or musical model to structure cinematographic material, as in early Peter Greenaway movies.

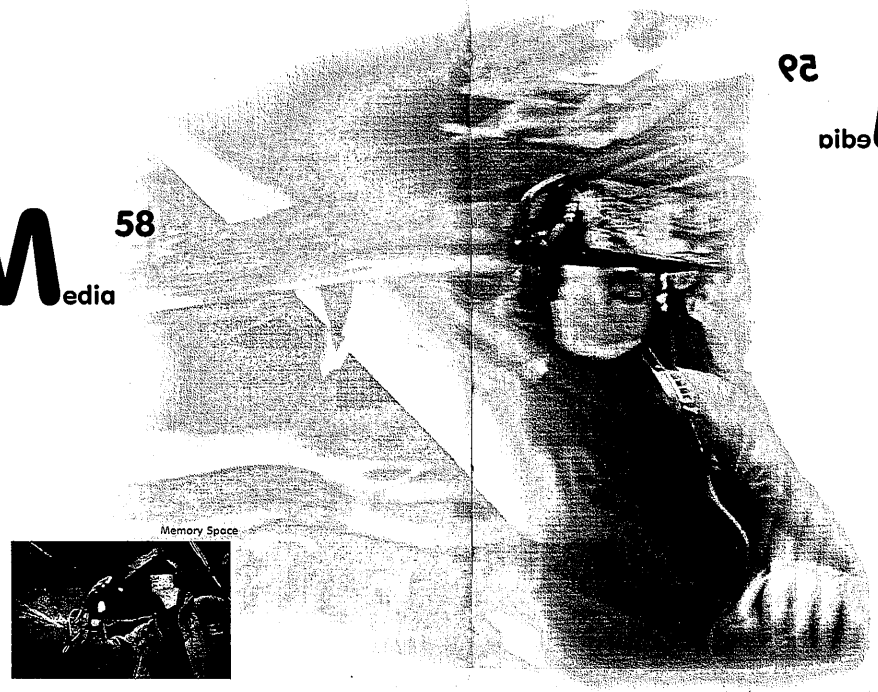
The third approach is the pragmatic one: how is the behavior of the spectator encoded in relation to the imagery? In my own work I attacked this pragmatic dimension of the cinema: what does a curtain mean, or an entrance? Why do people have to pay, go in, sit down? Why project on a screen, why not have 20 projectors, 20 screens? I used a mathematical model: I called film a calculus – an algorithm I would say today. Film has defined elements, like celluloid and a projector, plus a temporal succession: first you have a camera, then a set you film with a camera, then you develop the film, then you project the film, et cetera. First I said: why not do it vice versa? Why not put somebody in front of a screen with a light on him and just the sound of a camera running? I changed the calculus. Later I asked myself: why not use my skin as a screening place? The hairs on my body are signs and erasing them is like making a cut in a painting, as Lucio Fontana did. My work was about reorganising, redefining and recoding what cinema is.

And then I discovered a new medium that recorded and projected at one and the same time: video. Video had the simultaneity I had been looking for in cinema. As early as 1969 I started working with it. I made a work in which people came into a space where they only saw a camera. At the same time I showed other visitors in another room the recording equipment and the people coming in. The pragmatic aspect of visiting a gallery became the semantic and syntactic product that people came to see in that gallery. That was very strange then: visitors always came to see an art object. But in this 1969 installation,

a small screen on the text machine side, with sound.

The interactivity in this complicated installation is this: the text writer enters words, the VR navigator chooses from among them, the text machine with the database constructs sentences out of the words chosen, and the image generator translates these sentences into virtual sculptures which the navigator can float towards and around (until they become so large that they explode, as rumour has it). Both participants in this installation provide the content of their interactivity themselves, even if this is mediated by the image generator and the database of text fragments. Both the words from the writing participant and the images from the navigating participant are unstable. All the combinations of words into sentences and into three-dimensional shapes are unique. There is no underlying system, only esthetics.

