Read_in (Düsseldorf), digital print/drawing on canvas, 200x200cm, 2003

tracer pattern II, screen shot of the interactive installation, 1998
Ursula Damm navigates spaces. As long as I have known her this has been her main occupation in one form or another. I recall her gait at the Art Academy in Düsseldorf that I watched from a distance and even then it struck me that the person coming towards me was somehow navigating the space of that long, endless corridor in a different and definitely less earth-bound way than many. Looking at her artwork over the past years, the spatial aspect has always dominated in some form and her ability to turn what could almost be termed a scientific research project into something visually exciting is for me the core of the work. Assuming that Ursula Damm could just as easily have found her way into pure science, the respect that her work commands is one quite different to the subjectivity often associated with an artistic production. From her sculptural roots that moved into a virtual space, to dynamic architectural arenas and the visualisation of human movement - if one were to analyse the movement through the work as one that is physical, perhaps one could say that the camera perspective (angle) has constantly increased until, as in the most recent works, one has a bird’s eye view of her production. Ursula Damm’s interest in the interior and exterior, i.e. programming and interface, or re/search and re/sult, or even local and global leads me to believe that she is in a strange way attempting to leave a particular state of being in order to discover another. Could this be the age-old desire to fly? To view the world at an angle known only to birds and the wind? Increasingly the works have a real oddness about them, they defy categorisation, which naturally makes them troublesome, as the viewer has to weave an individual vocabulary in order to assess them.

Ursula Damm embraces a multi-tiered approach not only through the utilisation of images formed partly through technology, but also through the usage of waste-products - possibly the stuff from which science is made - and lastly her passion for the interactive about which we have argued many a time!

The complex reflection on an analogy between space, time, the human and flight all find expression in the work of Ursula Damm, perhaps the question is not when will the clouds be sculpted but from whom.

Katja Davar
After 1989 a series of drawings of geometric patterns, to be considered as mathematical descriptions of space, evolved out of earlier sculptural works. Space became declined in its proportional rhythms of finite and infinite dimensions and recursions. The pattern drawings which developed are a canon of shapes intended as the foundation for large-scale urban planning. The polymorphism of the patterns enables individual elements to be inserted into already existing proportions, generating a calculated description of the “new” from the already existing “old”.

The result of these calculations was a set of basic geometric forms with a long-range effect forming the basis of the first interactive installation “trace pattern”. In this installation patterns are automatically calculated and linked to the movement of people walking in a particular space. The resulting proportions can be examined “virtually”.

from patterns to traces
For “inoutsite” (see also http://www.inoutsite.de) a tracking-software was developed specifically for the surveillance of public spaces (programm authors: Thomas Kulessa and Matthias Weber). This experience with the machine processing of traces of movement brought about a gradual shift in the main focus of the work - from the construction of descriptive models to the observation of movements. In the installation of the “inoutsite” project the frequency of visits to the site under surveillance was analysed and then translated into image and sound. The resulting virtual three-dimensional shapes can be considered as the first virtual architecture.
memory of space is one stage within the framework of the inoutsite project that depicts space in its temporal alterations and explores how individual experiences of “space” generate the social construct of city. To what extent is the experience of a public space conditioned by me and my (unique) memory—to what degree is it determined by the conventions that result from social interaction with others and from architectonic/geographic factors?

In this case, an large, much-frequented square is monitored by a central camera. The video signals are passed on to two computers which edit the material. The first computer screens an image resulting from an analysis of the movements of people crossing, meeting and/or lingering on the square. Based on the collected movement data of the previous few hours, the second computer calculates an image describing the qualities of the place.

The installation “memory of space” links local and geographical dimensions. An aerial view underlying the virtual scene enables an examination of the virtual picture with regard to its potential relationship to large-scale axes.

At the base of the virtual picture is a grid-like system of coordinates, via a self-organizing map (a simple, neural net), is distorted according to the actual usage of the place. At the same time walking speed and direction are applied to the coordinates, pulling them along their direction of travel. A video-texture comprising the video image of the tracked place is mapped onto the coordinate system offering the viewer references to the real place.

As a result of this investigation, the monitored place can be divided into “territories”: areas of rest and walking lanes. These lanes are inscribed as “networks of corridors” (grey lines) onto the distorted (by the movements) reproduction of the square. The remaining spaces—the places where peoples showed a tendency to dwell (walking speed = 0)—were marked red.
In the context of a public competition to design underground stations for the “Wehrhahn” train line in Düsseldorf this first draft of the project “memory of space” was developed. After a number of selection rounds this project was chosen for the planned underground station at Jan-Wellem-Platz. This is the version which was originally planned for another site: Graf-Adolf-Platz. A camera monitors the space.

