A theoretical overview on the expression of time in digital cinema

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Abstract: The purpose of this essay is to present and discuss different theoretical perspectives, such as Steven Shaviro's post-cinematic and Garret Stewart's postfilmic notions, in a search to better understand the consequences of digital technology to film image and narratology. Its hypothesis is that contemporary fiction time might be a prolongation and an effect of the postmodern condition, unfolding in a sense of continuous *presentness* through the lack of actual movement and materiality of the digital form. More specifically, I combine what the contemporary theoretical debate has to offer on the issue of the index film, or its lack.

Keywords: digital film; time; fiction film.

Resumo: **Uma visão geral sobre a expressão do tempo no cinema digital -** O propósito deste artigo é apresentar e discutir diferentes perspectivas teóricas, como a noção de pós-cinemático de Steven Shaviro e pós-fílmico de Garret Stewart em busca de melhor compreender as consequências da tecnologia digital para a imagem e narratologia do cinema. A hipótese é que o tempo da ficção contemporânea pode ser uma prolongação e um efeito da condição pós-moderna, se desdobrando em uma sensação de constante presença por meio da falta de um movimento real e materialidade da forma digital. Mais especificamente, eu combino o que o debate teórico contemporâneo tem a oferecer sobre o tema do index do filme ou sua falta.

Palavras-chave: filme digital; tempo; filme de ficção.

This paper analyses a recent theoretical concept in film theory that critical theory has called post-cinematic (Steven Shaviro), pseudo-postmodern (Alan Kirby) or even post-postmodern films (Linda Hutcheon). Such approach appears to differ from postmodern theoretical ideas of Frederic Jameson's, Linda Hutcheon's and Andreas Huyssen's on nostalgia, dystopia and emphasis on space. New digital possibilities seem to have changed

our focus to *presentness* in fictional narrative constructions and cinematic resources. The first section begins discussing the issues that have put postmodernism into question, followed by a theoretical overview of contemporary cinema.

Postmodernism?

This study hypothesises that contemporary fiction time might be a prolongation and an effect of the postmodern condition. Therefore, it does assimilate the term postmodernism, but it also considers its implications. I give preference to the adjective "postmodern" instead of the noun "postmodernism", because apparently theoretical discussion is still far from achieving an agreement. The noun would infer a finished discussion or a term that has a settled meaning. As a matter of fact, some theorists, such as Russell West-Pavlov, do not even observe a real break between modernism and postmodernism. He states for instance that technologies such as the internet, mobile phones, and Skype, "are not genuinely postmodern to the extent that they merely evince the intensification of trends present in modernity from the outset" (WEST-PAVLOV, 2013, p.140), which implies postmodernism as "an accelerated, intensified form" (WEST-PAVLOV, 2013, p.151) of modernism, and not as an autonomous movement.

In the same direction, Bruno Latour states that we have never even been modern when emphatically declaring that "no one has ever been modern. Modernity has never begun. There has never been a modern world" (LATOUR, 1991, p.47). Such statement is explained with the argument that modernity is grounded on a contradiction: the distinction between nature and man. Nevertheless, this dichotomy creates *hybrids*, which demonstrates that science, politics, nature, among others compose a delicate and intertwined complex of touching subjects. An example is the ozone hole, which is not only about how nature is being destroyed, but also how capital production has contributed to this destruction. The contradiction is that the more we try to separate, the more hybrids are created, since they dependent on each other. Thus, if modernity does not exist, neither does postmodernism, "the hint of ludicrous that always accompanies postmodern thinkers; they claim to come after a time that has not even started!" (LATOUR, 1991, p.47).

