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NARRATIVE BIFURCATION, CLOUD COMPUTING INTERFACES AND HITCHCOCK

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ABSTRACT

From a narratological perspective, this paper aims to address the theoretical issues concerning the functioning of the so called «narrative bifurcation» in data presentation and information retrieval. Its use in cyberspace calls for a reassessment as a storytelling device. Films have shown its fundamental role for the creation of suspense. Interactive fiction and games have unveiled the possibility of plots with multiple choices, giving continuity to cinema split-screen experiences. Using practical examples, this paper will show how this storytelling tool returns to its primitive form and ends up by conditioning cloud computing interface design.

INTRODUCTION

Narrative theories have allowed the interpretation of traditional narrative fiction to be based on some quite sound structural foundations. However, new discoveries in other sciences and the practices of hypermedia are providing grounds for updates and reformulations.

Most commonly applied to the mathematical study of dynamic systems, bifurcation occurs when a change made to a structure causes a sudden qualitative or topological alteration in its behaviour. In discourse, bifurcation is present in the choice of words, conditioned by the vocal tract (Benveniste 1974). The idea of bifurcation is reinforced by a binary logic mode of thinking. It should be reassessed in the light of the newer formal logics, namely the resultant from computer programming (three value or fuzzy logics). This could bridge one of the gaps between arts and sciences, since the latter, that relied on strict logical systems where things were black or white, can get closer to the former, hovering in a grey, fuzzy, intermediate area.

NARRATIVE BIFURCATION

Bifurcation is an outcome of the causal and chronological dimensions of all kinds of discourse. It is essential to the functioning of any kind of narrative. Here it will be adopted the definition of narrative already offered (Barbas 2010; Ryan 2001), and reinforced the idea that all discourse is a narrative. An account corresponds to the representation of at least one event; each event is given under the form of two propositions (sentences). The story results from the relationship established between those two sentences (by

contiguity and consecution). In its core, this definition of narrative can be extrapolated to the act of offering any kind of information – being it scientific or other. It is this feature that will condition any kind of information retrieval, by any user, from any interface.

Bifurcation and simultaneity

In written or oral narrations simultaneous events are rendered sequentially. As we have seen (Barbas 2010; Monfort 2007) the order of the presentation can be crucial to the meaning of the story. In traditional narrative, bifurcation implies that the author will choose one of the events discarding the other, the outcome of a conflict; the user/reader will have to comply and accept it.

At plot level, this procedure can be used as a stylistic tool. The author can give fractions/sequences of each action one after the other, alternatively. This is done in written fiction, but the strategy is more evident in cinema or hyperfiction, and is the basic tool for the creation of suspense. In the wake of Hitchcock, Brewer and Lichtenstein (1982) have claimed that it is possible to instigate affective states in the reader by arranging the temporal order of the events underlying a story world. Their theory explains that suspense could be evoked by presenting the events of a story chronologically to the reader. Yet, against Hitchcock – to whom the reader/spectator must be God, and know more than the characters – they suggest that surprise and curiosity could be caused by hiding a critical fact or event early in the story world and disclosing it later in the text.

BIFURCATION AND SUSPENSE

For Hitchcock: «On the screen, terror is induced by surprise; suspense by forewarning» (Gottlieb 1995). Suspense has been defined as a feeling (uncertainty) or an emotion (anxiety) concerning the outcome of certain actions – dramatic or not. The main problem is that the effect (resulting sensation/secondary) is being defined by the cause (play with time/primary expectations).

Suspense results from the manipulation of order and time of narrative sequences. Says Hitchcock: «A light hearted comedy played slowly may produce the sense of impending doom, just as a too brightly acted drama might never give an atmosphere of tragedy». Suspense is achieved by the order chosen to present the actions (montage), or by the delay in the resolution of the bifurcation (barthesian catalysis).

The play with order has already been addressed. The problem of duration/time has to include a factor external to

the narrative. To be effective, suspense has to consider the dynamics of the user attention span – says Hitchcock: «How many people realize, I wonder, that we do aim at moods in our films? We call it 'Tempo' and by paying careful attention to the speed with which we act our little plays we do attempt to guide the observing minds into the right moods.» (Gotlieb 1965:167).

