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Pictorial Space in Electronic Art

There is no excellent beauty that hath not some strangeness in the proportion.
Francis Bacon

1. MODERN SPACE AS EXPERIENCE OF TIME

The representation of three-dimensional space on the two-dimensional plane of an image – what I would want to call the pictorial space has been subject to enormous changes ever since the days of cave paintings. One of these radical thrusts was the invention of perspective in the Renaissance. A profound change of paradigms, comparable to the invention of perspective, and an upheaval in the representation of space takes place at the moment in the field of electronic media art. The visible characteristic of this change of the pictorial space is the transformation of space into space-time. In the electronic media, space gains the factor of time. Related to this is a number of relativizations and mobilizations of quantities that had up to now been constant.

Even the size of things became relative, not only to be increased or decreased in context but also independent from one another. This relative size of things, independent of their natural measures, this random scaling, also renders the positioning of the objects independent, random, free-floating, not only in context but also separated from each other. In the new pictorial space, the objects of the world are transformed into free-floating symbols of random proportion and scaling, i. e. their size to themselves and to each other becomes relative and variable. This relative, random proportioning and scaling, however, can not only concern the individual objects but also their contexts. Thus, I am able to enlarge, diminish or dislocate entire fields of objects, photographically or digitally. They become mobile images in images. I can also understand the objects themselves as images and use their mere outlines as frames for new objects and images (marking or keying technique). These various methods that will be described in more detail later on, turn the formerly one-dimensional space itself into a multi-layered and multi-dimensional one.

However, this radical change has not met us unprepared; as we shall see, it had its fore-runners in the medium preceding the electronic art, namely in painting. Painting itself had to react to the changed concept of space and to the experience of space that had been changed by railway and airplane with a view to time. The mediatization of space, i.e. the vanishing of natural space, that can be experienced exclusively by our senses has taken place on various sensory and social levels as early as the turn of the century caused by telegraph, newspapers, etc. and by the revolution in transport.

The radical transformation that our culture has been undergoing ever since can be described – according to Paul Virilio – as transition from geo-policy to chrono-policy, from space to time policy. And this change has already entered our everyday language when we answer the question as to the space distance "How far is it from here to there" with the time-parameter "it is so many hours away". We even say "it depends", meaning it depends on the speed of our means of transportation, as we have lost the feeling for the constancy of space since we no longer traverse space exclusively with our body; we have made the experience that the relevant speed of our artificial body (train, car, airplane) determines the duration of time we need to traverse the space.

The constant natural space has become relative. The experience of space has turned into an experience of time, depending in its size on the speed of the measuring apparatus. The increasing acceleration of space undoubtedly tends to efface space itself. The acceleration of space is in its tendency an implosion of space. If a satellite orbits the earth in 90 minutes, a

journey that a century ago took 80 days, even this being considered science fiction, we can hardly continue to speak of the materiality of space, considering the few inches that Austria, e.g. constitutes for the orbital glance.

Ilya Prigogine has clearly understood this change, space as an experience of time, replacing space by time in our description of nature: "Our vision of nature is undergoing a radical change toward the multiple, the temporal and the complex" (I. Prigogine and Isabelle Stengers "Order out of Chaos", 1984).

In the era of the theory of relativity and of the space-time continuum, space has somehow lost the ground under its feet. New Cosmological theories as well as practical life-experience of increasing speed and acceleration (time moments) have de-corporated and de-materialized space. Space no longer exists as a steady constant but as a scenario of significant. Space has left the domain of reality; by transgressing the perception – visible to the eye – of reality into micro and macro spaces, into micro-biological and interstellar spaces to which we can only advance with the aid of technical equipment, space as a solid corporality has evaporated.

Already E. A. Poe who considered his poem "Heureka" as his most important work, has attacked, in his "Marginalia" (1844) the erroneous idea that "we determine space as a sequence of objects", as "we describe time as a sequence of events". He has renounced the object-oriented definition of space ("the more objects the larger is space") as a wrong idea, and strived at an immaterial concept of space. No longer should objects and bodies define space but the spirit that is able to correct and vary space and spatial parameters such as distance and size at random. Consequently, he has made a distinction between "abstract" and "relative" distance. He analyzed, starting out from painting, the problem of natural size and artificial scaling.