Despite these arguments, this study corroborates theorists who agree with the postmodern time and whose observance of an effective break between the modernist and postmodernist periods helps distinguishing conceptual tendencies from one movement into another. In fact, postmodernism not only existed but Linda Hutcheon officially declares its death in the 2002 article "Postmodern Afterthoughts." The upheaval of pastiche, nostalgia, and consumerism is now *démodé*. As she writes "The postmodern moment has passed, even if some of its discursive strategies and most of its ideological critique continue to live on – as do those of modernism – in our contemporary twenty-first century world" (HUTCHEON, 2002, p.11). Among the most striking reasons to

this alleged death is "its pragmatic limitations in actual interventionist arenas" (HUTCHEON, 2002, p. 6), losing space to theories as queer, postcolonial and feminism. Another issue is that Postmodernism was always accused of its emphasis on American-ness, maleness and whiteness (HUTCHEON, 2002, p. 7-8). Although we can indeed find some few examples of Latin American and European postmodern writers (Gabriel García Márquez and Umberto Eco), female postmodern writers (Angela Carter and Margaret Atwood) and postmodern Native American writers (Leslie Marmon Silko). Within this context, some obvious questions emerge as what has been happening in the beginning of twenty-first century; how it differs from postmodernism; what has caused such changes. The following section introduces recent theoretical discussions about the "descendants" of postmodernism.

Post-postmodernism?

By the end of Hutcheon's article on the death of postmodernism, she proclaims "Post-postmodernism needs its own label" (HUTCHEON, 2002, p. 11). In search of this label, Alan Kirby proposes the emergence of Pseudo-modernism, Garrett Stewart refers to a Postfilmic moment in cinema studies, while Steven Shaviro names a Post-Continuity film. Although these approaches are different, they offer significant aspects to this paper. Because they point to the emergence of digital technologies as a main cause for this cultural break, since digitalization offers new possibilities of engagement with the world. I observe, for instance, a clear distinction between analogue and digital technologies, in how they affect our understanding of time differently. Take for instance how big companies like Apple do not demand a fixed schedule from its employees anymore, who can work from home or go to work whenever he/she can, and how you can go to 24-hour supermarkets, gyms, restaurants, hospitals. In such context, the individual no longer bounds to time, as the 9-to-5 worker once did, this contemporary person does not suffer from the imposed universal time as Clarissa did in *Mrs. Dalloway,* but he/she is lost or challenges the value of a chronological time as the character Pierre Menard from Jorge Luis Borges's short story "Pierre Menard, Autor del Quijote". Thus, this study engages in a careful analysis of the mentioned propositions, more interested in their content than in their nomenclature.

Kirby's proposition–pseudomodernism–agrees with Hutcheon's argument, stating that we have already outgrown the postmodern age, and we are now in the *pseudo-modernism*[1]. He explains that "Pseudo-modernism includes all television or radio programmes or parts of programmes, all 'texts', *whose content and dynamics are invented or directed by the participating viewer or listener*" (KIRBY, 2006, p. 32). In other words, the participation of the audience, reader or public allowed by new technologies characterises the pseudo-modernism. For instance, when watching a movie I like to have my I-pad with me and

[1] Later, Kirby reformulated his thesis, and renamed it the digimodernism period in his book *Digimodernism: How new technologies dismantle the Postmodern and reconfigure our culture*.

check the actors, the soundtrack, the scenarios, I pause, go forward and backwards in the movie, in doing so I have a personal interaction with the movie, which is reconfigured through my experience. Kirby exemplifies his thesis with contemporary programs, which are built upon the audience's participation directly or through emails and text messages. Such relation is not just interactivity, but the viewer or listener is understood as a segment of the program. Kirby's theory of pseudo-modernism leads to a further point: the representation of reality. We are really entering the digital world, when the audience composes the shows.

