

corresponding computer hardware (compression boards, storage formats such as DVD), is driven by a clearly defined goal: the exact duplication of cinematic realism. So if a computer screen, more and more, emulates cinema's screen, this is not an accident but a result of conscious planning by the computer and entertainment industry. But this drive to turn new media into a simulation of classical film language, which parallels the encoding of cinema's techniques in software interfaces and hardware itself, described in "Cultural Interfaces" section, is just one direction for new media development among numerous others. I will next examine a number of new media and old media objects which point towards other possible trajectories.

New Temporality: Loop as a Narrative Engine

One of the underlying assumptions of this book is that by looking at the history of visual culture and media, and in particular cinema, we can find many strategies and techniques relevant to new media design. Put differently, in order to develop new aesthetics of new media we should pay as much attention to the cultural history as to computer's new unique possibilities to generate, organize, manipulate and distribute data.

As we scan through cultural history (which includes the history of new media up until the time of research), three kinds of situations will be particularly relevant for us:

- when an earlier interesting strategy or technique was abandoned or forced into "underground" without fully developing its potential;
- when an earlier strategy can be understood as a response to the technological constraints (I am using this more technical term on purpose instead of more ideologically loaded "limitations") similar to the constraints of new media;
- when an earlier strategy was used in a situation similar to a particular situation faced by new media designers. For instance, montage was a strategy to deal with modularity of a film (how do you join separate shots?) as well as with a problem of coordinating different media types such as images and sound. Both of these simulations are being faced once again today by new media designers.

I already used these principles in discussing the parallels between nineteenth century pro-cinematic techniques and the language of new media; they also guided me in thinking about animation (the "underground" of 20th century cinema) as the basis for digital cinema new language. I will now use a particular parallel between early cinematic and new media technology to highlight another

older technique useful to new media: a loop. Characterically, many new media products, be it cultural objects (such as games) or software (various media players such as QuickTime Player) use loops in their design while treating them as temporary technological limitations. I, however, want to think about it as a source of new possibilities for new media.³⁷³

As already mentioned in the previous section, all nineteenth century pro-cinematic devices, up to Edison's Kinetoscope, were based on short loops. As "the seventh art" began to mature, it banished the loop to the low-art realms of the instructional film, the pornographic peep-show and the animated cartoon. In contrast, narrative cinema has avoided repetitions; as modern Western fictional forms in general, it put forward a notion of human existence as a linear progression through numerous unique events.

Cinema's birth from a loop form was reenacted at least once during its history. In one of the sequences of *A Man with a Movie Camera*, Vertov shows us a cameraman standing in the back of a moving automobile. As he is being carried forward by an automobile, he cranks the handle of his camera. A loop, a repetition, created by the circular movement of the handle, gives birth to a progression of events — a very basic narrative which is also quintessentially modern: a camera moving through space recording whatever is in its way. In what seems to be a reference to cinema's primal scene, these shots are intercut with the shots of a moving train. Vertov even re-stages the terror which Lumieres's film supposedly provoked in its audience; he positions his camera right along the train track so the train runs over our point of view a number of times, crushing us again and again.

Early digital movies shared the same limitations of storage as nineteenth century pro-cinematic devices. This is probably why the loop playback function was built into QuickTime interface, thus giving it the same weight as the VCR-style "play forward" function. So, in contrast to films and videotapes, QuickTime movies were supposed to be played forward, backward or looped. Computer games also heavily relied on loops. Since it was not possible to animate in real time every character, the designers stored short loops of character's motion — for instance, an enemy soldier or a monster walking back and forth — which would be recalled at the appropriate times in the game. Internet pornography also heavily relied on loops. Many sites featured numerous "channels" which were supposed to stream either feature length feature films or "live feeds"; in reality they would usually play short loops (a minute or so) over and over. Sometimes a few films will be cut into a number of short loops which would become the content of 100,³⁷⁴ 500 or 1000 channels.

The history of new media tells us that the hardware limitations never go away: they disappear in one area only to come back in another. One example of this which I already noted is the hardware limitations of the 1980s in the area of 3D computer animation. In the 1990s they returned in the new area: Internet-

based real-time virtual worlds. What used to be the slow speed of CPUs became the slow bandwidth. As a result the 1990s VRML worlds look like the pre-rendered animations done ten years earlier.