The surveillance situation at the square is resolved in such a way that the “actors”, standing at the edge of the square, can observe themselves in the virtual image. On the one hand the underground station prepares the arriving passengers for the square they are about to enter; on the other hand the floor projection on the mezzanine level lures those visiting the square down into the underground.
As the result of an anonymous, nationwide call for proposals the work “flyover” was nominated to be realised at Brandenburg Technical University in Cottbus.

The concept was to install several dovecotes in the faculty gardens on campus. A virtual well – in which instead of water a video could be seen - was to be placed in the middle of the dovecotes. This well is the spatial and conceptual centre of the work. Over long time spans the flight patterns of the doves are captured and visualised in the video. The structure of the flight paths should illustrate a model-like view of the cohabitation of the birds and offers the opportunity to compare our behaviour with theirs.

The well consists of a square shaft made of bricks, which is sunk about 3m into the earth. This facilitates the darkness necessary for a video projection. The video shows the sky above the dovecotes as it is recorded by a camera installed on site. It creates a virtual water level which seems to mirror the sky in its surface.

After consultation with a dove-breeder a two-storey tower has been designed which is particularly suited to carrier pigeons. The presence of the dove-breeder was to connect university life and research with the experience of folk traditions.

A video difference filtering software computes the position of the doves from the image and writes the flight paths in real time into the video image. In the course of a day, based on the traces of the pigeons, a line drawing evolves. This, with its (chaotic) structure, examines the compatibility of the surrounding architecture and its arrangement (right-angled) with the geometry of the natural movement of the birds. The birds whose direction of movement is not dictated by paths, benches or buildings allude to a freedom beyond the predetermined structures on the campus.
Maquette of the dovecote for the Technical University Cottbus campus, wood, clay, Plexiglas, 70 x 90cm, 1999.
Screen prints of the interactive video with the traces of the doves
is an installation which investigates the swarms of midges that can be found on the banks of lakes and other bodies of water. Swarms of midges are intriguing entities: without any apparent logic they form at irregular intervals along the bank: towers of midges flying in circles - although it seems that their flight path is in fact angular. It is as though they fly in one direction, then they suddenly stop and fly off in another. Each swarm develops its own speed and rhythm. And each swarm forms itself into an axis which is circled by the midges in both directions: a flying double-helix.

The swarms are made up of male midges aiming to attract females for mating. Attraction and courtship occurs by wing beat which differs between the male and female insects.

Based on these characteristics a video and sound installation is to be developed. In order to observe the swarms they will be attracted by sounds of the female wing beat. Various sound sources (loudspeakers) will be distributed at intervals in shallow water. At a suitable distance from the sound source a video camera will be located on the bank to record any swarms which may form. The camera is set up on a platform which can be accessed from the bank. Passers-by can approach the camera and look for the swarms in the viewfinder. If a camera detects a formation it then remains still, a video image is recorded and is sent to a central computer.
A special software analyses and interprets the video of the midges. In order to be able to visualise the flight paths and organisational structures of the swarms, the flight paths are inscribed onto the virtual image. These paths remain temporarily visible on the computer screen functioning as nourishment for the virtual creatures whose purpose it is to identify the movement-traces of the flying objects. By following an evolutionary process where individual shapes and characteristics are inherited, the creature can adapt to the flight paths and develops a graphical/spacial structure which best represents the flying swarms of midges.
the geometry of the self: topology

Between 1983 and 1986 sculptures using earth, sacking and wire were developed which were a representation of the artist's physical perception. The wire was the frame, the earth provided the weight/gravity and the sacking and the way in which it was cut supplied the form. The forms both opened and closed towards the outside, the transition from inside to outside referring to the behaviour of communication.

The sculptures are derivations of the Klein Bottle - a topological shape which, despite its apparent volume, is made up only of surface. Neither the inner nor outer skin of the surface can be defined as they merge seamlessly together.
Inside-outside, earth, sacking, wire, 250 x 150 cm, 1986
The work W-ort (a play on words in German meaning word/place; Wort = word, Ort = place) is a visualisation of internet communication. It interprets communication as a topological structure. By offering a discussion forum about the works in an ongoing exhibition it translates the discussions about the different artistic positions into a dynamic architectural space which alternates between interior and exterior. W-ort.net is a self-generating dynamic entity which feeds on texts entered by visitors to the internet site. The "primeval soup" of this organism are texts about their works from artists who participated in the exhibition hell-gruen.

Descriptions of works are generated defining an artistic position against a semantic context and against related works. W-ort.net converts a topology of thought into a virtual 3D-topology.

W-ort filters out significant keywords from the texts. These words position themselves in the three-dimensional space, cast their spell on the visitor and grow with every operation that they undergo. They generate connections to their surroundings: to other geometrical objects, which like them are representatives of semantic fields, and which - as a result of audible similarities - form phonetic groups. In this way theoretical positions of artists become onomatopoeic positions. These locations, represented as hollow half spheres, grow when they are visited and form shafts which also grow fatter every time they are used.