When Poe evoked the spirit as the producer of space, he talked – in the language of his time – about the increasing immaterialization and coding of space as a scenario of spatial significant. For if space is no longer measured as a distance but as a duration of time, and if the duration of time no longer permits any real information on actual distance – as the trip to the airport of a city often takes longer than the flight to another city – if time duration and distance have no common measure, if they are not isotope and congruent, what then are the realities of space? If everything becomes near, it seems logical that space can no longer be measured as a distance. And when the close-by (the airport) often becomes more far-away (by the time used) than the distant (the next city), it does not make much sense to talk about space as nearness and remoteness, as distance then, the parameters of space lose their meaning.

Considering this enormous compression of space and time, the distance between Europe and America, some few centuries ago seemingly infinite, having been reduced to several hours by plane, what is left of volume, corporality and materiality of the space? In this de-corporalization and de-materialization of space, in which different heterotopic time-distances overlap in one and the same space and where different space-distances curve in one and the same time-duration, in these layered foldings of space and time – in which I would need one hour for ten kilometers and ten minutes for 100 kilometers – the realities of space get lost, space itself gets lost, only the significant of space remain. In fact, space becomes a space of symbols. By their nature, the significant of space are of a language character, they are symbols, elements of a code. In a work written in 1928/29, Herbert Bayer has defined present-day space as a multi-layered structure, as a "world of letters, with opposite-directional movements (russian ya = inverted R), with overlappings and dislocations. In modern space, substance is replaced by language, matter by code, body by dimensionality. In this space, a material sculpture can, by definition, only be out-dated and reactionary.

For which sculpture can bear witness of space when space itself has become mere language? The objectual sculpture of the past or the electronic sculpture? The classical sculpture with its

realities such as marble, wood, iron still clings to the natural, unmediated space of the past, it still knows the natural sizes, bodies, volumes and their counterparts, the holes; it still revels in the glory of the material. It is, therefore, no longer fit to articulate modern space. The space model of classical sculpture today is a forgery of nostalgia. Installations, performance, spaces as stagings of spatial significant, architectural furniture, metaphoric and models with their dislocated, refracted codes alone are still in a position to deal with contemporary space. The representation of space has shifted substantially: the sculpture as three-dimensional representation of space is historically limited by its materiality corporeality, etc. Above all, it lacks the most fundamental element of present-day spatial experience, i.e. time. At the moment, the mobile pictorial space of the electronic media is best suited to stage the temporal and spatial relations that characterize contemporary space experience. This is why exhibitions of objectual sculptures with their aggressive negation of truly contemporary articulations of space such as video installations, etc., are to be considered manifestations of the endeavours of reactionary and obscure opportunism.

Dislocation is a sort of inversion. From three-dimensional representation – the sculpture itself not being the space but only an image, although a three-dimensional image of the space, similar to the fact that a holographic image of space is not space itself – to two-dimensional representation. Inverse spaces therefore play an important role in contemporary pictorial space. We are confronted with the apparent paradox that space can be articulated better and more validly in the two-dimensional field of the electronic image, because it possesses time, than in the three-dimensional sculpture of material objects.

The prevailing primate of the pictorial space can be explained by the fact that all strategies that had been elaborated over the centuries in painting, photography, in film for the representation of space reach an ecstatic culmination in the electronic image. The forced perspective gets out of control. Space images move in images with mobile spaces. The objects and images randomly change their sizes and proportions, their positions and forms. To put it briefly: The pictorial space of the electronic image is the contemporary sculpture. This electronic sculpture alone demonstrates in an instant the complex and temporal space-experience of the contemporary world.

The fact that gravity is already neutralized in these images, while gravity in the three-dimensional sculpture only comes in as a problem, corresponds to the actual weightlessness of astronauts in space. The immaterial electronic sculpture, the unfolding of spatial and temporal relations in the pictorial space of the electronic image, takes the place of the classical material sculpture, because space itself has become immaterial and temporal. The experienced space itself being nothing more than the language of the significant, the represented space can best be characterized by means of language, by means of the code, by means of staged significant.

