FUTURE CINEMA

The Cinematic Imaginary after Film

Edited by Jeffrey Shaw and Peter Weibel

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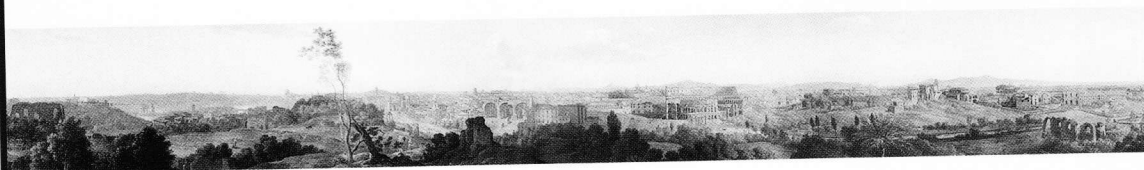Christina Zartmann

Susanne Jaschko
Space-Time Correlations
Focused in Film Objects and Interactive Video

Michael Zeno Diemer
Schlacht am Berg Isl
[Battle at Isl Mountain]
1896
oil on canvas
1000 x 10,000 cm
panorama
photo © Raiffeisen
Tirol, Arno Gisinger

Ludovico Caricciolo
Panorama di Roma
[Panorama of Rome]
1824
170 x 1340 cm

The Exhibition of Time Periods: the Moving Image

The close relationship between time and space has been a dominant theme in art for a long time – and still is. Long before the invention of panoramas at the end of the eighteenth century, painters dealt with the inseparable link of the two dimensions, trying to express different qualities of time and movement though space.

In contrast to these earlier attempts, panoramas string together spatiality and break the central perspective through isometry or through vanishing points in the painting. Although panoramas are nothing but stills proper, they helped to produce the illusion of movement by causing the viewer to move his/her eye over the picture, getting a notion of time sequence, or by moving the viewer him/herself, or the canvas. Panoramas represent therefore not only the extension of space through the positioning of stringing space together, but also the extension of time through the build-up of chronological time.

The need to present time and time-based periods in painting and sculpture culminated in the works of the futurists and the cubists, who now actually managed to form sequences of, and to abstract, single phases of the movement of the body through space and thereby produced new dynamic bodies.[1] Looking back on these early attempts to present movement and time at the beginning of the last century makes the discovery of film seem an unstoppable and logical cultural step forward. Film was born out of an ever-growing need, based on more than just one moment, rather to document and represent, respectively, a period in time. Within our visual perception, single pic-

tures shown one after another in fast succession came blended to a moving picture, which occupies clearly defined temporal frame, but also one piece defined through the position of the camera, the moving camera, the camera angle, the aperture setting, and the focus.

The first steps towards film were made by Edward Muybridge in the 1880s with his technique of "instantaneous photography." Muybridge used a battery of cameras (between twelve and twenty-four) lined parallel to the horse's path. A string running from each camera across the track was broken by the horse as it trotted or galloped, successively triggering the cameras to shoot. Then Muybridge's sequential exposures were projected at film speed and brought uncannily to life.

The French physician Étienne-Jules Marey found Muybridge's techniques and results problematic for several reasons. Because Muybridge used a different camera to record each new image of his subject, a single point of reference from which to evaluate changes in the subject's position was missing. Indeed, Muybridge's batteries of cameras, placed parallel to adjacent to the subject's movement, kept the relation between camera, subject and background consistent in each frame. It was also difficult for Muybridge to accurately and consistently measure the gap in time between each image, thus making it impossible to render a complete representation of the subject's movement.

Marey had, in Muybridge's work, examples of how not to photograph movement. His solutions, developed over the course of twenty years, were helped

1 Umberto Boccioni in the *Technical Manifesto of Futuristic Plastic*, 1912: "Sculpture must give life to the body, in which the extension of the body in space is represented in a clear, perceivable, understandable way so that today no one can claim that an item starts there, where another stops, all things, which are surrounding our bodies (bottle, car, house, tree, street), these things cut through it with curves and straight lines. […] again in sculpture as well as in painting things can be achieved, as long as one does not look for forms of style for movement. The futuristic sculpture would address the codification of the light-paths and the interpretation of body movement. Transparent glass and shiny surfaces, strips of metal, wires, internal or external installed electric light sources would give the painted layer, the character, the tone and half tone a new reality."