Why do all this? Why make things so complex? In this installation words and images are the media for a form of communication which, although it uses linguistic and visual signs, does not use linguistic or visual meanings. Every possible meaning is being neutralized by the preprogrammed arbitrariness of the text machine and the image generator. It is the audience outside the constellation that projects meaning onto the words and sees representations in the images – the communicating participants are focused on something else altogether. This is what makes **Memory Space** a game: the exchange between the two players has no need for the weight of interpretation – very unlike everyday life. To the audience, however, something else applies. Once you have found out how the words and images in the installation are generated, try applying that objective view to the sentences and images you read and see on a daily basis. Their meaning is just as preprogrammed and arbitrary. You don't need to interpret them; you can do without their meaning. They function outside of their meaning, following different rules. But they most certainly have an effect, both on each other and on you. Here is a third definition of interactivity: communication without the detour of meaning.



Memory Space

The eye of the beholder

"Erst die Theorie entscheidet darüber, was man beobachten kann." "It is theory which decides what can be observed," as Albert Einstein remarked to the youthful Werner Heisenberg, and: "only theory, the knowledge of the laws of nature, enables us to draw conclusions about the processes behind them, based on our sensory perception." In other words, the perceived world does not exist outside of the way in which we organize our perception by means of abstract concepts. We will never be able to see the world as it exists independently of our insights. When nature gives an unintelligible answer to a question posed by science in the form of an experiment, this may lead to a change in the theory and to the forming of new concepts. After this, the world will look different.

Classical physical science, as established by Isaac Newton in his **Philosophiae naturalis principia mathematica** (1687), describes the world in an ideal state, as seen by an absolute observer. What it does not describe is the world as it exists in reality. Space and time, distance and duration, mass and speed to Newton were quantities that existed independent of our sensory impressions, and he had discovered their underlying principles. Newton pointed out the order in a chaotic world, and it was a stable, timeless, controllable order. It wasn't until 1905 that Einstein showed how, for us, there were no absolute quantities and all our observations were relative. To a stationary observer, time passes differently than to a moving observer. Even space is not a homogeneous, endless continuity but is curved around bodies and around itself. This relativity of Einstein's, the introduction into knowledge of active observation, subsequently led to Heisenberg's idea of the uncertainty principle. In the subatomic range an observation influences the path of an observed particle, because in order for us to see that path, a light photon has to hit the particle, which in turn changes its path. It is impossible to know simultaneously where a subatomic particle is and how fast it is moving. One can only know its approximate position and movement. Knowledge of suba-

Peidi Weibel

The Public as Exhibit – 1969

called **The Public as Exhibit**, the art object has vanished. There was no artwork in the form of an object, no image in the form of an object like a painting. There was only the spectator himself as the image, seeing and being seen. The acts of seeing and observing became the image. The processes of vision became exposed. The mechanisms of expositions became exposed.

Expanded cinema was the beginning of a turning away from object-based art towards a practice-based art, a moving away from material art towards immaterial art. But nobody from the art circle had a theory about it, nobody could understand it. As long as the society itself was in a revolutionary moment, with the student revolts and all, this didn't matter. We had an audience; we could make an existence from our work. When at the beginning of the 1970s this revolutionary situation declined and everything became normal again, we lost our audience. There was a return to conventional art forms. This forced us to create our own circuits and festivals to continue our work.

So media art came from expanded cinema and not from video art?

It came from avant-garde cinema. The most successful video artists today, like Douglas Gordon, Pierre Huyghe and Aija-Elisa Atthila are repeating the concepts of expanded cinema, from time delay to multiple screens to multiple narrations, et cetera. Video can repeat these experiments of expanded cinema more easily, more cheaply, faster, technically better. A continuous projection in a loop requires an expensive, specific and complicated machine for cinema. With video you just press the button. The film avant-garde worked at the border of its medium, at the esthetic, syntactic and pragmatic border.

And video artists work in the middle of their possibilities, not at the borders of their medium?