'Tempo' and the attention span

The Hitchcockian 'Tempo' could be a synonym to the attention span: the amount of time that anyone can concentrate on a task. Studies on attention span (Middendorf and Kalish, 1996, i.e.) are usually centered on student performances. But there is a general agreement that human beings have, at least, two types of attention, short and long term. The first, is a focused, brief response to a stimulus, that may be as fast as 8 seconds. The latter, is a sustained effort that allows the production of consistent results on a task over time. The range – for an healthy adult – reaches the maximum of 20 minutes at a time. This span builds up in a curb, that can be renewed, and that allows the individual to concentrate in longer tasks – being it study, watching a movie or browsing the web. Hitchcock builds his film sequences playing with this two span factors: the greatest amount of information in the shortest time (4/12 seconds) up to the climax in circa 12 minutes.

Like a goldfish

The controversies surrounding these attention spans have been transferred to the new media. As it happened with books, authors believe that the human attention scope is decreasing as modern technology, especially television, increases.

Internet browsing is charged with a similar effect (Carr 2010) because it enables users to easily move from one page to the other: «Navigating linked documents, it turned out, entails a lot of mental calisthenics – evaluating hyperlinks, deciding whether to click, adjusting to different formats — that are extraneous to the process of reading.» A 2002 article from BBC News, still quoted (Ebert 2010), forebodes that we will all end up with the attention span of a goldfish.

User studies – including tracked eye movement ones – show that people start to read faster and less thoroughly as soon as they go online (Carr 2010). The argument is that «each glance breaks our concentration and burdens our working memory, [and] the cognitive penalty can be severe». The penalty is amplified by what brain scientists call switching costs. Every time we shift our attention, the brain has to reorient itself, further taxing our mental resources. Yet, it seems that every medium develops some cognitive skills at the expense of others (Greenfield 2009).

These studies do not specify which kind of attention was being measured – short or long term. And the issue was to determine what or how can make the users «stick» to a website. It seems that web surfers show a «maddening unwillingness to stay put». Ever on the lookout for engaging content, most online viewers spend less than 60 seconds at an average site.

Yet, internet should not affect the attention span anymore than a book with footnotes, endnotes, accreditations, bibliography and an index. Humans use their concentration

in accordance with the tasks they are executing. Browsing should naturally require a short term attention span – the same as the necessary to peruse a telephone directory – and the switch to long term attention will logically occur when the effort to obtain material/information becomes relevant.

Programming Suspense

Besides the above differences in human attention span, user studies should also consider as a useful measure the 'Tempo' /speed of the information provided.

The technique of postponing story resolution/delaying bifurcation is easy to computerize. The MINSTREL system, i.e., includes additional events that detail the protagonist's struggles in between the story's climax and its resolution (Yacine 2011). However, experiences with algorithms to program 'suspense' have not succeed: «While the results of this study do show that Suspender was effective in generating suspenseful stories, the design of the experiment does not allow us to point conclusively at a single reason for this effectiveness» (Cheong et al 2008).

BIFURCATION AND MONTAGE

Editing is the signature of an author, his style. It plays the main role in Hitchcock's creation of suspense. Each juxtaposition of shots is carefully prepared to achieve its utmost impact. The famous shower scene in *Psycho* (1960) uses montage to hide the violence. The knife stabbing the body is never shown; the illusion of violence is created through the editing speed. In *The Man who knew Too Much* (1956) climax is achieved in 12 minutes. There is a plot to assassinate a statesman at a concert, and the audience is immediately informed of the exact point in time when the crime will occur. «The very first thing that Hitchcock does is to establish the situation and indicate all who will be involved. This is done for story purposes, as well as to keep with his principle of constantly informing the audience, in an efficient 38-second sequence.» (Sly 2008). Following this cue to analyze *The Rope* (1948), Brandon and Philip strangle David Kentley in the first 3 minutes; the hiding of the corpse and the set up for dinner are ready at minute 11:36 – when a close-up shows the audience the poorly hidden rope.

