Executable Cinema:

demos, screensavers and videogames as audiovisual formats

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Abstract

The digitisation of the multilayered cinematographic apparatus turns the cinematographic image into an extension of the projecting system, making the movie impossible to be separated from the rendering mechanism in both physical and logical levels. Thus, graphic user interfaces and digitised movies would share a similar nature, in which every image is a real time manifestation of the computer as a surface effect. So, the definition of the limits between the audiovisual work and the rendering system becomes somewhat arbitrary, conditioned by economical and cultural standards that are not directly related to the qualities of cinema itself. In order to further investigate this hypothesis, we analyze three different computer-generated visual systems as audiovisual "genres": *demoscene* videos, screensavers and videogames.

Introduction

The intrusion of digital technologies in audiovisual circuits does not only promote the reform of the filmmaking procedures, but also modifies the very nature of the technical image. In this new configuration, audiovisual objects are no longer reproduced by playback, but interpreted through rendering, only existing in the circumstance and quality of its exhibition. The image is how the interaction of different mechanisms appears on the screen – just like in an abacus the movement of the pieces does not constitute the graphic representation of calculus, but is calculus itself.

Therefore, a digital movie should not be considered as a surface *projected from* a dispositif, but the *pure dispositif* – or, more precisely, one of its bare faces, which is accessible to *spectators*. If its exhibition retrieves any latent, perhaps pro-filmic, meaning, it is in an almost arbitrary way. A priori, it is just the manifestation of a system in process. As the system runs, the screen refreshes; frames are composed; a narrative unfurls.

Thus, it should become clear that there exists no dichotomy between the digital a paratus and filmworks. Hardware and software only operate synergistically and, under the logics of the computer, both the movie file and the media player software are composed by the same binary patterns, organized through different levels of abstraction – all of which "are simultaneously erased at the moment in which the computer actually generates an image" (Bolter and Grusin 1999, 27).

For an aesthetics of compression

However, if we had to decide on a separation between apparatuses and media objects – between the medium underpinnings and its language –, we could say that *codecs* are what define the limits of cinematographic practice within digital systems. These industrial standards establish how audiovisual information is codified in binary data. Without them, the reproduction of a movie in an informational system would always depend of the algorithms for rendering to be included in the work structure. The movie file, just like ordinary software, would have to be executed in a lower (less abstract) level of computation.

One of the main reasons of such technology is economic. Pairing up efficient data compression with a common rendering grammar, codecs reduce drastically the size of a movie file, making possible its distribution through digital means. For instance, it is just because of MPEG-2 codec that DVDs are a viable format for the distribution, storage and reproduction of movies. This codec reduce in 97% the amount of data needed for moving image information, so that a feature film can fit in one versatile disc of 4,7 gigabytes without any significant loss of quality (Lasica 2005, 88). Moreover, the standardization of rendering procedures allows the same set of audiovisual data to be equally reproduced in the most different devices. Such portability is not possible to conventional software, which must be compiled in accordance to the architecture of each system (Murray 2003, 82). For those reasons, some might argue that the biggest responsible for the recent changes in the entertainment industry are not the peer-to-peer file sharing

networks, but the increasing sophistication of codecs (such as the iconic Mp3 format) (Lasica 2005, 89).

However, at the same time codecs foment market revolutions, they also define the boundaries of digital cinema. The preponderant reason for standardizing sound and image is pragmatic. The uniformity of rendering routines assures the absolute universality of the available operations: in the same media player – in the same editing software –, different files can be loaded, just like film reels in a projector. This allows for a common architecture for the whole circuit, over which filmworks can be produced and consumed in accordance to the historically constituted paradigms of the cinematographic institution. The moviemaker does not need to understand how the codification of data occurs; he is free to produce cinema as he has always done, employing software whose interface simulates established routines of film production. Her work ends where the codecs' starts: packing and unpacking data bits in complex signifying arrangements.

Thus, codecs organize the medium as a territory: on the one side, the apparatus, the normal infrastructure of production and consumption; on the other, the available field for cinematographic creation. Of course, such division is entirely arbitrary, and even sterile, since it insists in this historical separation digital media rends obsolete. What the standards really define is how information processes employ the materiality of the system – i.e., the amount of memory necessary for storage and reproduction of movies, the way pixels are organized in the screen, etc. This is a dimension of the medium that does not allow simulations; parameters that correspond to the very quality of *time* in the digital image. Should not cinematographic creation involve such elements in a more critical way?

Spectacular interfaces

There even exist some initiatives that question commercial aspects of media codification. One example is the *Ogg* format, a collection of open source codec developed by the Xiph.Org Foundation. Even so, few projects consider the formal dimension of codecs. Among those, one of the most instigating ones is *Download Finished,* an online system that scrambles and republishes "footage" found in p2p networks Download Finished operates precisely in the stage of data decodification, "which translates the underlying data structure of the films onto the surface of the screen".