2. THE LANGUAGE OF THE SPACE

Considering grammar as the inner model of language, we ought to raise the question as to the inner model of space. What is the grammar of space? As described above, our model of space is characterized by everyday and cosmological space-experiences of our times, distant sound sources droning right in the room, the distant image of the moon through the window to be seen simultaneously with the close-up image of the moon on the TV screen, where the unlimited space of the cosmos interlinks with the miniature space of the electronic micro-chip, as illustrated by the film "The Power of Ten" by Ray and Charles Eames. "Natural" and "unchangeable" quantities and distances no longer exist in this space world, the large appears small, the small appears large, the near is far away and the far away is close by. This scaling, proportioning and positioning that can be changed at random constitute the very nature of the code. Thus, the coding of the space is a consequence of the modelling of space and of

semiotization and verbalization of space. The daily experience of cross-blending of macro and micro spaces, the changing and making insecure of standards resulting from modern transportation, no longer permit a simple universe without the dimension of time and without complexity. The language of space has become pluri-dimensional, multi-layered and temporal. Contrary to classical sculptures made of wood and iron, where spatial and temporal relations remain stable quantities, where space and time are frozen, the new language of space is the output of a grammar that produces an infinite number of models in which spatial and temporal relations are changeable. The large spaces of architecture and the small spaces of the furniture world become interchangeable images of one another. The large elements of architecture become the small elements of the sculpture. Sculpture works with micro-chips of architecture, architecture with enlargements of the sculpture. Micro- and macro-chips of the space constitute of the modules of a new language of the space in which miniaturization and large scale integration of architectural elements give proof of the codifiable spatiality. In the pictorial space of the electronic sculpture this play of spatial chips unfolds to its best.

The chip or integrated circuit (invented in 1958) may serve as a model of modern space experience. A micro-chip is a minute piece of silicone imprinted by photo-masks with up to 15 layers containing a maximum of 500,000 components of electronic circuits, so that hundreds of thousands of bits of information are stored and millions of operations that used to take enormous amounts of space and time can now be carried out in fractions of seconds and inches. The chip is a compression, a reduction of space and time, at the same time being an enlargement of its capacity. Thus, the micro-chip not only resembles an aerial photograph of a city, it is the city. The structure of the chip is reflected in almost all forms of life. The micro-chip is the true monument of our time because it expresses the enormous compression of space and time. Its mere existence has rendered the notion of a natural place, a natural space and a natural time obsolete. As an essential element of the third communication revolution, of the computer revolution, it has contributed to make our life-space a sort of large scale integration, permeated by time and space compressions, by paradoxical micro-chips and macro modules of time and space, as already William Blake had imagined them.

To see a World in a grain of sand,
And a Heaven in a wild flower,
Hold Infinity in the palm of your hand,
And Eternity in an hour.

The chip is one of the elements that have made possible the simultaneous invasion into the micro and macro spaces of the universe. The chip is an elementary part of the communication revolution to which electronic cinema owes its existence. Therefore, the electronic image can only be visualized by the space and time experience transformed by the electronic revolution. The pictorial space of electronic art expresses the distorting compression of space and the collision of the space significant in temporal shiftings of which electronic space-time consists.

Symbols travelling with electronic speed, transforming presence and past into a compilation of instantness, create a new spatio-temporal arrangement, time dislocating space or a location-less space, a location-less shell of space. These space shells transform into images of the consciousness. Thus, a journey into the internal is visualized in the external.

This new language of the space, these images of consciousness, i.e. the reconstruction of the world in consciousness, this shifting of space shells in space, etc. has only just now exploded, at a moment when the space craft Earth glides through global and orbital TV networks in a videosphere of thousands of images, but the fuse has been laid out in the history of modern painting and in contemporary media art (photo, film, video, digital).

We would like to outline the history of this new language of the space in the media painting,

photo, film and video and to present in a rather haphazard way some works and artists, standing for many others, as points of crystallization for items of development.