Exactly. The only place where video has reached a border of sorts is in video installations. To go beyond avant-garde cinema video artists started to make installations that worked in real time. Then they realised that this was still too iconoclastic. People in the 1980s were hungry for images – there was a return to painting, et cetera. So video artists started to make environments stuffed with materials that were richer than the immaterial video images, like the installation Bill Viola made with trees lying around, or Fabrizio Plessi working with marble plates. I myself have always refused to show anything else but video images and video cameras, although it demanded more of the viewers. Nam June Paik turned monitors into objects that looked like bodies or human-like robots. If he had made them as just sculptures, everybody would have said they were silly.

This brings me to the real problem with video art. Media like cinema, video and, later, computer are about dislocation, while classical art is about location. Theater takes place in time and place on a stage; a sculpture is bound in space, as is architecture. But from the telegraph in the 1840s onwards it became possible to separate message from messenger. Before that, one needed a physical carrier, a person or an animal or a machine, to send a message. With new media we no longer need such physical carriers of the message. The new esthetics is about dislocation; the message goes from one locus to another. Video is of course ideal for this. You can send messages from one room to another, and even within a room make a distance between camera and image. Media are also about disembodiment, and even work against the body. They surpass the body. Television enables you to see further than your eyes, a telephone to hear further than your ears. Technical media are not only an extension of the body, they can reach beyond it. They are above anthropomorphical scale.

It is therefore a tragic paradox to make media look like humans or humanoid robots. I call that treason. Media are made to go beyond the borders of the human body, and then you make a clumsy humanlike thing with these media! It's like making a car that looks like a horse. In politics the term for this is revisionism. The most successful video art of the 1980s has been esthetic revisionism. And what is even worse: it brought psychology back into it. The avant-garde cinema movement was not

tomic particles is not absolute but vague, a matter of calculating probabilities.

The irony of atomic research in the twentieth century is that initially scientists wanted to know how atoms could be so stable that, even after goning through all sorts of chemical combinations, they always emerged again in the same form. The answer was Niels Bohr's "atomic model," in which a stable number of protons and neutrons were held together by nuclear forces. Around this nucleus float the same number of electrons as there are protons in the nucleus. But these electrons are unstable: they can collect and radiate energy and do so in discrete quantities (quantums). Matter can be converted into energy and vice versa ($E=mc^2$). Light is a stream of particles or a wave movement, depending on how you look at it. Soon the atom nucleus itself proved to be not stable but fissionable: atomic energy, nuclear weapons. What started out as interest in the stability of matter led in the end to the realization that all building blocks of the universe are unstable.

Heisenberg: "Nature has been fashioned in such a way that it can be understood. That is to say: our brain has been fashioned in such a way that it can understand nature." In the classic mechanical world view the following thought experiment was permissible: If you could observe the position and velocity of every building block of the universe, then according to Newton's laws of movement you could know not only the present but also the complete past and future of these elements. Position and velocity (the trajectory of a body) provide enough information to describe the entire life of the body, both forward and backward in time. What this thought experiment reveals is that in the mechanical world view the universe contains hardly any information at all, even though the "mechanics" believed they now had at their disposal all the information there was to have.