Going through this "transformation machine", conventional movies become amorphous masses of confused pixels, whose insufficient proximity to figurative image reveals the arbitrarity of rendering routines. However, in this situation, we once again have a fixed apparatus to which different works can be coupled, without the need of a poetic correspondence between both levels. Hence, even thought it makes critical use of codecs, Download Finished still respects its essential operation and the modularity they favour.

It is indeed difficult to find a cinema in which those stratums of production are combined in an expressive way. Whenever this happens, the resulting work not rarely belongs to another field. As it employs the processual character of digital media, a work becomes subject to different interferences and interpretation. Normally, such possibilities preside over its form and operation – just like in videogames, for example. These images exist not to be *seen*, but *operated*.

However, that is not what interests us here. In fact, we are trying to define up to which point interactive screens can be object of mere *spectation* – the involuntary and dysfunctional attention that is particular to the cinematographic medium (Munsterberg: 28). After all, spectation never emerges from the work. It is a stance of the user, a *modus operandi* that can be adopted in relation to anything. It is the spectator who decides what is worth to be seen and, doing so, defines *cinema*.

In informatics, most of the times, spectation is but a measure for the agency of the system. According to Janet Murray, agency is "the fulfilling capacity of performing meaningful actions and seeing the results of our decisions and choices" (Murray 2003, 127). Thus the gaze is specialized and takes part in the dispositif. The operator is so immerse in the image that it becomes difficult to watch it: the *optical* dimension only matters while subjected to the *haptical* one, or so it seems. The *screen* only exists in function of the mouse, of the joysticks, of the keyboard. The image only exists so that the traffic of data is possible. It is a channel of input and output: image-interface.

But when we take some distance from the system, a surface becomes evident. As the user is excused *and control leaves its reach*, all that he can do is to observe: a fourth wall naturally appears.

That to which the system nothing demands tends to become *audience*. A system produces audiences precisely where it turns out to be autonomous (and therefore closes itself). In that situation, the system becomes an image, but does not reveal its operation. Most of the times, what happens is the contrary: the system appears transparent and the surface is pure façade; a simulation. That means the user becomes redundant, but not unnecessary. What is an image for, if not being watched?

Hence, that which we want to call *executable cinema* is characterized precisely by the fact of *not suffering of any relevant form of agency*. So, there would be between our provisional genre and conventional graphic interfaces the almost naïf difference Murray suggests to exist between stories and games: the later "always involve some sort of activity", while the former "do not demand anything but our attention" (Murray 2003, 127).

There are two conditions which might cause such situation: either when the operation of the system is impossible, either when it has been alienated. The first case refers to images which agency themselves: works that are not obviously interactive, and because of this are particularly spectacular. We are talking about modalities of generative video, screensavers and demos – executable films in the most elementary sense of the term. The other situation refers to powerpoint presentations, live audiovisual gigs and videogames. The system, under the control of an operator, is updated in relation to (but not necessarily *in response to*) the audience. Now, we pass on to a more detailed analysis of some of these circumstances and their particular audiovisual characteristics.

The *demoscene*

Ironically, the closer we can find of a proper circuit of executable cinema is in the primitive *demoscene* – a hacker subculture that emerged in the end of the 70s, devoted to the development of algorithm-generated animations as a way of testing the limits of the machine and the ability of the programmers. These animations, known as *intros* and *demos*, originally appeared as a kind of splash screen that pirate groups incorporate to the software whose copy protection they had cracked – hence their name. That was the way such groups used to "sign" their works (not much different from graffiti *taggin*).

Since they were nothing more than vignettes, demos needed to attend the compromise of being light and small, so that they did not increase significantly the size of the files in which they would be inscribed. Such directive determined the first productions of the genre, and is still effective even after the demoscene became autonomous from the cracker world and this particular form of distribution. Even today, such works are appraised not only by their plastic beauty, but also by their algorithmic elegance – which can be evaluated by their *size in bytes*. Upon creating a demo, the filmmaker does not only aim for the equilibrium of compositing and montage, but also for the efficacy of the subjacent code.

The concur for material economy is so important that it fundaments the whole structure of diffusion of the demoscene around the *demoparties*, its equivalent of cinema festivals, with exhibitions and awards. The main difference is that the participation in such competitions is not determined by their duration of the work in minutes, but by its *volume in bytes*. One of the most usual limits is 64 kilobytes (65536 bytes). For comparison effects, with this amount of data, it is possible to store only one frame of video using a high-compression codec (such as *Motion-JPEG*). With a similar quantity of binary instructions, a demo such as *.fr-08: .the .product* (.farbrausch, 2000) generates about ten minutes of tri-dimensional animation, with stereo soundtrack, realistic textures and illumination effects.

This is only possible because demos are processed in a more elementary level of computation than digital video. They are not files of audiovisual information codified under redundant standards, but executable programs, whose codification is optimized to the graphics they intend to generate, employing the architecture of the system as an audiovisual dispositif in the best possible way.