In his early days, between 1910 and 1917, Giorgio de Chirico had already painted the collision of spatial significant in his "metaphysical painting", thus opening up the new language of the pictorial space. His relevant aesthetic strategies were further developed by photography, film and video, and also by painting – see Magritte. In his paper "We Metaphysicians" (1919) he praises cubism and futurism for "having deformed, split up or elongated the visible aspects of creatures and objects", at the same time criticizing that they had also remained "under the spell of common sense". "My oeuvre signifies an enormous leap in the progressive development, in the complicated hustle and bustle of the arts". His metaphysic is founded on the characteristic sentence: "Absolute nonsense, if you consider that no distance exists in outer space. A non-explainable point x can be situated outside of a painted, described or imagined object, but also (and this is what is happening in my art) in the object itself". In de Chirico's pictures we therefore find the first examples of the "strangeness of proportion". Pencils are as large as the funnels of industrial plants. The infinity produced by the extreme forced perspective is being contrasted by immense enlargements of a glove.

Inside and outside are switched – a huge industrial plant is situated right in the living room. This interior of an apartment is therefore termed metaphysical. Clouds spring from the natural background into the unnatural foreground. A train appears, the great suppressor of space, the tower, the great module of architecture, the industrial plant. The machine of architecture, and the tower again, the monument of forced perspective that was to unfold its full effect in the photography of Rodchenko, Moholy Nagy and others. The motifs of train, tower, funnel return as fundamental elements in the works of Kounellis.

De Chirico achieved large scale integration of spaces by his famous method of putting panel paintings of spaces into other spaces and looking into further spaces through windows. Thereby he produced an imbalance of proportions. Vases became larger than towers, biscuits could take the size of buildings. By the dislocation of perspective, by interchanging background and foreground, with blackboards and easels he staged spaces in which the scaling was absolutely wrong compared to the natural one. This incongruity of nearness and distance, of large and small constituted the trans-realistic, metaphysical character of his paintings. De Chirico's interlocked, disproportional spaces upset the vision, they produced and represented the imaginary space of modernity.

De Chirico found his successor in the representation of space in the paintings of Magritte. Here, too, clouds en miniature enter the interior (poison)- the exterior and the interior switch places (the praise of dialectics). The manner in which Magritte uses mirrors and windows continues de Chirico's technique of new space arrangements in painting.

Herbert Bayer's photo-sculptures (a term created by Moholy-Nagy) from the 1930s transposes De Chirico's grammar of the space into photography. In "Knochen mit Meer" (Bones with Ocean, 1936), the familiar clouds are in front of a wooden wall instead of behind it, and they are wrongly scaled. However, the photo still reflects the classical division of space in painting, the division into foreground, background and middleground. The hole in the wall anticipates the masque technique used in film. Especially Kurt Kren's film "Asyl" (Asylum, 1975) is a further development. For several weeks, Kren cemented the camera focussed on an landscape. He placed a cardboard box with a hole in it in front of the camera and shot the autumn landscape by frames, i.e. in an extreme compression of time. Then he re-wound the film in the camera, closed the original hole in the masque and cut open a new one, through which he filmed the winter landscape for some time. Then he re-wound the film again, cut a new hole, filmed the landscape that had changed seasonally, and so on. The seven minutes of the film condensed several months of landscape transformation into minute spatial

segments.

These few selected examples of the simultaneous development of certain aesthetic strategies in painting, photograph and film could be continued at random. However, it was our main intention to illustrate the proposition that strategies of the pictorial space had been developed with increasing exactitude and imagination in all media over the last 70 years. As De Chirico had influenced Magritte and Herbert Bayer, Magritte influenced video artists. Take, as an example, "Transition" by Peter Campus and compare it with Magritte's "Das Glashaus" (The Hothouse) or Magritte's "Die goldene Voyage" (The Golden Voyage) with Vasulka's tape with the same title.

The collage, derived from cubism, is the foundation of this new pictorial space, to which the futurists added the time element. The former depicted an immobile object from different angles, the latter showed moving objects in different phases, undoubtedly influenced by the inventions of photography (Marey, Muybridge). In a concealed manner, the photographic collage also attacked classical space and introduced random scaling into the panel painting. In Bayer's "Der Kuss" (The Kiss) (1932), one can detect this in the two space-layers (river, loving couple) and in the unequal proportions. This photo already expresses the next step in the development of De Chirico's mirror and window technique, namely the matrix.