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Susanne Jaschko / Space-Time Correlations

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Joachim Sauter, Dirk Lüsebrink
Invisible Shape of Things Past
1995
virtual film object
Joachim Sauter, Dirk Lüsebrink,
Art+Com
© Art+Com

steady advances in photography as a whole, including faster and more stable film stock. His primary strategy was to record multiple images of a subject's movement on the same camera plate, rather than the individual images Muybridge produced. Marey's most aesthetically compelling invention was the cronophotograph: multiple exposures on single glass plates and on strips of film that passed automatically through a camera of his own design. The results were scientifically important, but also inspired artists such as Naum Gabo, and most well known, Marcel Duchamp's Nude Descending a Staircase.

The advantage of film was that one was able, for example to document time changes in cuts, whereas the first films that were produced were actually limited. Among the themes of the first short films, which could be filmed in one take with a static camera were everyday stories like the driving of a train into a station (Lumière Brothers) or people leaving a factory.

The next essential step leading to the art works of the present, which rather concentrate on the time-space relationships, and the moving image as metaphor and medium all in one, was the digitalization of pictures which is a fundamental pre-condition for the real time-interaction with the moving image. The viewer does not need to subordinate to a chronological sequence but is rather able to focus, for example, on single cuts of film or single areas of the picture. Digitalization and interaction enable an individual and complex representation of space and time frame in the virtual world by navigation along the time or space axis.

From Film to Film Object

Film material is always understood as meaningful in that it is fixed both in time and geography. Owing to the technical means of today, it has become representable as such in the context of its space-time expanse.

As early as in 1994, Edward Elliot, who worked at MIT Media Lab, developed (in a dissertation under Glorianna Davenport) the so-called Video Streamer,[2] a tool mainly designed to view video films by presenting single pictures of the videos strung together to produce a picture-block. The block is not seen as a static picture but as a temporary, changeable manifestation of a stream of pictures. The block is composed of one half-minute video, where every new single picture on the front block is visible and with each new shot the pictures move backwards, completely disappearing from the block within half a minute. This viewing tool lends itself to the idea to edit video in a manner different from the traditional way, since the outer area of the block is composed of the outer pixels of the single pictures, and therefore is also "readable," in principle in a similar way as the picture from a slit camera.

A related, but essentially more complex concept was presented in the middle of the 1990s in *Invisible Shape of Things Past*, a work by Joachim Sauter and Dirk Lüsebrink, which explored time related to virtual space and navigation through virtual time.[3]

In this work, film sequences are transformed into interactive virtual works. The transformation is based on the camera settings in a film sequence (movement, angle, and focal distance): The single film shots are

2 See http://ic.media.mit.edu/
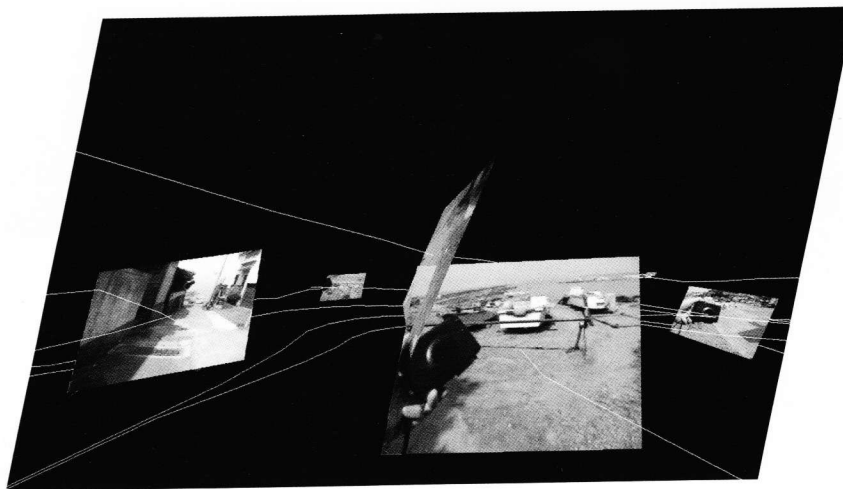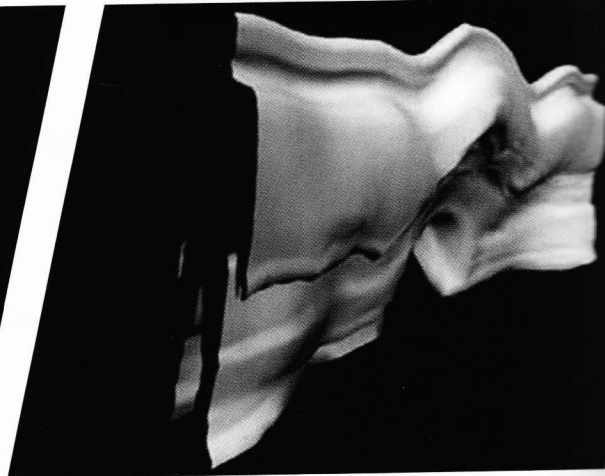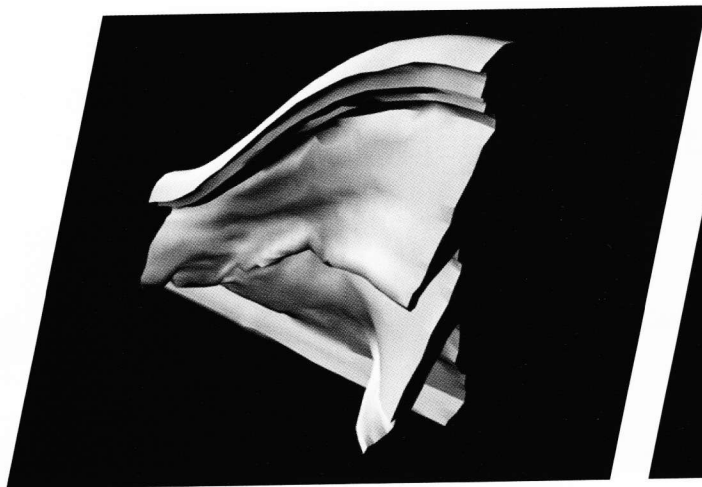
3 See http://www.artcom.de

