Towards the interactive filmic narrative—"Transparency": An experimental approach

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Abstract

Nowadays, the cinematographic language claims for a specific type of interpretation and understanding. The emergence of the digital image and the innovative immersive reception devices provide new and diverse possibilities of reading and interacting within the filmic narrative. That is to say, cinema is constantly reinvented and explores potential renewals within the new interactive medias. This article reflects not only on the mutations of the filmic narrative, but also on its adaptation to interactivity. It proposes, also, new models of implementation, from traditional filmic narrative towards an interactive one. The experimental project *Transparency* illustrates it—it is a cinematographic project, which has the main goal of studying the interactive filmic narrative. An original plot has been created and adapted to an interactive narrative structure. The project is presented under the form of an installation allowing the spectators to choose the narrative sequences of the story.

1. Introduction

"Le cinéma c´est ce qu´inventent les cinéastes, des blocs de mouvement durée".
Gilles Deleuze

For Bernard Perron, "the interactive movies are considered failures, since their *playability* is little or far from captivating. The fact of telling a story by giving control to the spectator is contradictory" (author's translation) [1]. How, then, a traditional filmic narrative will be able to adapt interactive codes and forms? Which transformations must the story suffer in order to be adapted to the new interactive language? How should the role of the spectator change? Thomas Elsaesser points the finger to what the interactive cinema tries to dissimulate: "you can go everywhere whenever you want, but I should have gone there before". The degree of freedom of interactive movies is not yet absolute because the authors define the spectator's choices and the progressions in the interactive narrative in advance.

Currently, we can say that the interactive cinema presents difficulties. The present article tries to give some clues on the new challenges for future interactive cinema.

In Section 2, "The interactive narrative", we explain the major distinctions between the traditional and the interactive narrative. In case they do exist, what are their main features and in which way have they created a new kind of narration? In which respect has the interactive narrative taken the traditional expressions of narrative?

In Section 3, we analyze several films that arouse an interactive potential due to the inclusion of several interactive characteristics in their narrative structure.

Section 4 is focused on the diverse projects of interactive movies. We explain the plural and diversified proposals of various authors and artists, from the first movie called "interactive" to the new experiments on the Internet.

Section 5 is devoted to analyze the experimental project *Transparency*. It points out not only the outlines of the story, but also its form and contents, and the adaptation of its traditional narrative structure to an interactive one.

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The device installation and the role of the spectator are also explained there.

This article also reflects several improvements made from our last experimental project called *Carrossel*, presented at the ARTECH 2006 Conference [2].

2. The interactive narrative

Jean-Michel Adam defines the narrative as an event in a chronological dimension, which "must be told on the basis of at least two proposals, ordered temporarily and forming a story" (author's translation) [3]. Adam considers that the temporal question is fundamental for a story to exist and therefore a narrative.[1]

In his side, Jean-Louis Paquin believes that narrative is the act of telling a story, in other words, of being able to organize a plot in space and time. "It is to choose and to use certain facts, to simplify certain aspects, to condense, and structure the events in order to make links appear between them", says Paquin (author's translation) [4]. This organizational proposition, where links must emerge is basic in order to understand the passage from the traditional narrative to the interactive narrative. If, in the former case, the links are necessary for a narrative to exist, in the latter, those links will be essential for the existence of interactivity. These connections lead us to a new way—it is not only any more the fact of maintaining the dramatization of the narrative a certain suspense, the pleasure or the interest of the story (order, duration and frequency [5]), but the fact that new conditions come to overlap the previous ones (without canceling them). We could say that the narrative segmentation and all its interdependences (non-linearity, bifurcation, suspension, navigation), along with its temporal reception, the new role of the spectator/reader/user and the appearance of computer programs in the author–reader relationship establish what we could call the grammar of the interactive narrative.

According to Serge Bouchardon, the interactive narrative "is still an experimental activity which conventions of writing and reading are in the process of constitution" (author's translation) [6]. An interactive narrative consists of the presence of successive events that make a story (compared to an attention exclusively associated to the game on meaning, as in the poetic writing); the principal representation mode of this story is a narration (compared to the dramatic play) and its narrative is interactive, that is to say, it evokes a computer programming, more or less opened as well as material interventions by the users [6,7].