The similar logic applies to loops. Earlier QuickTime movies and computer games heavily relied on loops. As the CPU speed increased and larger storage media such as CD-ROM and DVD became available, the use of loops in stand-alone hypermedia declined. However, online virtual worlds such as Active Worlds came to use loops extensively, as it provides a cheap (in terms of bandwidth and computation) way of adding some signs of “life” to their geometric-looking environments.³⁷⁵ Similarly, we may expect that when digital videos will appear on small displays in our cellular phones, personal managers such as Palm Pilot or other wireless communication devices, they will once again will be arranged in short loops because of bandwidth, storage, or CPU limitations.

Can the loop be a new narrative form appropriate for the computer age?³⁷⁶ It is relevant to recall that the loop gave birth not only to cinema but also to computer programming. Programming involves altering the linear flow of data through control structures, such as “if/then” and “repeat/while”; the loop is the most elementary of these control structures. Most computer programs are based on repetitions of a set number of steps; this repetition is controlled by the program’s main loop. So if we strip the computer from its usual interface and follow the execution of a typical computer program, the computer will reveal itself to be another version of Ford’s factory, with a loop as its conveyer belt.

As the practice of computer programming illustrates, the loop and the sequential progression do not have to be thought as being mutually exclusive. A computer program progresses from start to end by executing a series of loops. Another illustration of how these two temporal forms can work together is Möbius House by Dutch team UN Studio/Van Berkel & Bos.³⁷⁷ In this house a number of functionally different areas are arranged one after another in the form of a Möbius strip, thus forming a loop. As the narrative of the day progresses from one activity to the next, the inhabitants move from area to area.

Traditional cell animation similarly combines a narrative and a loop. In order to save labor, animators arrange many actions, such as movements of characters’ legs, eyes and arms, into short loops and repeat them over and over. Thus, as already discussed in the previous section, in a typical twentieth century cartoon a large proportion of motions involves loops. This principle is taken to the extreme in Rybczynski’s *Tango*. Subjecting live action footage to the logic of animation, Rybczynski arranges the trajectory of every character through space as a loop. These loops are further composited together resulting in a complex and intricate time-based structure. At the same time, the overall “shape” of this structure is governed by a number of narratives. The film begins in an empty room; next the loops of character’s trajectories through this room are added, one

by one. The end of the film mirrors its beginning as the loops are “deleted” in a reverse order, also one by one. This metaphor for a progression of a human life (we are born alone, gradually forms relations with other humans, and eventually die alone) is also supported by another narrative: the first character to appear in the room is a young boy, the last one is an old woman.

The concept of a loop as an “engine” which puts the narrative in motion becomes a foundation of a brilliant interactive TV program Akvaario (aquarium) by a number of graduate students at Helsinki’s University of Art and Design (Professor and Media Lab coordinator: Minna Tarrka).³⁷⁸ In contrast to many new media objects which combine the conventions of cinema, print and HCI, Akvaario aims to preserve the continuous flow of traditional cinema, while adding interactivity to it. Along with an earlier game Jonny Mnemonic (SONY, 1995), as well as the pioneering interactive laserdisk computer installations by Graham Weinbren done in the 1980s, this project is a rare example of a new media narrative which does not rely on the oscillation between non-interactive and interactive segments (see “Illusion, Narrative and Interactivity” section for the analysis of this temporal oscillation.)

Using the already familiar convention of such games such as Tamagotchi (1996-), the program asks TV viewers to “take charge” of a fictional human character.³⁷⁹ Most shots which we see show this character engaged in different activities in his apartment: eating dinner, reading a book, strolling into space. The shots replace each other following standard conventions of film and TV editing. The result is something which looks at first like a conventional, although very long, movie (the program was projected to run for three hours every day over the course of a few months), even though the shots are selected in real time by a computer program from a database of a few hundreds different shots.

By choosing one of the four buttons which are always present on the bottom of the screen, the viewers control character’s motivation. When a button is pressed, a computer program selects a sequence of particular shots to follow the shot which plays currently. Because of visual, spatial and referential discontinuity between shots typical of standard editing, the result is something which the viewer interprets as a conventional narrative. A film or television viewer does not expect that any two shots which follow one another have to display the same space or subsequent moments of time. Therefore in Akvaario a computer program can “weave” an endless narrative by choosing from a database of different shots. What gives the resulting “narrative” a sufficient continuity is that almost all shots show the same character.

Akvaario is one of the first examples of what in previous chapter I called a “database narrative.” It is, in other words, a narrative which fully utilizes many features of database organization of data. It relies on our abilities to classify database records according to different dimensions, to sort through records, to

quickly retrieve any record, as well as to “stream” a number of different records continuously one after another.