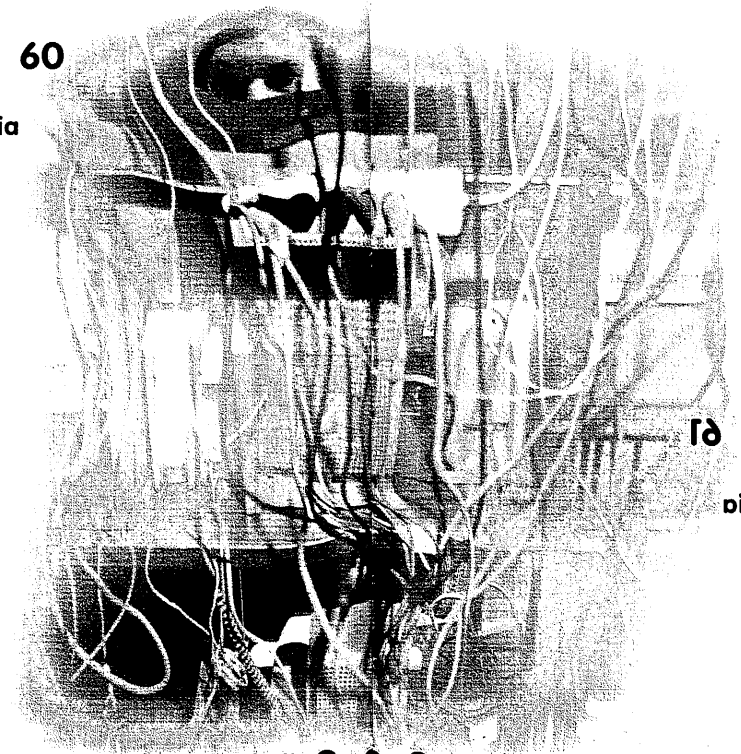
Information, in the eyes of early cyberneticists – Claude Shannon, Norbert Wiener, Heinz von Foerster – was the degree of organization in a system. Entropy, in this sense, was the degree of disorganization within that same system. The amount of entropy is the negative of the amount of information. Every closed system tends towards a state of full entropy, according to the second principle of thermodynamics ("spontaneous reactions always evolve toward a state of maximum disorder"). Therefore, entropy is the most probable state of any system, information the most improbable state.

From this Norbert Wiener arrived at a fundamental insight into communication: "The more probable a message, the less information it gives." This proposition was subsequently paraphrased by the media philosopher Vilém Flusser to read: "The less probable a message, the more informative it is." Everything that behaves normally is probable and therefore non-informative and trivial. This is why in the mechanical worldview the universe contains hardly any information at all. Only what is weird, deviant, inscrutable and unpredictable is informative. This is exactly what classic natural science overlooked, fascinated as it was by the little bit of order it was capable of describing. The little bit of order that, according to that same natural science, spontaneously tends toward entropy.

Norbert Wiener: "Life is an island here and now in a dying world. We are not stuff that abides but patterns that perpetuate themselves. The individuality of the body is that of a flame rather than of a stone, of a form rather than of a bit of substance". (The Human Use of Human Beings, 1954). But how does life become "informed" in this universe that tends towards entropy? Humberto Maturana and Francisco Varela, in The Tree of Knowledge (1989), pointed out that if you study a living system at the molecular or atomic level, you will find no life there. An atom couldn't care less whether it is part of an organic or of an inorganic system. It will behave according to the applicable laws of physics anywhere. Every living creature, from microbe to primate, can be described at the molecular level as an extremely complex, non-living piece of machinery. At higher levels of perception, however, from cells to tissue to organs to bodies, this no longer holds. There, the organism is alive. Life, and intelligence and consciousness as well, are properties of a complex dynamic system, properties that only exist to observers outside the system because within the system they cannot be located.

Information is not material; it exists only figuratively. If someone

Media 60

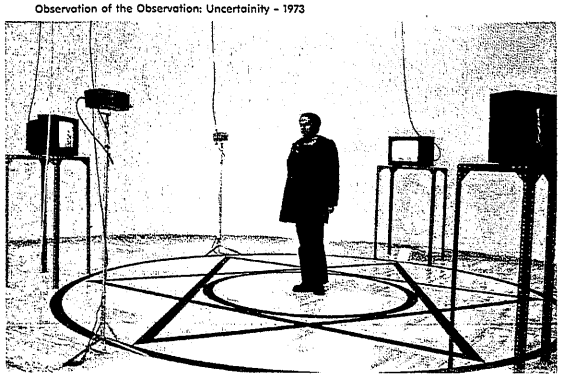


Media 60

Peter Weibel

about psychology, but about material and technical deconstruction, and from there to mental deconstruction, mind expansion. The end of painting came with noise – you could call a Pollock painting noise – and abstraction. Media art started with noise and abstraction; when you amplify a video head you get noise, you have nothing. Therefore it is very strange to anthropomorphize it again, like Bruce Nauman is anthropomorphizing video to give it back a soul. By using video to make beautiful images and even go so far as to refer to the history of painting, as in the triptychs by Bill Viola, you give the art world objects again; you fill rooms with objects. But in effect this practice blocked and stopped the development of video, and was one of the reasons why artists hooked up to computers.