Meanwhile Jean-Louis Weissberg believes that "the interactive narrative tests certain majors knowledge of the traditional narration, as for example the relationship between the author and the characters, between the activity

of writing and the produced narrative or between the interpretation and the material organization of the device" (author's translation) [8]. Of course, the interactive narrative picks up from its predecessor, the traditional narrative, several qualities and characteristics that keep them closely related to each other. Then, how do the interactive narrative differ from the traditional narrative? According to Martin Reiser's remarks "the nonlinear narrative or the narrative with multiple linearity is not, by itself a definition of the interactive narrative" [9]. Defining the interactive narrative only by its distinction to the conventional one is very difficult. To Reiser, it is the nature of the reader or spectator's interactions within the narrative that are completely changed and this makes the interactive narrative so particular. Weissberg believes that the interaction choreography, the hyper-media design of navigation and the nature of the computer programmes, which organize the narrative production and fix the posture of the *spect-actor*[2] is what specifies the interactive narrative [8].

3. The film narrative: an interactive potential?

In the filmic narrative, the spectator is kept apart in relation to the actor's representation. The story is told in a linear way, with a beginning, a middle and an end, which corresponds to the actual length of the film (even if this one goes forward or backwards, uses prolepsis, analepses and ellipses [5]). The dramatic narration is unchangeable and the spectators always see the same movie.

The underlying interactivity within the interactive narrative comes to change this paradigm. It will change the role of the spectator who was kept at a distance most of the times and now will be actively involved in the story. The spectator becomes an actor (the *spect-actor*, Weissberg) accepting an effective role where the cinematic narrative is supposed to wait for a release, for an impulsion, for an action. The narrative structure requires then a diverse conception, implying navigation through the story that is being told, including choices, bifurcations, suspensions, jumps and repetitions[3] [10]. It is there where the interactive narrative appropriates digital computer programs and uses them to organize the narrative production and the "choreography of the interaction" [8,10].

Before the filmic narrative was proposed as voluntarily interactive, the cinema had already introduced the question of the ductility into temporal handling and the consequent notion of the appearance of continuity [11]. The montage rules of temporal moments within the cinematographic narration were defined as a primordial need for the

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[1]For other definitions on the narrative concept, see also Gerard Genette, *Figures III* (1972); Roland Barthes, *Introduction à l'analyse structurale des récits* (1966); Claude Bremond, *La syntaxe narrative* (1966); Marc Lits, *Récit, Médias et Société* (1981).

[2]Weissberg considers the spectator of the interactive narrative as an actor, someone who makes an action.

[3]Marie-Laure Ryan proposes a set of nine possible structures (Ryan, 2001). See also the typology of Mark Bernstein, in *Patterns of Hypertext*, where he proposes several hypertext structures and which complement Ryan's proposition.

construction of meanings [12,13]. At the cinema, what is seen does not always correspond to the chronological order of the recordings and camera captures. The diverse image sequence order is often modified to highlight an aspect of the narrative or to reorganize the different temporal instants of the movie.[4] Through the temporal reorganization, the narrative interruption, the multiple sequences repetition and the temporal jumps of the narrative action, the cinema wants to connect the spectator within the story, and thus, requires its mental intervention for the comprehension of the events told [11–13]. Imposing the spectator to remain mentally active, the cinema conserves some interactive potential. Let us take an example. In the movie *Rashomon* (Akiro Kurosawa, 1950), the story is told according to four different versions. The spectator, in the judge role (Kurosawa uses a subjective shot to involve the spectator within the story, substituting the judge character), feels the need of choosing one of the interpretations of the facts, in this way conscious choice of the different versions is made [14,15]. This game of different glances on the same event makes the spectator to take part on it, being by the side of one of the characters and believing in the veracity of one of the told versions. In *Rashomon*, Kurosawa plays with the variation and the discontinuity of the narrative—the same story, told in different ways, ramifies in four versions. However, in front of the fixed glance of the spectator, the stories are presented sequentially. In a clever parallel assembly, Kurosawa leaves the spectator in suspense, waiting for the final sentence and for truthful facts. Those director's decisions, towards a multiplication of the story and a direct implication of the spectator, puts this movie in the face of an inevitable interactive commitment.[5]