4 One can click on the objects in every position, it is thereby a chronological sequence of single pictures as near as possible as the return of chronological sequences or the entry into a film at an arbitrary point.

5 A possible application of this project lies in the mediation of a historical context, for example an urban situation. Films from different eras, which would be shot in different times in which geographically limited frame would be presented as objects, where the user can freely ramble in a time space context, meet the film objects and explore their content, and so understand their spatial and historical relationship.

6 See http://www.waliczky.com

7 Tamás Waliczky, 1996: "For us humans, who are limited in time and space, time is a one-dimensional affair. We can move only along one axis we define in co-ordinates of 'past-present-future'... And, sadly enough, even in this single dimension we are able to travel in one direction only, namely forward. But for God, who is eternal

strung together along the camera path when it is transformed into virtual space. The angle of the shots to the camera path depends on the angle of the real camera, the size of the single shot on the camera focus used. The pixel edges of the single shots form the outer surface of the film object.

The result is a film object that is based on a complex camera movement and virtual information architecture, respectively, and that can be interactively explored. It is the spatial interface for the information which it contains.4

In a second step, a spatial and time based organizational concept for film objects was developed: As each film sequence occurs not only in one place, but also at one time, a virtual representation of the surroundings was constructed, enabling users to navigate through time. One such construction modeled all urban building structures of Berlin since 1900. 5 The film objects were placed in virtual reality at the place and time of the takes in the respective time dimensions.
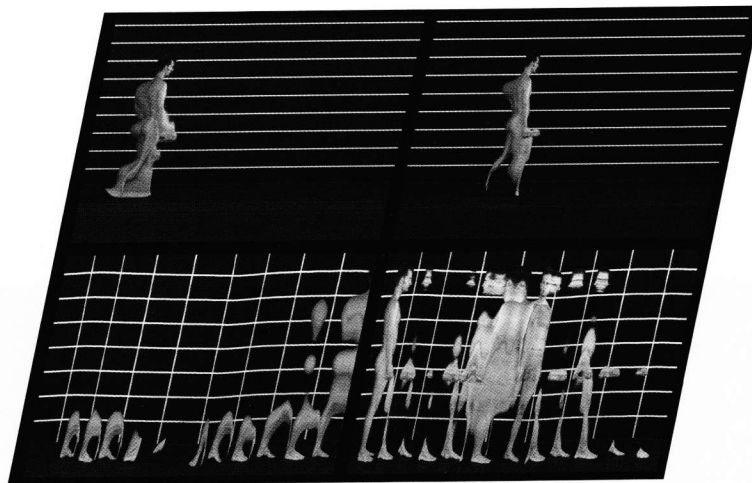
The documentation of a particular space and time sequence is thus transformed into a perceptible space-time object with an individual aesthetic quality. Independent of their interactive application, these film objects, produced with the help of these transfer tools, have a particular poignancy because of their

form that abstracts the literal picture material. This represents an interesting parallel to the sculptural work of the Futurists, who used sectional methods cut through space and time and achieved real impressive results, especially on a formal level.