Observation of the Observation: Uncertainity - 1973



The computer offered a possibility already present in video called closed circuit. You can become part of the image you are looking at; you are part of the system you observe. This was the beginning of interactivity. Interactivity takes a pragmatic approach, since the image is not syntactically or semantically defined but defined by the behavior of the interpreter, as in music. With this emancipation of the spectator the role of the creator is relatively reduced and cut down. A similar thing had already happened in the classical avant-garde music scene with Schönberg. Adorno wrote that the tie between music and ear was cut. That is a good description of what avant-garde is about: you don't have an immediate understanding of what you hear or see. Because popular music uses a melody, its structure is comprehensible. That is why popular music can never really become art. It is on a low level of complexity where your ear immediately hears what it is. In a more complex structure of music your ear can't follow it anymore and you need a concept to understand what you're hearing. This is also true for a certain kind of art practice, be it in painting or in video. Avant-garde is always theory-dependent, like modern science, like nearly everything in the modern world.

Are you saying this is also true for interactive art?

Media art has become so complex that there is no natural tie anymore between image and spectator. The spectator has to operate in a conceptual framework. The spectator has to make the tie himself and create some meaning to it. Interactivity is not just that you can press a button. In good interactive art the semantics of what you see and hear is partially created by you; in bad interactive art the relationship between artwork and user is only mechanical. The problem though with computer installations is that they still are locally bound and only work one way. What you do has effects on the image, but not vice versa.

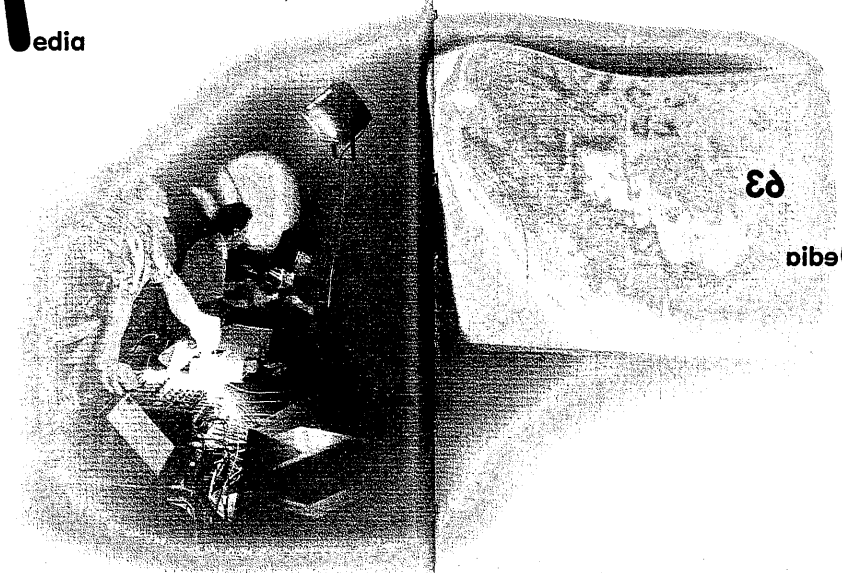
That is why I became interested in net-based installations. A video game remains inside the computer in front of you, but with an internet game your partner can be in Sydney or in Amsterdam and your doings here have an effect there and vice versa. Thus the relation between spectator and image is bidirectional and non-local. This opens up new structures of communication. And that was what the avant-garde art of the 20th century was about: the content and structure of communication. Take the red painting by Rodchenko: there was no content – a red color is no content. But it was changing the material level of painting; it was changing the structure of communication. At the beginning of a new content you'll always find a material revolution. Media art has no content anymore in the classical sense. The content is a structural change or

addresses you, nothing from that person's body penetrates into your body. The only thing that is being disturbed is the equilibrium of your ears and auditory nerves, and your body reacts to this by neutralizing this disturbance. This is what we perceive as hearing. Living systems are "autopoietic"; they are closed systems that continually generate themselves just by continuously correcting the disturbances in their state of equilibrium caused by breathing, eating, sensory impressions and internal shifts. If it no longer succeeds in doing this the unstable system resorts to a stable condition: death.