The narrative in the movie *Elephant* (Gus Van Sant, 2003) does not advance, or we could say that it does not progress too much. The action takes place in an American secondary school at the suburbs of Columbine, in the United States. The repetitive style used by the director sends back the spectator to the same place, once, twice, up to three times. This differentiated repetition leads the spectator not only to some memorization but also to an intensification of the testified meanings of the story. The spectator is constantly dismissed around moments of narration that are on standby, remaining in suspense. Let us see one example, when at the beginning of the film two

of the characters, *Eric* and *Alex*, head for the school, armed with a military arsenal (which seems inappropriate for the place), at the very same time, *John* approaches, but leaves the place immediately, warned by his two colleagues. We will see them again, later on, coming back, but filmed under another perspective, renewing the alert, to continue the sequence some instants before the massacre of Columbine. The first scene remains in suspension, waiting for its continuity, which will appear only later: "as the so fluid dynamics shootings of *Elephant*, at the same time chained up and juxtaposed, displays an alliance of pure movement and frame vibration, with the suspense effects that are born of it" [16]. This constant coming back of the story, under the form of differed repetitions, anticipates a more convincing need of interaction—it would be easy to imagine the audience choosing from different viewpoints in each repetition. According to Gus Van Sant, we come back to the era of the cinema deconstruction. This phenomenon is due to other type of pictures organization like the video graphic pictures, the 3D pictures and interactive pictures in videogames.[6] Could we find an objective link between the narrative structure in *Elephant* and the interactive filmic narrative? We think so. The multiplicity and repetition of the same scenes, the different points of view, the repetition of the same path and the spectator possible choice of versions are present [17]. The non-linear diversity of structures (hierarchical, ramify, loop, maze, counterpoint, etc.) among the computers and consoles video games have finally influenced the cinematic story up to the point of adapting their heroes and their virtual worlds.[7] The space manipulation, the different viewpoints and numerous levels of actions in the video games challenge a still too linear structure of a well-established cinema. Using the narrative structure of the video games as a metaphor, Van Sant incites the spectator to take position on the revisited motion picture, to better judge the appearance of it. Van Sant questions the present process of cinematic narration, proposing a narrative structure that comes out of the interactivity conditions.

The spectator is asked to make an additional effort in order to fill in the empty spaces and the clues of a story that appears to be non-linear [18]. In an audacious attempt, Alain Resnais has made of its "bi-film" *Smoking/No Smoking* (1993) a real challenge to the cinematic narrative structure. *Smoking/No Smoking* is composed of two films that have to be watched separately, but according to the order desired by the spectator. Indeed, the fact of having to make a compulsory choice transforms the Alain Resnais films to a very interesting and specific one. The choice is understood in two ways: a virtual choice, where the spectator is obliged to make a subjective choice of the

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[4]Of course, the aesthetics of the *movie-plan* (movie with a single plan) of the Lumière brothers (e.g. *L'arrivé d'un train à la Gare de Ciotat* and *L'arroseur arrosé*; 1895) was a dead end when it was a question of telling several simultaneous stories through the moving picture. The *movie-plan* was then insufficient. It will be only with Edwin Stanton Porter that the temporal non-linearity, and the multiplicity and dramatic discontinuity of the narrative will be introduced (e.g. *The Life of an American Firemen*, 1903).

[5]In another example, the movie *Timecode* of Mike Figgis (2001), the four narrative versions are shown simultaneously. The four sequential shots of 98 min each are presented in *split-screen*; in this way, the director refutes the ellipse form and the story corresponds to the real time length of the movie.

[6]*Elephant* shots are similar to the FPS ("First Person Shooter") video games type, where the spectator takes the place of the gunner, by an objective vision beyond the shoulder of its avatar. See Bellour R., Le parti pris du réel, *Trafic*, no. 49, spring 2004, pp. 5–13.

[7]Let us point out the success of the movie *Tomb Raider* (2001), with the actress Angelina Jolie in the character of *Lara Croft*.

versions presented and a real choice, owed to the formalism of the presentation of the two movies. Built on a rigorous structure of 25 segments, the two movies are completed, depending on whether one of the characters decides to light or not the cigarette. The two stories initiate, leaving place to a labyrinth of situations and relationships, where the spectator sees himself confronted with the variations and the turns that every story takes. Another possibility could be showing the two films simultaneously, juxtaposed in the same movie theater, where the spectator would be given the option of a direct choice between the two versions (using, for instance, the split-screen method[8]).

In the movie *Blind Chance* (Krzystof Kieslowski, 1981) a man runs to take the train—this situation becomes the starting point for three different stories. We can find here the same repetitive structure proposed by Kurosawa in *Rashomon*. In the first story *Witek*, the main character, takes the train where he meets communist supporters and joins the party. In the second story, the main character's efforts to take the train are interrupted by a controller who stops him on the quayside. *Witek* sees himself taken behind the political scenes. In the third and last story, *Witek* loses the train and goes back to the medicine studies that he had tried to quit before. He falls in love with a student, gets married and lives his life as a doctor. The Kieslowski narrative proposal contains an obvious interactive potential—the option of choices between the three versions presented. The three-in-one movie would obviously be a different one but its actual narrative structure invites to this speculation.