Tamás Waliczky's sculptures6 dating from the 1990s are based on a similar principle as Sauter-Lüsebrink's films. For them, too, the starting point digital film, and the results of the works are virtual sculptures, which, however, in this case are definitely only obtained from a space-time development of single visual objects/bodies.7

Waliczky extracted the movement of a person from digital film by cutting out the silhouette frame by frame. As a result, the single shots/frames are arranged a row forming a virtual sculpture, in which short moments of life are "frozen." Waliczky refers these sculptural works as *Time crystals*, through which the viewer can move in different perspectives at different camera angles, and at different speeds.

The work *Field-Work@Hajama*, 2001, by Masaki Fujihata,8 also starts from the principle that film material has a space dimension which can be transferred into a three-dimensional representation in virtual space. The starting point are digital video shots that were recorded in urban surroundings in Tokyo together with the exact GPS data. From these

Martin Reinhart,
Georg Dorffner
tx-transform
1998
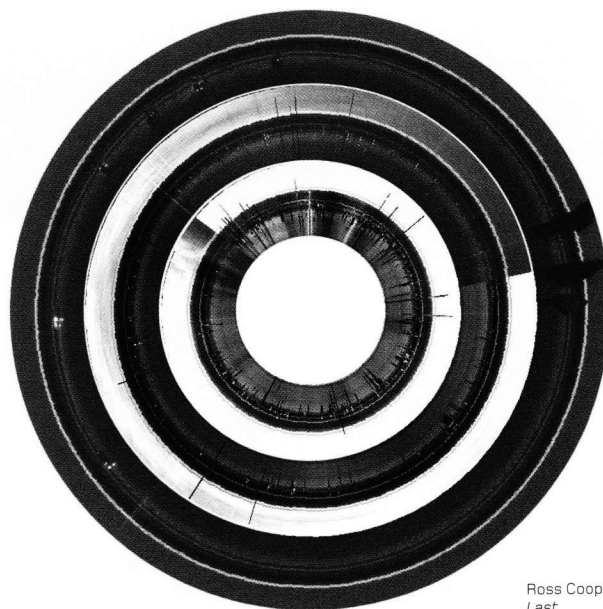film technique
© Martin Reinhart,
Virgil Widrich

Ross Cooper, Jussi Angesleva
Last
installation
Ross Cooper, Jussi Angesleva;
Royal College of Art, London
© Ross Cooper, Jussi
Angesleva

...graphic and time-based system of co-ordinates
...produced, since each video frame represents
...h a defined place and a particular moment of the
...e. Fujihata translated this system of co-ordinates
...o a virtual three-dimensional space, in which the
...deo takes are displayed in virtual space in positions
...rresponding to those in which they were recorded
...d move alongside these three-dimensional GPS
...ces. Through the use of the interface the viewer is
...le to follow the video images and their paths and to
...vigate through the three-dimensional space and
...ereby experiencing the complexity of the inter-
...lation of space and time. By the use of stereo-
...pic projection the viewer can perceive the picture
...ree-dimensionally, from which, in addition to this,
...gains an individual experience of the hyperreal in-
...mation space through the interaction with the
...erface.

From Film to Cut Through Space

...m a visual concept originates from the correlation
...f me and space and can be understood in terms of
...near ordering principle, which attributes a particu-
...r spatial and pictorial configuration to a particular
...nt of time. We see time as a linear dimension with a
...nite extension. In our perception, these experi-
...ces are congruent with the visual impressions of
...e film takes.

...Both the film objects of Sauter/Lüsebrink and the
...ctures of Tamás Waliczky visualize the spatial di-
...sion of film as well. A further step which followed
...conceptual idea of this type of representation is
...cut through the film's space axis, a process that
...s developed by Martin Reinhart under the name *tx-
...ansform* and was first shown publicly in 1998.9 In
...7 Björn Barnekow had conceived a very similar
...ct bearing the title of *timemirror*.10

...*Tx-transform* starting material is a traditional,
...ally recorded or digitized film that is transformed
...h the help of software. In its original form, each
...le picture shows the entire space within a minimal
...e-span. By contrast, the transformed single film
...ure only shows a minimal spatial clipping and its
...plete development during the recording process.
...h single picture is a cut through the space axis, a
...uence of pictures produces visual effects such as

the following ones: Houses start to move, moving
trains become shorter with increasing speed. Thus,
items in film are not defined as an representation of
some concrete existence, but rather as a state in
time. The result of tx-transformation can, depending
on the mode of perception, appear completely ab-
stract or completely realistic. Theoretically, these
spatial clippings can be positioned deliberately, so
that new perspectives and effects develop again and
again.

