Chapter 15
Interactive Film: Forking Paths to a Complete Audiovisual Experience

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Abstract The evolution of forms of immersion in the history of cinema has contributed to a paradigm shift: the narrative thread does not have to be linear and the doors to an effective interaction between the narrative and the viewer(s) are open. Nowadays, experimental film and digital media use the most advanced technologies as aesthetic strategies that seek to submerge the public, giving them the freedom to build the narrative or an aesthetic experience by interacting with it. *The Forking Paths*, a project developed by the Research Center for Arts and Communication (CIAC), focuses on different types and models of interactive films, both from a theoretical and a practical perspective. The aim of this project is to conduct original research targeting the discovery of potential new knowledge, namely through practice and through the results of this practice (practice based research). The project platform includes the films produced for the project: *Cadavre Exquis* (2019), *Valsa* (2016), *The Book of the Dead* (2015) and *Haze* (2014). Having *The Forking Paths* project as a starting point, this chapter tragets two main goals: (1) to analyse possible models and levels of film interactivity, and (2) to trace possible evolutionary paths for audiovisual language.

15.1 A Brief Preamble—From Prehistory to the Present Day

Just four years after the birth of cinema, the Cinéorama (Fig. 15.1) premières at the 1900 Universal Exhibition in Paris. This filmic artefact simulated a balloon trip exhibited by 10 projectors on a 93-m-long 360° screen. The idea of audiovisual immersiveness arrived early but with great force: the spectators watched the film at the centre of the projection, inside a simulacrum of a hot air balloon basket. In the Pavilion Gallery of Machines, the Lumière brothers also opted for a large screen, 21 m long, and with a fountain underneath it that made it transparent and, therefore,

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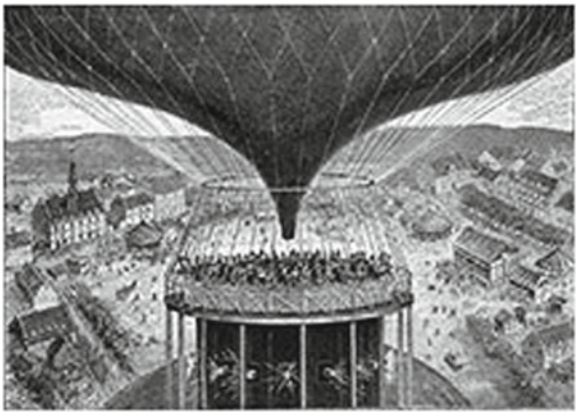

Fig. 15.1 Inside view draw of the Cinéorama, La Natur, Revue des Sciences, 1900

the projection was visible from both sides. A total of 150 films were projected and viewed by approximately one and a half million spectators [9, 12].

The cinematic shooting galleries also date back to the beginning of the century. Life Targets, the best known, were patented in England in 1912 (Cowan, 2018) [14]. Also considered a precursor of video games (namely first-person video games), this early target-shooting simulator consisted in a device that brought real bullets and images together. The screen was a strip of rolled paper so that the bullet holes could be easily removed. The audiovisual Pandora's box was open. Cinema could be anything. However, a certain narrative tendency quickly took hold (Thompson and Bordwell 2003). Young cinema spectators wanted to see stories, and directors like Georges Méliès understood that this medium could, in addition to telling stories, capture dreams [6].

In 1886, the Lumière had already filmed "Panorama of the departure from Ambérieu station" taken from the train. The first travelling shot in the history of cinema established an analogy, which was as simple as it was obvious, between the gaze of the train traveller and the cinema spectator: the window showing moving images is a screen. This experience was followed by different authors, and the boldness rose to a higher level [12]. Films dubbed the "Ghost Rides" genre, positioned cameras in front of the locomotive. Theis genre "inaugurated" the concept of the Subjective Camera and emphasise the passion for speed brought by transport machines.

Edwin Porter directed in 1903, "The Great Train Robbery". Porter followed the trend in train films—train robberies—and applied the morphological and syntactical innovations experienced in the complex filmic narrative "The Life of an American Fireman", released in 1902: continuity of action, mastery of the three families of the plane scale and parallel editing, a resource he perfected in "The Great Train Robbery".