**relation behaviour - topological form**

- hole
- sphere representing a w-ort-object
- sphere with one branch line
- orientation against visitor
- open w-ort oriented to www-links
- closed w-ort internal conversation
- links to www
- links to www
- open w-ort oriented to www-links
The actions of the visitor are evaluated as either an internal or external activity. This is then added to the statistics which construct the geometry either as an open or closed form. W-orts are generally interiors (spheres) as they are made up of texts from the internal discussion (exhibition, visitors).

Internet links represent the exterior – if they are selected the half spheres fold back outwardly over themselves (like chalices in the process of shifting their centre to the outside) a process which, in the event of the link being integrated into the group of w-orts, culminates in the envelopment of the original w-ort. In this way a topology of the exchange of information comes into being.

The meanings and sounds of the w-orts are constantly altered through the transposition of letters, inviting us to free association. The distances which are normally created by "definitions" of personality and work are disbanded here in favour of a mind entity, which attains its meaning from the formal structure of the forum. Topological shapes form interiors and exteriors which represent the communication structure of the site and make it accessible on a virtual level.

The version which is currently online is based on texts from artists participating in hell-gruen, an exhibition in Düsseldorf, Germany. In this case the documentation and descriptions of the works are the foundation of the database.

The data entry in w-ort happens in two ways: firstly there is the initial entry of the texts by the artists about their works which then form the foundation of the database. Secondly there is an "observer" which registers the navigation of the visitor, any text entered and any texts read (time spent on an artist's text) and then writes this into the database (user statistics).

It is possible to access the artist's texts directly under their name in the login window created in flash. Keywords can be both entered by hand, defined by the user, or generated automatically. Currently the keywords are ordered according to their spelling and are then merged into one another. By clicking on the keywords the visitor arrives at the text shell in which, if registered on the site, he or she can continue writing the artist's texts.

by clicking on the w-ort objects you gain access to the artists' texts and are able comment on them

by clicking on the red cubes you are directed to internetlinks related to the topics of the w-ort object
The world today is a world of machines. We live surrounded by machines; they make everything imaginable easier for us, they help us in work and in leisure. But what do we really know of these beings, of their moods, their souls, their habits? [...] The machines reproduce themselves a lot faster than human beings, almost as fast as the most fertile of insects; they already force us to look after them, to spend a great deal of time on their care; they have corrupted us, we have to keep them clean, feed them and let them rest, we have to incessantly examine them, to make sure they want for nothing. In a few years we will be their slaves.

The artists are the only ones who can save mankind from this menace. The artists have to take an interest in machines, they must leave the romantic brush, the dusty palette, the canvas and frame behind them. They must begin to learn the anatomy of machinism, machinism as a language; they have to understand the soul of the machine, entertain them by making them work against their specifications. They should make works of art with just these machines, with just these methods. [...] The machine of today is a monster! The machine must become a work of art!

DP: This text written by Bruno Munari in 1952, describes an ambivalent relationship to the machine. Invented to make people's work easier, to provide assistance, it subversively threatens to subjugate our working routine to its ways of functioning. Munari declares that the machine corrupts us, which we could interpret as in effect saying that the machine takes away our ability to think, that the system created by it conditions our daily life and leaves very little space for individuality and fantasy. Like Munari you don’t seem to trust the machine completely. Alongside your computer based installations you frequently make works that use classical techniques. In these works your personal handwriting in the form of watercolour drawings is overlaid with existing, mostly technological images.

UD: At the beginning of a work there is always a sensory form, which is or has been created using basic principles of spatial design, which can be varied and practically applied, and which, in a continuation of the golden rectangle, produce a mathematically describable, perceptually tested concentration of digitally captured patterns of movement, which are not only generated by people but also by other organic creatures, for example in your works “doves” or “double helix swing”. The bred “animals” were determined by the system, which was defined as a world of midge swarm movements. How these animals are able to live there is revealed by their appearance and patterns of movement. I can never say how this world will look in half an hour: What we can see on the monitor is literally dependent on the wing beats of a single midge. Unlike sculpture, I’m not creating something here that stands functionless in a space, but developing creatures that engage in a dialog with something outside themselves and through this achieve their quality.

DP: You’ve also decided to work with the machine “computer”. What strategies have you developed to use the computer as interface, that is as a machine that reads reality and makes a digital representation of it. The possibility of using a machine to plot movement traces and developing programmes to analyse them became the subject of my work.

DP: Our conception of machines is that they develop completely ordered systems. In daily life the computer is almost always called upon to execute sterile processes. Munari recognised this danger and countered with the work “Aritma” which breaks this regular rhythm and follows its own rules. You’ve also decided to work with the machine “computer”. What strategies have you developed to solve this problem?