FROM THIRD OPTION TO MULTILINEAR PLOT

In storytelling, the existence of a choice at the level of the middle function creates a binary opposition up to now considered impossible to surmount. This matter has been addressed by hyper fiction practitioners and theorists.

Chris Crawford (Crawford 2004) considers that more than two alternatives are irrelevant: «If the user has reached the climax of the story and must choose between leaving his girlfriend for the war and shirking his duty, having only two choices doesn't detract from the power of the interaction; it's difficult to imagine any other reasonable possibilities». Further on, affirms that the computer cannot offer the third option, because «the correct one would be obvious to the reader». He is right, but for the wrong reasons – the problem is that the reader can only follow one option at a time.

Emily Short contradicts him with her practice – since her first work, *Galatea* (2000), with multiple plots and endings: «Galatea has what I call a multilinear plot: unlike traditional IF, it has no single path to victory. Instead there are a large

number of endings, some more satisfactory than others, of which many could be considered "win" states» (Short 2008). In her collective work *Alabaster* (2008), a «fractured fairy tale» inspired by *Snow White*: «The Queen is certainly a witch – but her stepdaughter may be something even more horrible... There are some eighteen possible endings to this fairy tale. Some of them are even almost happy».

The multiplicity of plots – of «third options» – may allow the user to experience large segments of the game in different ways, on different plays. These possibilities have already been explored in games that may contain entire alternate scenes and segments (*Losing your grip*, Stephen Granade, 1998; *Scavenger*, Quintin Stone, 2003; *Heavy Rain*, Sony, 2010) or multiple endings (*Slouching Towards Bedlam*, Daniel Ravipinto and Star Foster, 2003). But in the end neither evades bifurcation.

LITERARY AND CINEMATIC EXPERIENCES

This polemics can have a retroaction effect on narratology. The two options alternative has been proved correct with the literary analyses of traditional linear narrative because it was the norm. Yet, there have been literary experiences of more than one option, and multiple endings hypothesis.

Theoretically, the problem is addressed in Umberto Eco's *Opera Aberta* (1979) – where the ending, corresponding to a total absence of viable alternatives, or alternatives with equal weight, are (supposedly) left to the reader. In practice, there have been experiments to surmount bifurcation and present the reader with multiple choices. This consists in offering, at plot structural level, three possible and equivalent ways of solving a conflict. As to the theatre, there is a very dramatic "third option" in the tragedy *Oedipus Rex* (III vv. 950-970) by Sophocles (c. 497/6-406/5 BC). Curiously, as will be done by Hitchcock, the suspense/solution to the dilemma, results from the fact that the audience has all the premises (three) and the tragic characters only two.

Playing with bifurcation is the leitmotiv of the first of the novels, *Life and Opinions of Tristram Shandy* (1759-1789), by Laurence Sterne (1713-1768). Amongst the most recent works of fiction (prior to the pc's boom) it must be referred *The French Lieutenant Woman* (1969) by John Fowles (1926-2005) presenting three alternative endings (not so well worked-out in the 1981 film directed by Karel Reisz with Harold Pinter's screenplay).

In cinema there is a recent inconspicuous film whose intrigue is completely built upon the hypothesis of a "third" hidden option, always prepared by the plot, but becoming visible only when the actual scene is enacted – *Dirty Rotten Scoundrels* (1988), directed by Franz Oz, with Michael Caine, Steve Martin, and Gleanne Headly, with script from Dale Launer, Stanley Shapiro Paul Henning.

All these examples prove, however, that, independently of the quantity of plots or endings available, the reader will only, and ever, be able to follow one of them at each time.

Simultaneity and split screen

So, simultaneity is the problem of dealing with two events occurring at the same moment inside the narrative. In cybertext, tv serials and cinema it can be enacted through the technique called «split-screen». This is the visible division of the screen in half, or presenting several simultaneous images.

It intends to destroy the illusion that the screen's frame is a seamless view of reality, similar to that of the human eye.