4. The interactive filmic narrative

The innovative proposals presented on the previous chapter update a need for a meeting between cinema and the new forms of interactive narratives. Well before the audacity of Alain Resnais, other directors questioned the cinematographic device and its relationship with the spectator. Between the years 1950 and 1960, thanks to the numerous experiments of multiple projections, the first «immersive» environments were born. The projects *Laterna Magika* (Josef Svoboda and Alfréd Radok, 1958), *Glimpses of the USA* (Charles and Ray Eames, 1959) and *Polyekran: A Mirror of My Country* (Charles and Ray Eames, 1967) are good examples of this, and they arouse for the inauguration of the interactive filmic narrative [19]. These films, with varied size and multiple projections, sometimes complex, created on the spectators an idea of engagement, participations and singular mental choices of the stories presented.

It will be only with *Kinoautomat* (Radúz Çinçera, 1967) that what we could title the first interactive movie is going to be born. *Kinoautomat* was viewed for the first time at the

Czech pavilion of the Montreal World Fair in 1967. Every spectator was provided with a red and a green button, and the audience was asked to answer 10 questions (with green for yes and red for no) at the end of each scene. One of the comedians went up on stage to give the explanation of the game. We could imagine a vertiginous and exponential increase in choices and possible continuations of the movie. On the contrary, every choice was structured carefully so that the result of the votes indicated to the projectionist on whom of the two spotlights he should synchronize it and where had to put the plug of the objective. With this system, every presentation of *Kinoautomat* became distinct and unique. The sequential change, that is to say the bifurcations led to the narrative and the public efficient involvement, put to days a new and coherent artistic language of interaction and a promise of future developments.

With the computer's arrival, the interactive narrative is dematerialized. From a less permeable structure, we pass to a narrative organization, which leaves an almost dominating role to the spectator. Thanks to the new technologies, the diffusion and propagation of films on digital video disc (DVD), will allow a different approach. The image, digitalized, becomes malleable, allowing modifications and variations in the order of the various film segments. In 1992, Greg Roach applies a new technique, which he called ''perspective switching'' [20]. *The Wrong Side of Town* (Greg Roach, 1992) gives the spectator the possibility of viewing the narratives according to the perspective of every character in the story. Each point of view has been filmed in its entirety and the change is done while following the chronological story.[9]

In the same year, Bob Bejan presents at the «First Interactive Film of New York» the interactive movie *I'm Your Man* which allowed the interaction of the public through three buttons placed on the arm of each armchair. Once again, and in similarity with *Kinoautomat*, it was left to the spectators the choice of the various possible courses of the narrative. In 1998, *I'm your Man* appears in DVD, allowing an individual viewing and an improvement of inherent possibilities of interactions within this new support.[10]

Tender Loving Care (Rob Landeros and David Wheeler, 1999) proposes to the spectators a more intense and specific intervention. It is again a matter of answering questions, while selecting from several given choices, but also the spectator should give his/her opinion and explore the places freely, he/she is meant to dig out in the businesses of the characters and can choose specific objects, etc. The spectator realizes, then, his relation to the story and according to his reactions (not only his actions) the

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[8]A technique used to juxtapose two images, dividing the screen into two equivalent parts. This technique goes back to 1960, where *Airport*, *The Thomas Crown Affair* and *Grand Prix* were the first films to use it.

[9]In another example, the DVD version of the movie *Final Fantasy* (Hironobu Sakaguchi, 2001) an option is provided there, where the spectators are invited to create a personalized version of a preset sequence.

[10]See the Marie-Laure Ryan analysis in *Narrative as Virtual Reality* where she devotes a whole chapter to it. *I'm Your Man. Anatomy of an Interactive Movie*, pp. 271, 280.

narrative will proceed in one way or another. He becomes aware of his answers and understands quickly that he can influence the future events of the filmic narrative.