UD: John v. Neumann developed the computer as a machine that can reproduce itself. This concept already contains the idea that a machine can itself invent something that lies beyond our (human) imagination. This hope led me to the strategy of formulating my works in the form of computer programmes. In “double helix swing” a biological system is simulated which can breed characteristics and abilities.

DP: What are your reasons for wanting to virtually imitate life?

UD: The experience of making the work “double helix swing”, which is based on genetic algorithms, dominated by a process of “letting go” artistically. The appearance, form, colour and size of the bred “animals” were determined by the system, which was defined as a world of midge swarm traces. How these animals are able to live there is revealed by their appearance and patterns of movement. I can never say how this world will look in half an hour: What we can see on the monitor is literally dependent on the wing beats of a single midge. Unlike sculpture, I’m not creating something here that stands functionless in a space, but developing creatures that engage in a dialog with something outside themselves and through this achieve their quality.

DP: In your “in situ” installations you developed virtual sculptures resulting out of an encounter between space and time. How do you portray the meeting of these two concepts? What part does the human being play in this?

UD: The basic concept of the works using video tracking was that space attains its quality through being used by humans. Space attains from them its characteristic as place. This is the reason why I used a neuronal net in “memory of space” which simulates the perceptual mechanisms of the brain. This net, which is stretched over Grabbeplatz in Düsseldorf, receives its stimuli in real-time from the movements of the passers-by. It receives pure impulses without any qualitative information, but still manages to represent the space usage and the habitual movement specific to the place.

DP: You develop virtual spaces which cannot be entered and don’t exist. For you, place is a concentration of digitally captured patterns of movement, which are not only generated by people but also by other organic creatures, for example in your works “doves” or “double helix swing”. Thought seems however to also play a fundamental constructive role, this is inferred by the wordplay contained in the title of your work “w-ort.net” (Wort = word, Ort = place). Is it the word that ultimately determines the quality of the place? Can the place itself evolve as an artificial brain?

UD: That’s a difficult question. Language is foreign to the computer at least in terms of it having semantic content. Because of this computer generated systems can’t (as yet) deliver formulated thoughts completely. As I was doing this I suddenly discovered how exciting it can be to...
Bruno Munari, Far vedere l'aria,
Interview by Danièle Perrier with Ursula Damm, 15th of March 2004

Like to lead the viewer. This process brings with it a "dis-illusionment", a loss of our preconceived assumptions about ourselves. This process is a recognition in which we repeatedly learn how inadequate our knowledge is. The machines teach us far more about those things that we haven't yet understood about ourselves and our environment, than that they are all powerful.

UD: "w-ort.net" is intended as a design concept for a topological architecture, an architecture that deals with "outside" and "inside", with belonging and exclusion. Concurrent with the opening of the exhibition "hell-gruen", for which "w-ort.net" was developed, Anish Kapoor was showing his work "Marsyas" in the Turbine Hall at Tate Modern. In this work I discovered the same spatial principles that I had explored in my work: at the entries and exits of the hall were the trumpet-like openings of a huge PVC sculpture that connected the significant places in the space with each other. In principle Kapoor had built in real space that which I had virtually constructed in "w-ort.net". He had produced a static work that symbolically described the function of the space. "w-ort.net" on the other hand constantly regenerates itself and changes when people engage with its texts. "W-ort.net" builds itself out of the social interaction of the participants. It is then a process of recognition in which we repeatedly learn how inadequate our knowledge is. The goal of my work is to influence the processes of life from within the virtual, whether in "w-ort.net" or the shaping of cities. This is a communication about one's own work as in "w-ort.net" or the shaping of cities. This won't however just be about having access to the means and the commissions to convert the virtual into the actual. It is equally important to understand that when writing a computer programme we are formulating real issues and functional relationships. In recognising this we discover that our tangible, formal achievements are a poor reflection of the actual processes that are taking place. At the moment the machines teach us far more things about those things that we haven't yet understood about ourselves and our environment, than that they are all powerful. It is then a process of recognition in which we repeatedly learn how inadequate our knowledge about ourselves is. This process brings with it a "dis-illusionment", a loss of our preconceived conceptions of reality, but counters by allowing us to discover the complexity of our world anew, a polymorphism which we can only approach in our imagination. It is into this process that I would like to lead the viewer.

Interview by Danièle Perrier with Ursula Damm, 15th of March 2004

1 Bruno Munari, Far vedere l'aria,
works on DVD

1996  trace
1997  trace pattern I
1998  trace pattern II
1999  inoutsite I
2000  inoutsite II
2002  memory of space
1999  doves
1996  the gift of love
2002  w-ort.net
2004  double helix swing

internet resources

http://www.khm.de/~ursula
http://www.inoutsite.de
http://www.w-ort.net
http://www.handscape.net

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