Kirby's observation about this new participatory audience, which changes the public's point of view from outsiders to insiders, also relate to other media. For instance, the video-games' virtual world have improved considerably, providing an even more emerging reality to its players, while the internet has allowed and demanded a more engaging participation. 4Chan, Reddit, Twitter, Facebook, Youtube and blogs changed the way information is spread. The big news companies still exist and still dominate information and its propagation, but these new websites have opened space to the common citizen, who is integrated into media. I would suggest that even phenomena like the 2014 *selfies* relate to immediacy (BOLTER AND GRUSIN, 1996, p. 315), in which the media is so immersive, that the consumer starts seeing himself or herself as part of it. One of the consequences is a blurring of boundaries between the real and the virtual, raising questions about our ontological realities[2]. Before continuing the discussion of this new cultural tendency, I present a brief explanation on ontology.

An ontological reality

David Harvey (339) and Brian McHale (180) have already observed that postmodernism presents a concern for ontology, while the radical experience provided by recent films question its very notion. Therefore, this brief section discusses an ontology that, although s still linked to postmodernism, is a radicalization and eradication of such notion.

Postmodernist perspectives of ontology react against the modernist belief that an individual can reach the "truth" about the world if he/she observes it carefully, as in an epistemological discovery. This position holds that a real world exists, and we can trust our perception to comprehend it. In this sense one can understand the very notion of epiphany, so dear to modernist writers such as James Joyce and Virginia Woolf. Will Moore describes that "Postmodern thinkers are bothered by the implication of modern ontology that since there is one world out there, and observation is not problematic, then there is only one reasonable interpretation of the world" (MOORE, 2001, p. 4). The postmodern position is that humans comprehend the world, and that each one, or each group, comprehends

[2] Jean Baudrillard's idea on simulacrum (see *Simulacra and Simulation*, 1981) does relate to this ontological perspective, but I understand the latter as beyond simulation. The copy is no longer the issue, as in Philip K. Dick's *A Scanner Darkly* (1977), but rather if anything real to copy exists.

it differently; the predominant views are those formulated by more powerful or skilled people, who are able to impose their position over less fortunate ones. A universal time, for example, was implemented into the entire world because it was of interest to the market, to industry owners, to countries, but it may not work for farmers and fishermen who live a different kind of time, a cyclical time, for instance.

Annemarie Mol clarifies postmodern ontology as a practice, performed by the individual. In a political ontology, reality does not precede practice, but reality is moulded through these practices. In other words, the way people act and think construct reality, as it is not something fixed, or even real. The consequence is that reality is *made*, and can be localised historically, culturally and materially. Since we *perform* reality, as we act upon it, it becomes realit*ies* that can collide and complement one another.

To Kirby, postmodernism only questions "reality", and that what he refers to as *pseudo-modernism* constructs reality through the audience: "Whereas postmodernism called 'reality' into question, pseudo-modernism defines the real implicitly as myself, now, 'interacting' with its texts" (KIRBY, 2006, p. 33). I do not fully embrace Kirby's pseudo-modernism, but his differentiation is relevant. If reality is once again constructed by the self in its interaction with the text, then we have the recuperation of the personal time, and space.

I hypothesise that this personal time does not collide with the universal one, as in the modernist period; when Clarissa internal time from *Mrs. Dalloway* could never fit into the social demands around her. Now, personal time is accepted and integrated into the social digital and virtual world. Modernism showed the problem, Postmodernism questioned and tried to escape it in nostalgia, and post-postmodernism embraced the problem/confusion. If this personal time generates multiple times, then it also constructs undistinguishable spaces and realities. Therefore, the issue does not seem to be whether reality proper was dissolved, but rather that it has been constructed through the individual's perspective on time and space.

Post-continuity, postfilmic cinema(?)

The questioning of postmodernism, confirming its end or denying its existence, has overlapped with a change in cinema. In this section, I discuss theoretical perspectives on the relation between digitalization and film, which does not aim at how this medium can evolve or hybridise, but rather on how this relationship affects time on film. Shaviro states a new tendency in Hollywood cinema in which digitalization plays a major role in the twenty-first century (SHAVIRO, 2012, p.2). He argues that the transition from analogue to digitalization transformed the film media, which has become post-cinematic. Such transformation does not mean the end of cinema but a change in focus; if before film was a cultural dominant over television, now the digital, computer, and video-game world dominates cinema. Similarly, David Rodowick notices how digital worlds and computer gaming is at the core of narratives such as *The Matrix, Thirteenth Floor* and *eXistenZ*. The intertwinement of different media emerges as a key feature of this digital cinema.