Fig. 15.2 Frame from The Great Train Robbery, by Edwin Porter, 1903

The last shot of the film is a subjective close-up. Actor Justus D. Barnes, directly ribbing the audience, draws his revolver and shoots at the spectators. This interaction between the illusory moving image and the audience happens, this time, in a conscious and provocative way (Fig. 15.2).

Many films have tried to apply interactivity by defining moments of bifurcation, where the viewer chooses the path to follow among two or more possibilities, or offering different viewing options for the film narrative. One of the most successful projects is the Czechoslovakian film *Kinoautomat—one man and his house*, created in 1967 by Radúz Činčera for the World Expo in Montreal (Fig. 15.3). In this film, the audience is asked (nine times) to choose one of two given possibilities to continue the narrative. At the first screening in Montreal, the process of choice, by voting, was mediated by actors.

Several projects allow the viewer to opt for one of two endings. This is the case of the film *Mr. Sardonicus*, produced and directed by William Castle, in 1961. Before the final scene of the film, the viewers can vote using a card they are given at the beginning, with two possible drawings, just as it happened in the Roman arenas, where the gladiators fought to entertain the audience: a thumb up and a thumb down,

Fig. 15.3 Frame from the film *Kinoautomat*, by Radúz Činčera, 1967

which allows them to choose whether the character should be mercifully spared and live or be punished and die.

I'm your man, directed by Bob Bejan, in 1992, also claims the title of first interactive film in the history of cinema. Just as in previous projects, the viewers decided the unfolding of the narrative using interactive buttons installed on their chairs.

Another film announced as "the first interactive film in the history of cinema" was released in 1995, *Mr. Payback*, written and directed by Bob Gale (Fig. 15.4). Depending on the audience's interaction, this film lasted approximately half an hour. The viewers were called upon to decide at various points in the narrative, again, by using a remote which was attached to the chair. The film was not very well accepted by the critics, mainly due to the absence of a plot; nevertheless, it marked an important step in the way viewers experienced cinema, although the experience itself has been considered by many more like playing a videogame rather than watching a film.

Between 2002 and 2005, Lev Manovich devoted himself to the development of the *Soft Cinema* project, a dynamic computer-oriented installation in which the viewers can, in real time, build their own audiovisual narrative from a database containing 4 h of video and animation, 3 h of narration and 5 h of music.

Later, in 2010, the horror film *Last Call* by 13th Street, a television channel specialising in horror films, was announced as the world's first interactive horror film (Fig. 15.5). Using a software that enables voice and command recognition, one of the spectators present in the movie theatre receives a phone call from the protagonist asking for help. The protagonist wants the spectator to help her choose the best way to escape the serial killer who is chasing her. Through this technology, the film becomes unique since it depends on the instructions of the person who answers the phone.

Fig. 15.4 *Mr. Payback*, by Bob Gale, 1995. Film poster

Fig. 15.5 Frame from the film *Last Call*, produced by 13th Street, 2010

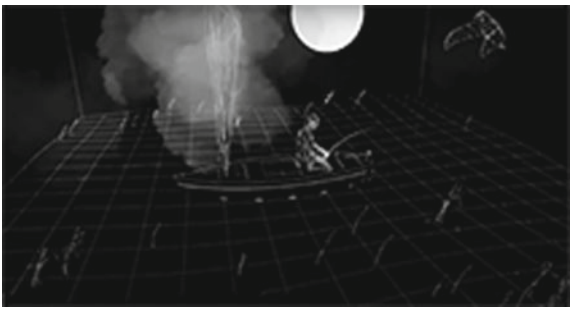

Fig. 15.6 Frame from the film *The Carp and the Seagull*, by Evan Boehm, 2012

In 2012, Evan Boehm and Nexus Interactive Arts create *The Carp and the Seagull*an interactive 3D movie that takes advantage of WebGL and HTML5 technologies (Fig. 15.6). The film describes a tale of the fisherman Masato, who one day encounters the spirit Yuli-Onna that appears to him in the shape of a seagull.

However, recent examples of interactive films, such as Netflix *Black Mirror: Bandresnatch* (2018), continue to adopt the same structure used by the pioneering interactive films in the 1960s: an arborescent structure based on a simple and occasional choice made at certain moments of the narrative, where the spectator-user can choose path A or B.