This intercut technique of dividing the screen has its first example in *Are You There?* (1901) a 35mm, black and white silent movie directed by James Williamson.



Figure 1: James Williamson - *Are You There ?* (1901)

In *Suspense* (1913), a thriller directed by Phillips Smalley and Lois Weber, this technique is called the triptych – to show several actions occurring at the same time.



Figure 2: Phillips Smalley and Lois Weber - *Suspense* (1913)

The telephone as an pretext is also the theme of more recent and famous split-screen movies – from *Pillow Talk* (1959) directed by Michael Gordon, with Rock Hudson and Doris Day (Academy Award for Writing Original Screenplay) to *Eat, Pray, Love* (2009) directed by Ryan Murphy, with Julie Andrews.

From split-screen to mosaic

The intercut technique dividing the screen in two halves, or the montage technique allowing it to incorporate several shots of different events in one scene, have exploded with the arrival of digital video technology. The division is much easier to accomplish, and recent digital films and music videos have explored this possibility widely and in depth. It has almost become the norm: in tv serials, since *24* (2001), all have several scenes using this technique.

The split screen sequences – even when the screen is filled-up with images – eventually are reduced to only one picture, conventionally occupying solo the screen. The same happens with the fragmentary «mosaic-screen» (Branco 2008), producing similar effects. Both options fit into the use of multi-frame imagery; and the problem with both is related with the way humans look at an image: if the screen is

partitioned in more than four sections, the message becomes unreadable.

Also, the presence of multiple frames needs an attention focusing point. This can be achieved by making one frame a little larger than the others; by giving the dialogue/sound of only one of the scenes; or by playing a unique soundtrack. Whatever the choice, narrative unity has to be secured.

CLOUD COMPUTING AND INTERFACES

Cloud computing is the movement towards a network based environment, implying novel conceptual models for storing and sharing digital information (Terrenghi 2009; Pan 2011). The server is replacing the desktop. And the exhibition and visualization of resources are exploring the imagetic possibilities offered by split- and mosaic-screen, following the latest trends.

Cool iris - Cooliris (<http://www.colliris.com>) is a free downloadable plug-in that turns any browser into a super media browser at the click of a mouse. Images are presented as a waving gallery, and the user can flip through them as in a catalogue.

Youtube Doublor and **You3b** – provide the possibility of playing two or three videos at the same time. **Youcube** (<http://youcub.es/>) by Aaron Meyers (2009) is an open source software that allows visitors to map six YouTube videos onto a cube that can be manipulated in 3D space. As the cube rotates, the corresponding video sounds fade in and out of audible range.

Microsoft has upgraded to **SilverLight 5**, promising to change the face of UI on the web. PivotViewer (<http://www.microsoft.com/silverlight/pivotviewer/>) is said to make it easier «to interact with **massive amounts** of data on the web in ways that are powerful, informative, and fun. By visualizing thousands of related items at once, users can see trends and patterns that would be hidden when looking at **one item at a time**», and: «the animations and natural transitions provide context and **prevent users from feeling overwhelmed** by **large quantities** of information» [bold is ours]. The propaganda hides a «denegation», users are overwhelmed by massive amounts of information, and can only look at one item at a time. The presentation of information in multifaceted windows/screens is invading the web and will certainly change the user experience. However, the user will continue to act at her own pace.

CONCLUSION: BIFURCATION RETURNS

The web and computers are being invaded by new forms of presenting the information. However, quantity is not quality even when aesthetically presented. It is humanly impossible to look at more than one item at a time. So, from the screen side, narrative bifurcation issues are still at work, in presence of massive amounts and mosaics of information. From the user side, behaviour is conditioned by physique, actions and reactions, brain functioning and human attention scope. Even in the case of long term, the span will be focused only on one task at a time, and not for longer than 20 minutes, with a peak of attention around 13 minutes – just like in classes, in lectures or Hitchcock's movies.

Considering that the human user's brain will keep working at its own pace, cloud computing interfaces will have to comply with Hitchcock's 'Tempo'.

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