One of the main changes observed by Shaviro is editing continuity. David Bordwell already theorised such tendency as "intensified continuity," in which the classic Hollywood rules of editing continuity are intensified. Although his perspective is not the most innovative thinking, his pragmatic readings are useful. To Bordwell, the Hollywood system of editing has not changed, only some of its devices slightly differ, such as faster editing, exceeding the 180° degree line, less establishing shots, and more close-up shots. The viewer is not expected to fully comprehend the space of the sequence, but to experience the strong and fast intensity of the action scenes.

Shaviro has a more radical stand, as he observes these changes as key parts of the post-cinematic. The intensified continuity is "a radical aesthetic 'regime change.' The New Hollywood of the 1970s may just have 'intensified' the conventions of continuity editing; but the Hollywood of today has exploded them, and reached the point of what I will call a stylistic of *post-continuity*" (SHAVIRO, 2012, p. 123). Such explosion relates to how trailers fast editing predominate in every action sequence. Further explaining post-continuity, Shaviro writes:

> [I]t's not that we don't read anymore, but rather that reading itself has been recontextualized, and subsumed within a broader multimedia/audiovisual environment. In the same way, it is not that continuity rules are always being violated or ignored; nor are the films made in their absence simply chaotic. Rather, we are in a "post-continuity" situation when continuity has ceased to be important — or at least has ceased to be as important as it used to be. (SHAVIRO, 2010)

Soundtrack seems to be the guiding element in these disorienting sequences. In traditional analogue cinema, sound works as "a support for the images, giving them emotional resonance and a guarantee of (seeming) naturalism" (SHAVIRO, 2012, p. 80). But in post-continuity cinema, soundtrack provides the continuity effect, while the image illustrates the sound, "sound now operates overtly instead of covertly" (SHAVIRO, 2012, p. 80). Nonetheless, these post-continuity moments do not prevail, and contemporary films still present many moments in which the Hollywood continuity editing patterns are carefully obeyed.

Pursuing the same topic, Stewart tries to understand time in this digital cinema. He compares recent films' manipulation of time, especially American science fiction, to European humanistic films. His main idea is that what Christopher Nolan's *Memento* (2000) does in relation to time and special effects is not quite distinct than what the French Nouvelle Vague did in the 60s. In doing so, Stewart relays on Gilles Deleuze's theory of time-image, since this concept focuses on European avant-garde, proposing a time that predominates over space, that is not spatialised, nor manipulated by movement, his pure time: duration.

Stewart refers to this last decade films as postfilmic, because they do not rely on the materiality of the filmstrip. Recent cinema's digitalization invalidates the moving frames

that once constructed the idea of cinema. These films do not use the movement criticised by Deleuze, the movement of the frames or the images that move, which generates moving images. The consequence is a "framed time", instead of time framed, as Deleuze would explain movement-image films. In Stewart words:

> Increasingly, the temporal transit (mechanical) of the image, frame by frame, gives way to its temporal transformation (electronic) within the frame. This is obvious enough. What isn't, or not without some further reflection, is the frequency with which the latter phenomenon is not only facilitated but inscribed by certain film plots of fantastic time travel. […] Framed time is a narrative inflection as well as a psychic topography operating across various genres. Its effect draws on the new cultural dispensation of virtual space and time as much as on any specific digital instrumentation. (STEWART, 2004, p. 2)