15.2 The Forking Paths

The Centre for Research in Arts and Communication (CIAC) at the University of Algarve (UAlg) has been producing digital artifacts that promote the interconnection between arts and technologies, and part of the developed products are the result of projects in the field of interactive cinema. These lines of applied research, whose matrixes have served as a starting point for the emergence of several PhD projects, are based on the development and evolution of audiovisual language. On the other hand,

the production of platforms whose objective is centred on the creation, dynamisation and expansion of networks of excellence in the areas of culture and digital art have been CIAC's most visible work. It is also important to remember that we live in a post-Benjaminian time [1], where the passive relationship between public and work has changed paradigm. This new relationship also embraces cinema and offers the viewer an active role of co-authorship regarding the final form of the film. It is in this context that the platform *The Forking Paths* emerges, prepared to support and host films for collective or individual viewing.

A phase of experimentation, based on 'practice-based research': original research undertaken to gain new knowledge through practice and the outcomes of that practice [2–5], resulted in the production of four interactive films:

(1) *Haze* (Fig. 15.7) shown to the public at the FILE 2015 International Festival of Electronic Art in São Paulo. "Haze" is divided into three distinct flows: one central and two lateral, one hidden on the left and the other hidden on the right. The choice of the flows will be made by the spectator-protagonist (the spectator who interferes in the narrative becoming the main character). Each flow conveys a distinct experience of the narrative. This film can also be seen on classic cinema projection screens. In this variant, the central stream is projected onto the screen and the side streams can be viewed on the mobile devices of the audience members.

(2) *The Book of the Dead* (Fig. 15.8) seeks to interact with the spectators on two levels: by controlling certain actions of the characters and by controlling the time of the narrative, allowing them to read at their own pace. When we read, we use our own reading time, we can read slower or faster. But when we listen to something being read for us, we depend on a reading time that is not ours and to which we have to adapt. The same happens when we watch a film: the viewing time is imposed by the editing rhythm, which can be faster or more contemplative. In *The Book of the Dead*, the viewers are the ones who intuitively choose the duration of each shot.

Fig. 15.7 Frame from the film *Haze*, by Bruno Mendes da Silva [10]

Fig. 15.8 Frame from the film *The Book of the Dead,* by Bruno Mendes da Silva, 2015

(3) *Waltz*, by Rui António, CIAC collaborator. Filmed with multiple cameras, *Waltz* proposes a physical interaction between man and machine, through a Kinect sensor. This film was part of the PhD project *Personagens à procura de um espet-ator*, which aims to offer the viewer control over the film editing in real time, giving them the status of co-author.

(4) *Cadavre Exquis* (Fig. 15.9) was implemented as an installation controlled by motion detection. At the time of this writing, it has been presented to the public three times: at the Literary Festival of Macau, China, in March 2019; at FICLO (Festival of cinema and literature) in Olhão, Portugal, in April 2019; at Artech 2019, in Braga, Portugal, in October of the same year. The opening scene of the film *Cadavre Exquis* is frozen (stopped in time). Three characters meet in the same room. However, the viewer (who interferes in the narrative) has the possibility to travel through the freeze-frame, getting closer to or moving away from each character. When the viewers get closer to a character, they may select him/her. That choice results in a flashback that leads up to the frozen moment. By choosing the last character, the viewer will unfreeze the opening scene, setting it in motion.

Three scriptwriters were invited to create three narratives based on a character who would meet two other characters in a room at the end of the narrative. The scripts would form a succession of sub-narratives which, just as in the *Cadavre Exquis* game played by surrealist artists, converge in the main narrative, eventually ending up in a succession of unlikely scenes. A common opening scene would be added: the scene of the three characters in the same room.

It is hereby intended a connection to the idea of automatism and to the processes that govern the unconscious: dream-condensation and dream-displacement are not perceived at the time they occur; while we are dreaming, we are not aware of the process.

The very idea of film interactivity may be regarded as an intolerable artificiality, but, at the same time, as a catalyst to the idea of collective creation, due not only

Fig. 15.9 Frame from the film *Cadavre Exquis,* by Bruno Mendes da Silva, 2015

to the possibility of co-authorship offered to the viewer, but also to the freedom the viewer is given to deconstruct the filmic structure at any time.