In 1995 and 1996, the interactive movies combined with hypertext appeared—hyper-videos which combine textual and video graphic hyperlinks. It is the case of *Hypercafe* (David Balcom and Ian Smith; 1996) and *WaxWeb* (David Blair, 1995). In *Hypercafe*, the spectator can choose according to "space–time opportunities", and he/she is able to listen and see the conversations between the various characters of the narrative. The choices are made either directly on the images or by clicking on key words, which composes the literary narrative. In *WaxWeb*, the reading and play experiment is comparable with the experiments of the hypertexts, a labyrinth of options which references to other options; *WaxWeb* is an exploratory database composed of motion pictures; texts and 3D scenes.[11]

In the movie *Switching* (Morten Schjødt, 2003), the narrative is segmented, allowing a reconstruction of the story through a process of random choices. Thanks to digital computer technology, the spectator's participation is authorized by a direct interaction on the viewed image. With each action on the remote control, the spectator proposes a new video fragment, a new piece of the story, selected among all the available ones.[12]

All those mentioned examples highlight the new spectator's relationship within the interactive filmic work. This relationship between the spectator and the filmic work through the interactivity could define the notion of interactive cinema. But this interactivity raises some questions. If on one side, a beginning, middle and one end compose the film narrative, how the interactive cinema, by a participative action of the spectator, can renew this established way of making movies? Graham Weinbren affirms, "in my interactive cinema, one finds the equivalent: it is a succession of plans where the spectator's action produces the middle term. If the spectator does not act, the first plan remains. But on spectator's action, plan B appears; then, at the end of one moment, plan A reappears, transformed by the plan interposed or unchanged" [21]. The relationship between the impossibility of an action within the traditional movies and the fact of being able to change the course of the story in an interactive cinema leads us to redefine all the narrative structure of the filmic narrative. With the interactive movie, there is a desire to abandon the narrative; the narrative aims to have multiple opened ends, multiple middles and beginnings without

endings. Weinbren proposes "another image of form for the interactive fiction movie, the one of *narrative flow*, where the scenes are not necessarily connected between them by a central image. (…) Potential narrative flows, with abstract or chaotic elements, which take form when they cross together, which have a direction once in relation to the ones with the others" [21]. This concept of *narrative flow* is very convenient for the interactive filmic narrative, because it will make possible to connect the narrative, fragmented and non-linear, to the subjective and interpretative readings of each spectator. This way, it is necessary to release the movies from their traditional devices (projective and spectacular) and to open them with new configurations, through a truthfully spectator's participative action.

5. The transparency project

Transparency is a research project on the interactive filmic narrative.[13] It was conceived to reflect the new interaction possibilities within the motion picture and the new spectator role as an *interactor* [22] and it also reflects the conditions for the adaptation of the filmic narrative through interactivity. It is a short-movie installation that gives the spectator the possibility of interaction. *Transparency* proposes a direct relationship between the moving picture and the public; it considers the creation of a new device and the adequacy of an original interactive narrative structure. This project reflects several improvements of the *Carrossel* project [2]. A completely new original narrative adapted to an interactive structure, an improvement of the interactive device and public participation and an empirical study of the public reception based on interviews.

5.1. The story and its interactive structure

In order to create an interactive fiction it is important that the spectators' actions could affect the course of the story. In the short movie *Transparency*, the spectator has the possibility to do so, since the evolution of the told narrative depends directly on an effective participation of the public.

The script for *Transparency* was written following the concepts of *rhizome* [23] and potential narrative flows [21] as references. It is made up of 23 narrative segments that have been written in order to be complementary when viewed consecutively, even though every narrative sequence can be seen alone too. The spectator has the possibility to join the story in the middle, beginning or end; it is not a matter of sequentiality but fragments of a story that are completed by the subjective interpretation of every spectator. Every *Transparency* scene represents a possible link and a conjugation with another scene. The narrative sequences, formed by the different connection of scenes,

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[11] *WaxWeb* is a hypertext movie that adapts the motion picture *Wax Or The Discovery Of Television Among The Bees* (1991), from the same author.

[12] See also the *Uncompressed* project (2000) de Margi Szperling, who wins the first Interactive Cinema Festival at Porto, Portugal, in 2001. http://www.substanz.com/substanz.html/ (consulted in September 2001). *BD-Bipolar Disorder* (2003) from Joan Morey or *HyperPlex: a World of 3D Interactive Digital Movies*, Sparacino F, Wren C, Pentland A, Davenport G, in Workshop on Entertainment and AI/Alife, Montreal, Canada, August 1995.

[13] Transparency's web page: http://www.carloscaires.org/i-Cinema/transparency.html.

represent the possible paths according to the choices formulated by the spectator. Furthermore, the narrative sequences are given to be chosen randomly, according to computer program conditions that manage the allocations of the filmic segments to every request from the spectator.