What Stewart proposes is that digital cinema constructs a different cinematography, through a narratography[3], instead of narratology, as he prefers. The possibility of new special effects affects not only the form of cinema, the technical way it is constructed, but also its narrative. Therefore, fantasy narratives have paid a special relation to temporal twists. Stewart also argues how supernatural narratives, such as *Donnie Darko* (Richard Kelly, 2001) or *The Others* (Alejandro Amenábar, 2001), resort to time subverting through special effects, but do not use technology as theme, "virtual as a psychological rather than a technological issue" (STEWART, 2004, p. 173). To demonstrate this tendency, he analyses moments in which plot and special effects converge, that is when narratography prevails over narratology. An example is when Donnie Darko, who has psychological breaks, time travels, *temportation*[4], in a zoomed tunnel. The psychology and fantasy of the character combines with zoom special effects. In doing so, he connects narrative to form, and technology to story.

Stewart explains that his time-image is a version of Deleuze's, although not exactly the same. The digital cinema constructs a "timespace-image," a spatialised time, but not in the movement sense attached to Deleuze's idea (STEWART, 2004, p. 205). It enables time to differ or detach from movement, since it does not depend on frames that move. In such new movement-image, or rather timespace-image, temporal categories such as past, present and future are looser in the sense that they do not demand a chronological order. Their independence allows the inborn to know his future as in *The Butterfly Effect* (Eric Bress, J. Mackye Gruber, 2004). In other words, this digital technology, in which the action of the characters does not depend on the movement of the frames, configures a time and space autonomous of movement, and enables non-chronological narratives. Stewart's explanation is that:

3 Stewart explains that "[i]n this book, then, it is the writing on narrative's graphic effects, either lexical or filmic or now electronic, their category of study (rather than the writing in and by them of screen effects), that the term narratography is meant to help focus" (*Framed* 22). Narratology maps as in 2D, narratography charts as in 3D, which means that the latter is more sociological and culturally driven, considering technological and formals aspects as well.

4 Garrett Stewart's term to time travel (*Framed* 205).

> In the maturation of the cinematic medium, movement first implied time, then figured it as the troped import of the framed image. Now time often defers to movement. Temportation [to time travel] throws over the virtual time-image for that new movement-image I have been identifying as the (com)mutable figure of timespace, where past and future are willed into a motility and plasticity all their own. And where temporality, once having been spatialized, can itself be morphed. (STEWART, 2004, p. 205)

Such distinction between time-image and timespace-image helps elucidate the difference between European film's and American science fiction's experimentations with time. The first conveys Deleuze's time-image, the *durée* of a time that does not emerge from movement or space. The second explores Stewart's timespace-image, in which time and *space* are independent of movement, the frames' movement. The issue is not simply that American science fiction stretches Deleuze's time-image. They are, for example, drastically culturally different. Stewart points that Deleuze's time-image relates to "modernism's unique way of giving fictive form to a cultural understanding of consciousness" (STEWART, 2004, p. 209). In this way, modernism's time-image connects to memory, projection, mind, and consciousness; it is strongly bound to the subject, and to his or her perception, as when Freder confuses robot-Maria and hallucinates in *Metropolis* (FRITZ LANG, 1927). When postmodern thinking emerged, it questioned not only the individual's consciousness, but also his or her own existence, as the replicants' and humans' ontological differences in *Blade Runner* (RIDLEY SCOTT, 1982).

To Thomas Elsaesser, the difference between the American contemporary cinema and the humanistic European is basically their context of production, since "cinematic storytelling has in general become more intricate, complex, unsettling, and this not only in the traditionally difficult categories of European auteur and art films, but right across the spectrum of mainstream cinema, event-movies/blockbusters, indie-films, not forgetting (HBO-financed) television" (ELSAESSER, 2009, p. 19). Shaviro also compares such violation of continuity with the 60s European cinematography, especially the Nouvelle Vague, and finds unmistaken similarities. The difference is that violations "were at the center of a film like *A bout the souffle/Breathless* (Jean-Luc Godard, 1960) more than half a century ago. Today, neither the use of continuity rules nor their violation is at the center of the audience's experience any longer" (SHAVIRO, 2012, p. 208).