The world can be understood, but what is understanding? It is different when you participate in something than when you watch. It is different when you describe something in words and symbols than when you intervene. It is different when you write than when you read. By denying the role of the observer Newtonian mechanics has in fact only studied nature's "intentions" – the laws of nature in their pure form – but not what nature perceptibly does. In the 20th century the roles have been reversed, and not only in the natural sciences. "Not the intention of the author but the effect his words have is essential" – this was the starting point on which Marshall McLuhan based his media theory. "The listener, not the speaker, determines the meaning of what is said" – this was the insight on which Heinz von Foerster based his cybernetics of cybernetics. Perception and that which is perceived are equally unstable.

Chaos

It is the unstable world that entices Ulrike Gabriel to play. The world where everything is always different, depending on your position and velocity. The world of the unstable media – "media" seen as anything that can contain or transfer information, "information" seen as the relationship between triviality and improbability. The fact that I can write this and you can read it is, in the light of astronomical, geological and biological evolution, highly improbable, and in that sense highly informative. Our wonder over this fact and our awe of it form the



religious dimension of unstable art. Life is no doubt an island in a sea of chaos. But not all chaos is entropy, end point. Sometimes it can be a beginning, as was discovered at the end of the 20th century. Chaos is the mother of all information.

Until far into the 1980s, the apocalyptic mood was a defining property of 20th century consciousness. Miscegenation, heat death or cold death, hails of bombs, fall-out, meltdowns in nuclear power plants, acid rain, poisoning of the environment, AIDS: everything seemed to point in the direction of total entropy. Then, shortly before the turn of the century, the eyes of science suddenly turned energetically toward all those phenomena that until then had to be repressed in order to keep stable the mechanic, thermodynamic and quantum-mechanic worldview, even if the fears and desires repressed in the process had continually recurred in popular culture and politics. It was now discovered that within turbulent, fluctuating, principally uncontrollable processes and "far-from-equilibrium" states, there was an amazing order at work, as long as you applied a simple mathematical formula to them.

It started in meteorology, that nightmare of everyone who believes in the predictive capability of natural science. Edward Lorenz demonstrated that the weather is so dependent upon minor variations in any of its many determining factors that long-term predictions are in principle impossible, even with the best computers. But the fact that the weather is unstable does not imply that it cannot be described. Within this chaos there is a stable structure of infinite complexity, which Edward Lorenz – to the astonishment of the scientific community – managed to lay down in a handful of nonlinear formulas. After this, other principally unsolvable problems were identified in other fields as well. Benoit Mandelbrot demonstrated that the length of an irregular entity – the perimeter of an island, a tree, a cauliflower, a cloud – can never be absolutely determined, since it depends on the distance between the measurer and the object to be measured. From a satellite the perimeter of England has a certain length, from the ground it is much larger, and on a molecular scale it is almost infinite: the coastline is fractal. Mitchell Feigenbaum

Peter Weibel

revolution on the material level – what I would call the "dispositif." Unlike in other art forms, in media art there are still revolutions to come on this material level, on the level of deconstructing the dispositif.

At the same time it can be said that the technical media have claimed representation. Photography, film and later television and video are capable of far more precise and cheaper representations than brushes and paint, for example. The function of representation has gone from the art image to other technical images. The use of photography, film and the other new media in representative ways succeeded more triumphantly in 20th-century science. Therefore we are facing another problem now: What to do with all these technical images of which only one percent is considered to be art? What do we do with all the images created by astronomers, Hollywood filmmakers, mathematicians, journalists, medical scientists ... Up to 20 years ago medicine was a kind of musical art form. The doctor got the information by listening to the sounds he got from the body of the patient. A doctor diagnosed a patient by way of ultrasounds, a stethoscope, et cetera. But today's advanced computer systems can make pictures of practically every zone and layer of the body. Medicine has become a visual art. And if we were forced to make a judgment about which kind of pictures is most needed today, the images of media art or the images of medicine, I'd have to say the medical science pictures.