A matrix can be a series, a repetition of the same elements. But it can also have an overall structure, the entity dissolving into the parts of the matrix grid. A wall of TV sets is the simplest matrix. In, let us say 20 monitors, the same image can be shown 20 times, or one image can be fragmented over 20 monitors.

Thus, the kinematic matrix technique has developed from De Chirico's panel painting windows via photography. A film-maker like Peter Rose has created a model of the unfolding of space in time in works like "Studies in diachronic motion" (1975) or "Analogies: Studies in the movement of time" (1977) referring even in their titles to their photographic and futuristic heritage. For example, he establishes a matrix of 20 fields, where the image in its first phase of motion is projected into the first field, bottom right. The following motion phases take place either diagonally or in spiral form over the remaining fields of the image. The image (in the field) is set in motion by its moving over the matrix. When in today's digital video the image fields come sailing in, this acceleration of motion is the consequence. Here, for the first time, something has become evident that had only been hinted at in automatic dissolve, i.e. in the superposition of two spaces – namely that the space of cinematography and of the electronic image is neither isotope nor isochrone, but polytope and polychrone, multi-spatial and multi-temporal. The electronic space is a spacially and temporally multi-layered space that artists of the matrix in film started to explore by following in the wake of De Chirico's and Magritte's paintings, of the photography of El Lissitzky, Rodchenko, Moholy-Nagy, Herbert Bayer and others.

The next step was taken by the masters of optical printing who re-filmed a projected film, not only projecting the film onto an already running film but utilizing in these projections the possibility of diminishing and moving the screen of putting different filters in front of the projector and extremely manipulating the speed of projection (skip or step printing). Paul Winkler's films such as "Sydney Harbour Bridge" (1977) or Henry Jesionka's "Resurrected Fields" (1984) demonstrate by their maximum utilization of the effects of repeated optical printing, how the optical printing bank constitutes the missing link between film and digital video. By matting and with masque technique they elaborated a cinematographic space independent of reality. After De Chirico's panel painting windows in space, after Bayer's photo-sculpture windows, after photographic double exposure and automatic dissolve in film, after matrix, matting and masquing, space has finally been transformed into a multi-layered one. In her tape for the video installation "The West", Steina Vasulka has cleverly mixed the

multi-layer space of the digital video with the keying technique constituting a further development of the window technique. First, she blended background and foreground by a moving reflecting ball, then she blended (hardly visibly) other landscapes into the ball, different to the natural opposite ones. Then, she electronically keyed other skies into the horizons of the landscape, making the artificial electronically generated landscape appear nearly natural. Besides, she also shifted the spaces as electronic layers one over the other.

Jesionka is correct in writing:

"The space (in RESURRECTED FIELDS) (both sonic and visual) is regarded as an information environment. The space itself is substantial, with layers upon layers of packaged and wrapped-up information.

Seeing space as the Renaissance painters did, laying it out in a grid, as a cavity leads to tunnel vision, to fixity of viewpoint and perspective, to a concept of objects in cavities that show nothing of their interaction with each other. Viewing space as a continuous mesh of information, however, makes space more palpable and immediate and, should some information be removed, the viewer would feel a new pattern of thought. He would entirely re-arrange his information to form another plausible system. The Renaissance view made one desire to obtain the rarest and dearest object. The information-space view makes one desire to maintain coherence and equilibrium. One view treats space as an emptiness out there, outside of ourselves, the other view treats space as a membranous and breathing body, a package of living fluids in circulation that both contains us and is a macrocosm of our interior."

H. Jesionka

The digital window technique, in which any plane representation of space, in which any space image can be moved, deformed, spherically turned, bent, rotated, diminished or enlarged at random, is the temporary culmination of this development. Aesthetic strategies of the two-dimensional representation of space in painting, photography, film and video, developed over the decades, have become potent tools of digital art. The variety of the methods elaborated in the preceding media remains unimpaired. It is even necessary to apply the aesthetic strategies of the pictorial space simultaneously in painting as well as in video. Therefore, pictorial, photographic, cinematographic and video-specific techniques are applied in the functioning electronic image in order to achieve contemporary representation of space.