Based on a digital slit camera is another project
that combines traditional analogue clock with camera
feed, creating a clock face that shows the history of
the space it is looking at. *Last* by Ross Cooper and
Jussi Angesleva 11 transforms the slit pictures into a
clock-like display: The clock's hands are narrow slits
of the live video feed, and as they rotate, they leave a
"time trace" on the clock's face. The hands are
arranged as concentric circles, the outermost being
seconds, the middle one minutes, and the innermost
hours. Thus, the clock face displays the last minute,
last hour and last twelve hours as its spatial history.
The video feed can be any live video source: A camera
mounted on the clock itself looking at what is happen-
ing in front of it, remote camera streamed over the
Internet or TV signal fed directly to the clock. The
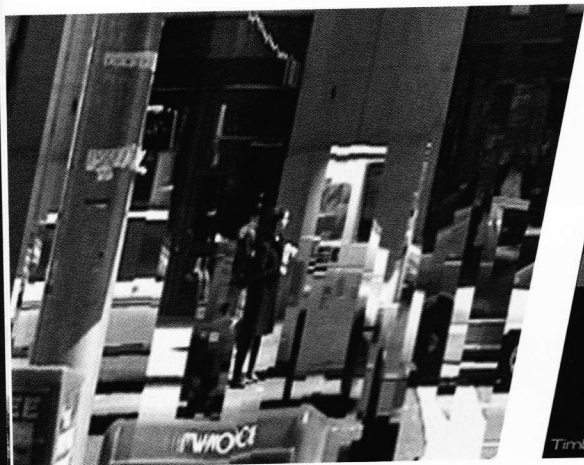clock can thus display the local space, remote space

and in His dimensions in-
finite, time is perhaps a
four-dimensional quantity;
for God can see all three-
dimensional existences,
simultaneously and at any
point in time. Therefore, for
God it is a simple matter to
change at will our percep-
tion of time. From His per-
spective, temporal mea-
sures such as a second, an
hour, a year or even eternity
are identical. I believe this
may be a possible interpre-
tation of the quotation
from Koran with which
Borges precedes his tale:
'And God made him die dur-
ing the course of a hundred
years; and then He revived
him and said: 'How long have
you been here?' 'A day or a
part of a day,' he replied."

8   http://www.transmediale.de/
    de/02/exhibition.php

9   See http://www.tx-
    transform.com

10 See http://www.digitalitis.
    de/index_i2g.html

11 See http://www.lastclock.
    co.uk

Camille Utterback
Liquid Time
1999
interactive video installation
Camille Utterback;
Creative Nerv
© Camille Utterback

Romy Achituv
BeNowHere Interactive
1999
interactive application
© Romy Achituv

12 See http://www.
creativenerve.com/
liquidtime.html

13 In this way the viewer
provides the interface:
Depending on his/her posi-
tion/movement in space
changing the picture zone,
which is in front of him/her.
The closer the viewer goes
to the projection, the deep-
er he/she pushes into time.

14 http://www.mikromuseum.
org/beta/submissions/
cdrom/pages/Archituv.htm

or media space respectively. As a clock, the emerging imagery becomes contextualized and makes it mean-ingful in the space it is being displayed at. As an in-stallation, the system can be used as a living, aes-thetic element reacting to the usage of the space. As a still it documents the different types of spaces, similar to a spatial identity card.

Penetration into Space and Time

Camille Utterback and Romy Achituv also dedicated themselves to the representation of the correlation between space and time but their project again ad-dresses the time axis. The installation *Liquid Time* by Camille Utterback and Romy Achituv[12] was based on traditional video-material that is played, in case of no interaction of the viewer, in the normal chronology of recording. An interaction system based on video-tracking enables the viewer to intervene in the chronology, moving backwards in time within a chosen picture area, or within space, respectively, while the rest of the film runs on chronologically.[13] What Utterback describes by the title "Video Cubism" is eventually the splitting of the video image into multi-ple time zones.