So the true revolution of the media was not just the emancipation of the spectator and listener, but also the abdication of the artist as the one and only creator of images. The first battle started with the invention of photography in 1839 and was about the question: what kind of technical images can be art? That battle is won: today many people who work with photography and video and computers are seen as visual artists and accepted as such by galleries and museums. The next battle is about the question: what is the direction of art in the dialectics with all the other classes of experts who can make images? We have to rethink the relationship between technical images and art.

The source content of successful media art today is mainstream cinema, coupled with the technique of the avant-garde cinema of the 1960s. We invented techniques like time dilation, but we created our own images. Douglas Gordon takes Psycho and extends it to 24 hours. I think that's a wrong relation to mass media. The relation should not be to popular mainstream cinema, but to the real competitors: images created by scientists. It is important to find out what the difference is between our work and theirs. Or maybe make an alliance. We should overcome Hollywood cinema, invent new strategies of interactive cinema, with virtual worlds, et cetera. We should tread again in the spirit of the avant-garde, to again create new methods for the encounter between spectator and image.

One of the problems with interactivity you mentioned is that people just want to push the buttons. That seems to be the normal reaction: how can I do something with this installation? This means that the image isn't really important anymore. The artistic material is the interaction, not the imagery. Which suggests to me that we're leaving the idea of the image as the central locus of art behind when we get into interactive art.

I agree that in interactivity pressing buttons has become more important than the image. The image in its function of representation has lost its appeal. What has become important in interactive installations is that one's actions affect the image. Even in some works here at the ZKM the image still represents something. I'd say that avant-garde interactivity should be replacing representation by processing. Since the process is important in interactivity, the image must have something of this processing. Groups like Knowbotic Research succeed in doing so. They offer no nice images; no trees, no buildings, no plants. They show interactivity itself. They understand that the image should deal with processing, not with representation. Art has to leave the ruins of representation and move into practices of processing. In the words of Manuel Castells, when you show processing, instead of the flow of power you have the power of flows. Even in society the process of information is now the driving force. We no longer have a society of flesh and bone, but a society of information processing. Money, information, data are being shuffled around the globe on an enormous scale. If you make an anatomy of society, you should give windows into this processing of data that governs the world. That is exciting. That is the true media art of today.

summed up this insight in his precept that from a certain distance objects and processes lose their meaning. This is to say that the degree of understanding of the world depends on the distance between the observer and the observed. If something makes no sense to you at all, then stand a little closer or further away.

This same total relativity and destabilizing of observation and the observed that was such a destructive experience to twentieth-century humans enabled chaos theory to come to the realization that the certainty, durability, stability and timelessness for which the classic natural sciences (and arts) had aimed were not the most interesting states in the world. A non-trivial, dynamic order can be found anywhere where nature organizes itself and becomes more complex as time goes by, against all the laws of probability. "Irreversibility is a source of order at all levels. Irreversibility is the mechanism that allows order to come out of chaos" (Ilya Prigogine). For centuries we have mirrored ourselves in stable images – in drawings, paintings, graphics, sculpture, photography, film, video. Even music, the most unstable of all media, could be recorded in scores, on gramophone records, tapes and compact discs. Even ballet. But at the end of the 20th century we see unstable media, unstable art, where the repressed ephemerality of the world is festively celebrated in all its once-only-ness. Celebrated as complexity through simplicity – made possible by that same computer that through sheer calculating capacity uncovered the regular irregularities in the weather, but also in rapids, animal populations, the price of cotton, serrated coastlines, boiling water, clouds, heartbeats, and in the images you can conjure up via software by breathing, by not thinking, by forgetting all known meanings.

Barney Haynes – ***The Shopping Cart (V2 – 1992)***
Shopping for 'art' with a supermarket cart and barcode reader. The space contains barcodes that when scanned activate a videodisk. The images are displayed on the monitor in the cart.