At sunlight, a duel is being fought by *Peter*, *Sara* and *Michael* as in the Sergio Leone movie picture *L'Uomo, la bestia e la virtù* (Leone, 1953). It ends up with the death of one of them. He or she dies as a result of being shot through the heart. Any of the characters can be the lethal victim of the duel. It depends on the spectator to make the decision. After one of the characters' death, we step into a world, which is characterized by a non-linearity time. At random, the onlooker will be able to jump either into the future or into the past of the plot. In that world, life is characterized not only by precariousness and changeability, but also by unpredictability. The spectator becomes a potential narrator and looks for different stories that take place among the main characters.

The narration has been divided into six themes: treachery, narcissism, jealousy, suffering, love and sex, and every character is represented there. It tells the story of 1 day in the life of *Sara*, *Michael* and *Peter*; their sentimental, emotional and love relationship constitute the main domains. In this world, the story of every character is related to everyone else's and becomes sometimes unforeseeable. At each viewing, the narration takes various paths, the interrelationships sets of themes change and the interpretations of the stories vary according to every spectator.

Also, multiple possible paths through the various narrative sequences of the story highlight the fragmentary structure of *Transparency*. Then, the organization of the temporal and spatial links must be predicted beforehand. As it is a filmic narrative, the possibilities of interaction are done according to a predetermined temporal space; it means that the interaction accesses within *Transparency* are not always present.

The tree structure, too often prevalent within hypertext or multimedia projects, stimulates the invention of new compositions for the interactive filmic narrative [10]. In *Transparency*, the structure of the interactive narrative was conceived so that each fragment of the narrative includes the possibility of a link (see Fig. 1). It means that each one of the 23 segments can be connected in order to be the following sequence of its antecedent.

The intermediary of a random mathematical calculation does the distribution of the choices given to the spectators. The computer program selects from the database which of the 23 segments to include and allows the continuation of the narrative to each request of interaction. The distribution is made in a random variation given between one (minimum) and four (maximum) sequences at the same time. The progression of the narrative is done, on the one hand, according to the choices of a third element (the computer program), on the other hand, according to the spectator choices. This structure allows diverse and
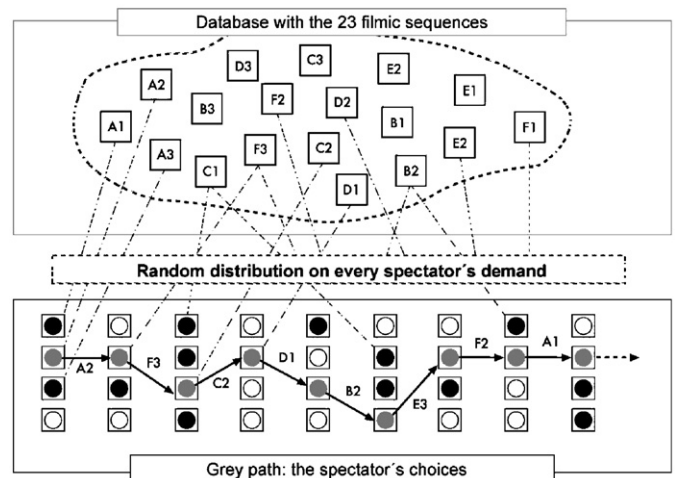

Fig. 1. The *Transparency* interactive narrative structure. Gray dots illustrate the spectator selections and the black ones, the possible choices of other narrative sequences non-selected.
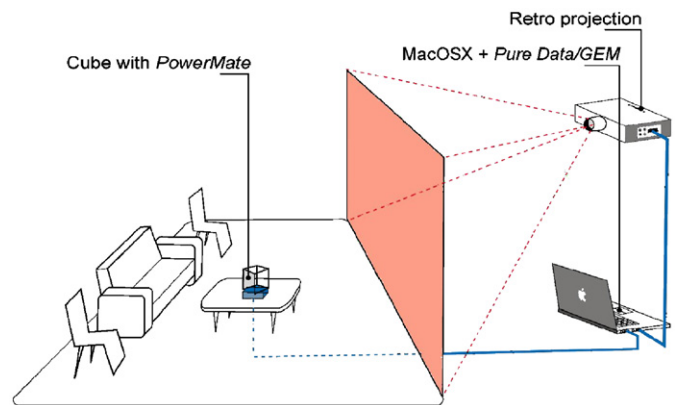

Fig. 2. The diagram installation.

singular combinations at the same time and arbitrary narrative evolution. We should take into account that a selection is possible only after having seen the preceding filmic sequence.