15.3 Models and Levels of Film Interactivity

Despite not exhausting the experiences made in the scope of interactive films, the examples we discussed describe potentially innovative strategies to make the spectator integrate the diegesis, using interfaces (remote controls, phones, tablets) or sensors that enable interaction with the filmic universe. But how can all interactive films be grouped, regardless of whether they are filmic experiences or commercial products? In an attempt to find a set of models that make it possible to encompass all films of interactive nature, the following criteria were found (Silva et al. 2019):

(a) the **arborescent model**, based on a simple one-of choice made at certain moments in the narrative, where the viewer can choose paths A or B, for which we may use the film *Last Call* (described in Sect. 15.1—A Brief preamble—from the prehistory to the present day) as an example;
(b) the **constructive model**, which involves multiple interpretation, according to a number of closed options offered to the viewer, where we can include the film *Haze* (described in Sect. 15.2—The Forking Paths);
(c) the **paired model**, which allows the incorporation of content external to the narrative, as in the film *Take This Lollipop* (Fig. 15.10), by Jason Zada (2011). The film-app requests that viewers temporarily allow access to their Facebook account to incorporate content and information from the viewer's Facebook feed that completes the narrative;
(d) the **fertile model**, whose process of interactivity between viewer and film enables the emergence of new content that was not defined a priori. This last model presents a possibility of breaking the production lines (commercial and

Fig. 15.10 Frame from the film *Take this Lollipop,* by Jason Zada, 2011

experimental) that have been taking place since the middle of the last century in the field of interactive film. Up to now, the possibilities of interactivity have always been limited to the possibilities of choice offered by each project. From the outset, they were pre-defined. However, we can only speak of an effective interactivity process when the viewer has the possibility of generating new content that was not initially foreseen. This possibility of effective man–machine interaction is complicated by nature because it depends on a process of pre-production, production and post-production. However, if we think of the hypothesis of the digital animated film conjugated with the advent of cybernetics and artificial intelligence, the emergence of narratives that enable automatic creation is very close. It is therefore important to think about the adaptability of the narrative to the user according to a new paradigm: the authorship of the film is divided between the one who thinks the film, the one who will enjoy the diegetic elements and the one who will bring the surprise factor to the narrative—the AI.

15.4 Results

The results indicate that the spectator has gained autonomy regarding control and the participation in the film narrative. However, despite technological advances in new interactive projects, such as motion-sensors, virtual reality or other interfaces, the spectator is still confined to pre-produced content. The very idea of film interactivity may be regarded as an intolerable artificiality, but, at the same time, as a catalyst to the idea of collective creation, due not only to the possibility of co-authorship offered to the viewer, but also to the freedom the viewer is given to deconstruct the filmic structure at any time. We concluded that we can only speak of true interaction when there is a reciprocal influence on the communication process. Such an interaction does not take place in any of the productions created up to the publication of this paper. The spectator is limited to certain insurmountable and predetermined options. With the imminent possibility offered by the Fertile Model, the spectator acquires creative powers beyond the author's control. The creation of unplanned content, in

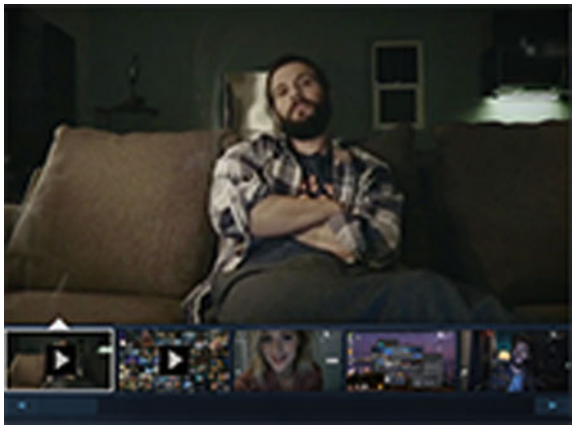

Fig. 15.11 Frame from the Videogame *Telling Lies*, by Sam barlow, 2020

other words, content resulting from auto-creation, is thus enabled, whereby the idea of a meta-author becomes a reality. This will certainly be a rupture in the logical sequence of the short history of interactive film, a turning point where a film can become something it has never been before: a complete audiovisual experience. As [7] brought forward:

The typical scenario for twenty-first century cinema involves a user represented as an avatar existing literally "inside" the narrative space, (…) interacting with virtual characters and perhaps other users and affecting the course of the narrative events.

But then, how can we differentiate between an interactive film and a video game? In fact, some videogames make this line very blurry. *Telling Lies*, by Sam Barlow, 2020 (Fig. 15.11), uses a video archive of real footage to engage the user in a complex narrative plot.