In Akvaario the loop becomes the way to bridge linear narrative and interactive control. When the program begins, a few shots keep following each other in a loop. After users choose character’s motivation by pressing a button, this loop becomes a narrative. Shots stop repeating and a sequence of new shots is displayed. If no button pressed again, the narrative turns back into a loop, i.e. a few shots start repeating over and over. In Akvaario a narrative is born from a loop and it returns back to a loop. The historical birth of modern fictional cinema out of the loop returns as a condition of cinema’s rebirth as an interactive form. Rather than being an archaic leftover, a reject from cinema’s evolution, the use of loop in Akvaario suggests a new temporal aesthetics for computer-based cinema.

Jean-Louis Boissier’s Flora petrinsularis realizes some of the possibilities contained in the loop form in a different way.³⁸⁰ This CD-ROM is based on Rousseau’s Confessions. It opens with a white screen, containing a numbered list. Clicking on each item leads us to a screen containing two windows, positioned side by side. Both windows show the same video loop made from a few different shots. The two loops are offset from each other in time. Thus, the images appearing in the left window reappear in a moment on the right and vice versa, as though an invisible wave is running through the screen. This wave soon becomes materialized: when we click inside the windows we are taken to a new screen which also contains two windows, each showing loop of a rhythmically vibrating water surface. The loops of water surfaces can be thought of as two sign waves offset in phase. This structure, then, functions as a “meta-text” of a structure in the first screen. In other words, the loops of water surface act as a diagram of the loop structure which controls the correlations between shots in the first screen, similar to how Marey and the Gibsons diagrammed human motion in their film studies in the beginning of the twentieth century.

As each mouse click reveals another loop, the viewer becomes an editor, but not in a traditional sense. Rather than constructing a singular narrative sequence and discarding material which is not used, here the viewer brings to the forefront, one by one, numerous layers of looped actions which seem to be taking place all at once, a multitude of separate but co-existing temporalities. The viewer is not cutting but re-shuffling. In a reversal of Vertov’s sequence where a loop generated a narrative, viewer’s attempt to create a story in Flora petrinsularis leads to a loop.

It is useful to analyze the loop structure of Flora petrinsularis using montage theory. From this perspective, the repetition of images in two adjoint windows can be interpreted as an example of what Eisenstein called rhythmical montage. At the same time, Boissier takes montage apart, so to speak. The shots which in traditional temporal montage would follow each in time here appear next to each other in space. In addition, rather than being “hard-wired” by an editor in

only one possible structure, here the shots can appear in different combinations since they are activated by a user moving a mouse across the windows.

At the same time, it is possible to find more traditional temporal montage in this work as well — for instance, the move from first screen which shows close-up of a woman to a second screen which shows water surfaces and back to the first screen. This move can be interpreted as a traditional parallel editing. In cinema parallel editing involves alternating between two subjects. For instance, a chase sequence may go back and forth between the images of two cars, one pursuing another. However in our case the water images are always present “underneath” the first set of images. So the logic here is again one of co-existence rather than that of replacement, typical of cinema (see my discussion of spatial montage below).

The loop which structures *Flora petrinsularis* on a number of levels becomes a metaphor for human desire which can never achieve resolution. It can be also read as a comment on cinematic realism. What are the minimal conditions necessary to create the impression of reality? As Boissier demonstrates, in the case of a field of grass, a close-up of a plant or a stream, just a few looped frames become sufficient to produce the illusion of life and of linear time.

Steven Neale describes how early film demonstrated its authenticity by representing moving nature: “What was lacking [in photographs] was the wind, the very index of real, natural movement. Hence the obsessive contemporary fascination, not just with movement, not just with scale, but also with waves and sea spray, with smoke and spray.”³⁸¹ What for early cinema was its biggest pride and achievement — a faithful documentation of nature's movement — becomes for Boissier a subject of ironic and melancholic simulation. As the few frames are looped over and over, we see blades of grass shifting slightly back and forth, rhythmically responding to the blow of non-existent wind which is almost approximated by the noise of a computer reading data from a CD-ROM.

Something else is being simulated here as well, perhaps unintentionally. As you watch the CD-ROM, the computer periodically staggers, unable to maintain consistent data rate. As a result, the images on the screen move in uneven bursts, slowing and speeding up with human-like irregularity. It is as though they are brought to life not by a digital machine but by a human operator, cranking the handle of the Zootrope a century and a half ago...

Spatial Montage

Along with taking on a loop, *Flora petrinsularis* can also be seen as a step towards what I will call a spatial montage. Instead of a traditional singular frame of cinema, Boissier uses two images at once, positioned side by side. This can be thought of a simplest case of a spatial montage. In general, spatial montage would