5.2. The interactive device

The *Transparency* device represents a double meaning. What is seen is influenced by what is done. That is to say, the spectator's action relates to the movements made by the motion picture, or the physical device manipulation produces several changes in the motion picture and in the narration of the story.

Transparency was conceived to be viewed in a dark room, on a rather large projection screen, allowing a strong immersion of the spectators (see Fig. 2).

A translucent cube placed on a coffee table in front of the spectators composes the physical device of interaction. Comfortably installed, the spectator has to interact through the "interactive" cube to make the filmic narrative
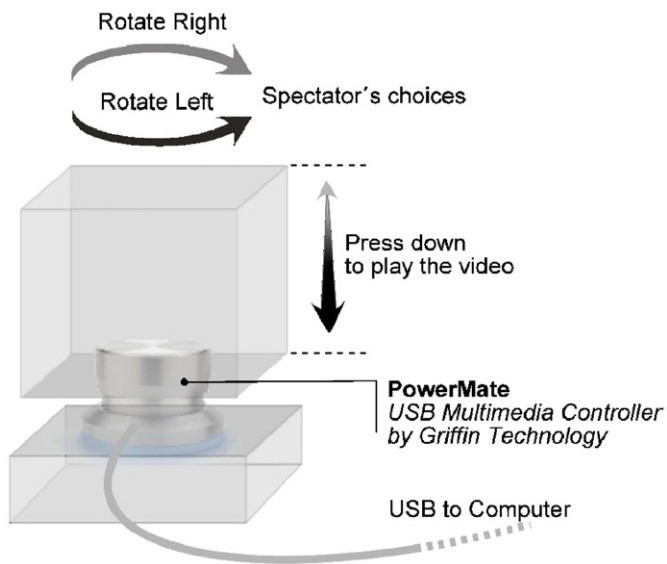
Fig. 3. The graphic representation of the interactive device with the *PowerMate* incrusted.

advance. This cube is the unique interface between the motion picture and the spectator, the whole essential technological device needed for the function of the project mechanism (projector, computer, sound and cables) remains either dissimulated, or placed behind the projection screen.

In this semi-transparent cube is encrusted the interface *PowerMate*[14] (by *GriffinTechnologies*), which is used as a link between the spectator's action and the filmic image. The *PowerMate* interface is a programmable controller that can be assigned several functions. In *Transparency*, three functions were programmed: turn-right, turn-left and click (see Fig. 3).

These functions correspond to possibilities of interaction from the audience, which also affects the motion picture projected on the screen. The projection itself represents also a cube, a 3D cube, where the point of view of the spectator is focused inside it (see examples in Fig. 4).

The motion picture segments are projected on the four sides of the 3D cube, according to the random choice given by the computer program. The spectator can then rotate the cube horizontally (to the left or to the right) in order to choose which narrative sequence he/she wants to view. The next choice of sequence can only be made after the complete viewing of the previous one.

This device certainly allows a narrative with multiple trajectories. The problem takes place when the spectator wants to know which story could come simultaneously after his last choice, which other endings could exist, or if he or she has seen everything. At this stage, the spectator can make himself some questions: How many narrative sequences should he or she view to fulfil the story? Has he/

Fig. 4. Several screenshots taken from *Transparency*'s projection.

she made the right choice? Or has his/her choice influenced the narration progress? In *Transparency*, the spectator has the possibility to review some sequences, because the options are given by a random function that accepts repetitions. But the doubt remains on the possible multiple ending questions; the reader's engagement is not the same anymore as when the narrative was given linearly and with a determined length.

[14]The *PowerMate* interface can be purchased at this address: http://www.griffintechnology.com/products/powermate/

5.3. The interactive software

Transparency has been developed and has been installed thanks to the PD program (Pure Data) and its graphic library called GEM (Graphics Environment for Multimedia).[15] PD is a real-time graphical programming environment for audio, video and graphical processing. It is easy to extend Pure Data by writing object classes called "externals", or patches called "abstractions". In fact, for the *Transparency* project several "abstractions" were written. These abstractions were divided into three categories: the implementation, the interaction and the relational abstractions. The implementation abstractions are used to generate the digital picture and to visualize the filmic segments. The interaction abstractions support the necessary calculations of the pseudo-random functions, the movements and actions on the motion picture—they decode the actions of the spectators on the physical device. The relational abstractions, as its name indicates, relates the two previous abstractions. They allow the necessary interdependence between the motion pictures and the interactivity; they put in relation the spectator's action on the physical device (the "interactive" cube) and its equivalence on the filmic sequences.