Screensavers

Almost every computer user already had contact with these basic programs that are the *screensavers*, so that it would not be wrong to qualify them as the most popular existing form of executable cinema. Just like the demos, the screensavers were not originally meant to be works to be admired. As their name implies, its function is to preserve the monitor, so that the phosphor used in this equipment is not burnt by the continuous exposure of the same image for long periods. To avoid this, the screensaver occupies the pixel grid whenever the system is kept inactive for a certain time, alleviating the monitor of its interface function.

Therefore, in normal conditions, the screensaver is an audiovisual format that does not even allow for the possibility of *play*. The degree of control of the user over these works is so minimal that he cannot even decide when to watch them. They only happen when (and while) the user does not do anything. Moreover, since it is not conditioned by a pre-determined consumption dynamics, and depends on the availability of a screen otherwise instrumental, the exhibition of a screensaver can last from a few seconds to many hours. And, since it presupposes the absence of the system operator, it would be somewhat absurd if it requested its attention.

Keeping these parameters in mind, we should not be surprised that most of the screensavers consist of eyecandy, which can be interrupted at any time. It is as if all of them were but sophisticated variants of *aquariums*, from the most rudimentary bouncing balls to the flying toasters of the seminal *After Dark* (Berkley Systems, 1989) and the evolutive patterns generated by *Electric Sheep* (Scott Draves, 2005).

But the genre is also capable of its own seriality, employing the regular intervals in the system operation to create a narrative arch. The classic *Screen Antics Johnny Castaway* (Sierra Entertainment, 1993) operates as such. This comical screensaver depicts the life of a castaway in a desert island through short sketches. Each time the program is run, we may find the main character fishing, building sand castles, and even receiving the visit of UFOs. Even though the order of the scenes is completely random, the processual character of the screensaver allows for an accumulation of *story* in certain background details. For example: the boat that the castaway is building to escape the island is increasingly complete as the days pass, and his daily routine follows the real world holidays, read from the system's calendar. On Christmas, the island is decorated with a pine tree; on January 1st, with a "Happy New Year!" sign, etc.

Videogames

Contrary to the cases explored so far, videogames appear as a modality of executable cinema in which agency may exist, but is withdrew from the supposed audience. We choose to talk about them, instead of a more obvious format of the genre (such as live audiovisual practices), precisely because they make obvious the provisional limits between interface and surface, agency and spectation.

Moreover, videogames are largely responsible for popularizing and developing the cinematographic dimension of algorithmic systems, giving birth to a series of signifying practices – from interventions in the display (with *game-modifications*) to the recording of gameplay videos such as machinimas and speedruns (an activity that attest the relevance of system operation as a spectacle).

Besides, since they are an eminently social activity, electronic games naturally foresee spectators. After all, "although only one or two people can actively participate, everyone who sits in or walks through the room shares the experience of the game" (Bolter & Grusin 1999, 102). The softhouses always had this in perspective, and never left eventual spectators out of the gaming experience. In different proportions, videogames have always been full of spectacular resources, some of which are interesting only for the audience – or when you have an audience.

A good example of the later are the infamous *fatalities*, the "posthumous" special attacks of the fighting game series *Mortal Kombat* (Midway). These attacks have no utility within the game, since they can only be executed after the adversary has been defeated. Thus, their only function is to humiliate the losing player, as a vulgar display of ability – perfect for when there is an audience gathered.

Videogames can also be approached as mechanisms for the cognitive education of their own gameplay, in cyclical processes that make the player get into the dispositif (Cook). Under these conditions, their operation can reach a *performatic* level that makes clear the spectacular dimension inherent to any graphical interface. Such premise determine games such as *Dance Dance Revolution* (Konami) and *Guitar Hero* (Actvision) – the now popular *rhythm games*, in which the player must execute instructions of growing complexity in accordance to the soundtrack.

In the rhythm games, the division of the screen as an interface of inputs and outputs is exaggerated. The image has two clearly distinguished portions: on one side, it presents the instructions to be executed; on the other, it exhibits animations in response to the player's performance. It is as if, in the screen, there existed both code and its graphical result. The player is responsible for making the connection between them: to (literally) interpret the code and generate the image. Therefore, its attention must be always directed toward the functional part of the screen. The other part, as sophisticated as it can be, only makes sense if there is an audience.

Conclusion

The field of production of this kind of work grows with the appearance of programming frameworks appropriate to the creation of interactive audiovisual, such as *Macromedia Director* and *Processing* – but the greatest sign of this popularity is *Quartz Composer*, a software for the creation of procedural animations that Apple included in every domestic distribution of its operational system from the version 10.4 on.

As they are adopted by artists everywhere, these frameworks establish norms for this kind of filmmaking. A language is consolidated; procedures that can be recognized and legitimized by the field of art-technology – and even that of cinema. Maybe that is why the traditional San Francisco International Film Festival (created in 1957) included in its last edition a programme called *Generator*, gathering twenty works created by "algorithms or other computational processes".

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