A further concept of non-linearity and coexis-tence of different time zones in a picture has been developed by Romy Achituv alone and transplanted into the interactive application *BeNowHere*.[14] The panorama of a site was documented from one per-spective at different times of the day. Within a drift-ing section of the panorama, the application shows a

single moving picture at each stage. Parallel to the camera view, this picture drifts along the space and time axis and leaves a static picture, a trace of time and space, by means of the "last" pixels from the pre-vious moving picture. The viewer can intervene using the input medium in order to focus on a section of the image and to activate the moving picture at exactly that point. This means that the viewer fo-cuses not only on a particular space but also on a particular time, namely a point in time before the ac-tivated picture in case it is positioned to the left, and after the activated picture if it is visible to the right.

For Achituv this application demonstrates struc-tural possibilities for non-linear cinematic narrative that break away from the reliance on "montage" as the basic semantic unit of cinema. On celluloid, time and space are inevitably fused: every film frame rep-resents a particular space and a particular point in time. Transitions from one space to another, as those from one time to another, can only be affected through a "cut" (or a "fade" – which is no more than a sophisticated cut). The synchronized scenes of *BeNowHere* suggest the possibility for playing with the viewers' expectations of space and time by af-fecting transitions between scenes based on user panning alone. This could be achieved by seamlessly integrating scenes. Instead of three different times of day like it is now, the application could be based upon three different scenes shot with parts sharing an identical backdrop (scenery, props, light, etc.). The user/viewer then could push the "narrative" forward by transitioning from one scene to another simply
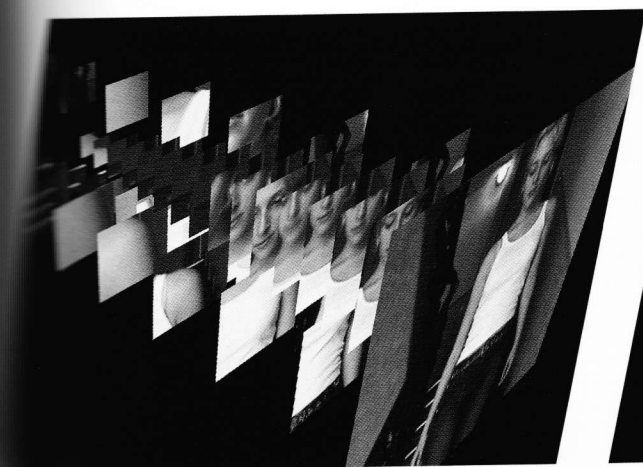
Sascha Pohflepp
Meandering
2002
Interactive application
Sascha Pohflepp;
Universität der Künste Berlin
© Sascha Pohflepp;
Universität der Künste Berlin

through panning the image in different directions.

As we have seen already in the application *Video Streamer* by Elliot and also in *Invisible Shape of Things Past* by Sauter and Lüsebrink some of the experimental work with video imagery results in possible tools for the analysis and editing of moving images. The same applies to a project that was just recently developed at the University of the Arts Berlin. *4DDurée* by Sascha Pohflepp can either be used as a viewing tool or as an creative means for the manipulation and sculpturalization of images.

By selecting one or more areas within a frame it is possible to create a video sculpture in which the single bulges represent other time zones before or after the main frame. The staggering of frames inside the virtual space of a 3-D environment illustrates the fourth dimension of the moving image and creates a virtual object inhering an artistic character in itself.

Conclusion

A number of contemporary and more recent art projects have transformed film-material into interactive virtual spaces, in order to break through the traditional linear quality of the moving image and the perception of time, at the same time to represent, or to visualize the spatial aspects of time respectively. In the times of resampling, the concentration on an relatively old picture medium and its transformation into space-time phenomenon open to interactive experience does not seem surprising. The results of these experimental works exploring and shifting the parameters of the linear film are often oddly abstract and quite expressive in their formal composition, and, consciously elude simple legibility.

The development of space-time representations to the present documents the keen interest of artists to portray space-time correlations in their complexity by using methods of representation available at the respective times. Any obvious step towards an innovative way of representation each time implies a radical break with old concepts of visual art. Both the interaction with film and the representation of the space-time characteristics of film in virtual space, which, in the described works, are fathomed by experimental and artistic means, represent a conceptual expansion of the film medium and a break with traditional perception. In a similar way, for example the panorama picture once broke with the traditional understanding of the work of art of the preceding century.