5.4. The spectator's participation

In the past century, artists presented their work completely finished to the public, separating it from the audience by a minimum-security physical space, like in museums or art galleries. The positive reviews on the media and the public's pleasure pointed out the success of the artistic work, but it did not influence the artistic practice directly.

Later on, audience participation and public involvement in artistic practices arose some questions: What should the new artist's challenges be? What are the new relationships between the artist and the public? Does the spectator apprehend the eminently interactive digital work over all sensation?

Let us focus on the *Transparency* project study. We have held several interviews with members of the public that have experienced this project in order to analyze and study their reception (processes and ways).

5.4.1. Description of the interview
We did ten interviews: five individually and one to a group of five people. A total of ten people were interviewed. Eight were men and two women. The average duration of spectators' participation was 27 min. The range of age varied from 24 to 65 years old.

5.4.2. Goals of the interview
To survey and characterize the public who effectively took part in the work. Some of the questions were, for

instance, if it was the first time that he or she had experienced an interactive installation, or how often the person visits contemporary art exhibitions or go to the cinema. To analyze the public's participation, not only according to *time parameters* (how long their participation lasted and for how long he or she experienced the piece of work), but also to the level of *understanding* (general agreement with the functioning of the device). To identify, on the one side, the elements of the interactive narrative in different parameters, and on the other, to confirm the perception of the participant spectator: non-linearity and fragmentation (random versus predefined sequence), the decision moments (bifurcation and narrative suspension), the repetition and narrative memorizing.

5.4.3. Preliminary results
When the spectators were asked if they preferred the option of choosing the scene or not, most of them agreed to have this option; besides, the order of the narrative segments was not the most important part for them; learning how to use the interactive device was very fast and it was not inhibiting; the story involvement was not so evident, most of them concluded that it was harder to understand this plot than those they were used to at the cinema; most of the interviewees felt that they were able to takeover their choices, but they could not control the uncurling of the story; finally, non-linearity, segmentation, suspension and bifurcation conditions of the narrative were always understood as necessary, while memorization and repetition were not.

6. Conclusions

In most of interactive narratives, the author foresees the anticipation of spectator's reactions. Surely the spectator is not free, in the sense of being able to do whatever he/she wants. Navigation and interaction rules predetermined by the author are quite rigid and let very little margins to the spectator's improvisation. On the other hand, the majority of interactive narrations are slaves of the digital interfaces attributes. In addition, their assembly and arrangement design are too often solved and defined by a technological prevalence: the *interactor*'s behavior [22] is so many times forgotten. What is the author's responsibility on this question? How can he/she surpass these restrictions?

In the interactive movie, the action vote of the spectator makes the things less interesting from the point of view of the plot (e.g. *Kinoautomat* and *I'm Your Man*) and often, the spectators are cast out of the various narrative derivations getting frustrated by their lack of participation or choices. The main difficulty of the interactive movie consists "of implying the player (spectator as a gamer) without allowing him to enter in the movie diégèse and in letting him interfere without giving him too much of control" (author's translation) [1].

In the *Transparency* project, the setting up of a device that allows random calculations on filmic sequences

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[15] Pure Data and GEM are open code programs and they can be downloaded at this address: http://puredata.info/downloads/

authorizes a certain independence of the author in relation to a predetermined narrative structure. Each segment of the story can be linked to another segment. Each spectator can perceive a totally different story depending on which choices he or she has done. Also, the project is presented in order to maintain a resemblance with the cinema device known to the spectators: the dark room, the back projection and the frontal screen. This disposition should help to improve the engagement and reception of the filmic narrative (Agency-Murray, 1997); fear of not knowing what to do in front of devices too often hermetic and complex is avoided here.

Which transformations must the filmic narrative accept in order to be involved within an interactive relation? By what processes the interactive filmic narrative gets in direct relationship with its spectators? Jean-Louis Boissier proposes some clues; he has noticed that the variability of the pictures seized on reality, as the choice of the points of view and the camera movements, should put in *oeuvre* what he has designated as an "interactive perspective" [24]. That the relation layer, as the third layer of the digital image, together with the picture layer and the sound layer, becomes "the support set of all possible actions on the image, the interactive and generative behaviors, the performance layer" (author's translation) [24]. Or that the bifurcation, the suspension, the mutation, the reversion, the comparison, the designation, the distance and the replacement should define, according to Boissier a synoptic table of the figures of the interactivity.

Acknowledgments

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