We can, however, find at least one differentiating line: the interactive film, unlike most video games, does not have a concrete goal to achieve, which is, ultimately, victory within the framework of a proposed challenge. On the other hand, both aesthetics (e.g. Art Game genre) and AI are very much rooted in some video game subgenres. In the Art field, artificial intelligence has inspired numerous creative applications displayed in reference spaces such as MoMA, Ars Electronica or the Beall Center for Art + Technology.

Nonetheless, the very idea that the viewer can make a universal association of specific forms with aesthetic qualities is questionable [13]. Aesthetics is considered a human domain, which is why the intersection between AI and the discipline of aesthetics is so important. Its complexity seemed for some time incompatible with algorithmic logic. Art, aesthetics and creativity are the pinnacle of human capabilities and therefore represent an advanced stage of AI. In this sense, this complex field becomes the ultimate testing ground for the possibilities and limitations of AI [8].

15.5 A Proposal to a Final Path *of Walking on Ice*

In late November 1974, Werner Herzog received a phone call from Paris. He was told that his friend Lotte Eisner, a writer and film critic, was seriously ill and would probably die. Herzog said that this could not be. He would not allow his friend to die. He grabbed a case, a compass and a pair of new boots, and took the most direct route from Berlin to Paris, convinced that she would live if he went to her on foot (Herzog 2011).

We propose the production of an interactive film based on Herzog's journey, a film called *Of walking on ice* that portrays the harshness and solitude of that journey. While travelling from one city to the other, surprising and arbitrary encounters might take place. The user must always walk in the same direction, towards Paris. To do so, Herzog's boots will be replaced by a treadmill, set at a constant speed. The frozen landscape will be recreated three-dimensionally on the fly, i.e. while in motion, by AI and perceived through Rift glasses and VR gloves. Finally, it is important to convey how cold this late-November-journey was. Such sensory experience can be achieved through both the temperature of the exhibition venue and the binaural sound.

This proposal intends to materialize the concept of interactive film defined in the fertile model (previously mentioned in subchapter 3—Models and levels of film interactivity). It has as main reference the work *The Legible City* (1988–1991) by Jeffrey Shaw (Fig. 15.12), which allows the audience to wander, both in a virtual and interactive way, through a city that reveals itself through words. Those words are used to replace spaces and forms of architecture and are meant to be read by the spectator: "Using the ground plans of actual cities—Manhattan, Amsterdam and Karlsruhe—The Legible City completely replaces the existing architecture of these cities with text formations written and compiled by Dirk Groeneveld" (Shaw, n.d). In this work, we find the ideas of immersiveness, space reconfiguration and dissolution of the boundaries between the physical and the digital, taking the viewers into the work, as if it was their (new) place. Technically, the work resorts to position sensors activated by the interface of the pedals and the steering wheel of the bicycle. On the other hand, we have a projector and an LCD monitor that together allow the visualization of images in real time. The simulation happens when the spectators, while pedalling a bicycle previously equipped with position and speed sensors, choose their route from a small LCD monitor to be able to view the projected and always updated images.

In the proposal *Of walking on ice* (Fig. 15.13), the user's ascent to the treadmill is perceived by a sensor that triggers a narrative introduction: a voice over that contextualises the situation, a sort of audible open caption. Then the path begins. The users' steps are marked by the binaural sound: sometimes users step on water, others on ice, they might also step on snow, or even on mud. Nature works as a whole and reacts to the behaviour of each user. Random animals can run away, attack, allow themselves to be petted or follow the user. The outcome depends on the way the users interact with the diegetic elements they casually encounter along the way: snowstorms, fog, hailstorms, rain, ice, deer, trees, crow flocks, northern goshawks, pheasants, noises, goats with rattles, cackling roosters, a tractor that leaves furrows,

Fig. 15.12 *The Legible City*, by Jeffrey Shaw, 1988–1991

Fig. 15.13 A draft for the film *Of Walking on snow*

bells, hills of fog, dogs, an old woman with crooked legs and a bicycle, two men of African descent, a train at standstill and a bus stop.

We conclude by saying that producing this pioneering film as an example of **The fertile model** is the final goal of *The Forking Paths* project. *Of Walking on Ice* proposes to be the first interactive film to use AI, seeking the way to the complete audiovisual aesthetic experience.

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