Thus, modernist time-image is epistemological and the time instabilities are mental related, subjective. While Hollywood fantasies do "so within circumscribed stories that, again and again, surprise us with a revelation before dismissing it from all urgency within the mechanisms of the unreal: the fact that all is artifice or delusion, posthumous or electronic" (SHAVIRO, 2012, p. 209). Contemporary Hollywood films, especially science fiction, tends to an ontological proposition, rather than an epistemological view, in which no reality is real, or all realities are real. *La Jetée* (Chris Marker, 1962) never questions

whether the future is real or not, whether the time-travel is possible, or whether the past is virtual. After ten days of experiments with time travelling, the voice-over narration describes "a real room, real children, real birds, real cats, real tombs." This French short film from the early 60s built in photomontage does not problematise the possibility of reality; it epistemologically takes it for granted. Even if its technological resource inquires on the movement of the image, even if its photo roman technique emphasises how time in conventional cinema may depend on movement, and how in this particular case time is literally freed from movement, since the images do not move in the photomontage. The spectator does not see a "man walking", but rather a still man, in a position of walking.

Following this perspective, Rodowick observes a "strange effect of the curious ontology of digital worlds": the loss of *durée* (RODOWICK, 2007, p. 171). Similarly, the cinematographer Babette Mangolte wonders "why is it so difficult for a digital image to communicate duration?" (MANGOLTE, 2003, p. 263). Rodowick explains that since "nothing [physically] *moves*" in the digital world, "the sense of time as *la durée* gives way to simple duration or to the 'real time' of a continuous present" (RODOWICK, 2007, p. 171). A perpetual present seems to substitute *durée*, as a time that lingers, instead of a time that lasts. Such substitution appears to waive the emotional possibilities of time.[5]

Mangolte acknowledges that digital has no sense of time because there is no 24 frames per second, as analog cinema, time is then in the layers of digital image. She describes that "[t]ime is not transformation anymore, [it] is inscribed in layers on a set screen with bit-size slots. When you dig into these bit-size shots to see what is there, you find bits of time memory one on top of the other without chronology. You travel through time now by traveling through layers of pixels" (MANGOLTE, 2003, p. 264). But it is precisely these layers of the digital that allow the intricate and complex constructions of time, since the "silver-based film is structured by time as entropy, therefore unrepeatable" (MANGOLTE, 2003, p. 264) in the passing time from one frame to the next.

Shaviro explains that such loss of emotional time, or *durée*, aligns with Mark Fisher's idea of *capitalist realism*, in which capitalism becomes the ultimate social constraint, being easier to imagine the end of the world than of capitalism. In such world, the future cannot escape dystopia, since it cannot avoid the repetitive empty commodity relations. The result is that "[i]n capitalist realism, duration implodes; it shrinks down to a dimensionless, infinitesimal point. Time is emptied out, or whittled away" (SHAVIRO, 2012, p. 88). But this empty time of capitalism in digital cinema is not necessarily negative. As Shaviro proposes "if we have lost a certain humanist pathos of lived duration, in return we have gained the sheer profusion and density of 'real-time' innovation and invention" (SHAVIRO, 2012, p. 87). As mentioned, this real time condenses into a continuous present.

5 Maria Pramaggiore argues that aesthetics of time can contribute to the production of emotions, and critical thinking. See *Making Time in Stanley Kubrick`s Barry Lyndon*, 2014.

Elsaesser reinforces Stewart's and Shaviro's arguments in favour of a post-continuity or post-cinematic cinema and points that even themes seem to become more intricate. To Elsaesser, some recent films construct mind-game stories. They present "a delight in disorienting or misleading spectators" (ELSAESSER, 2009, p. 15), proposing "new forms of spectator-engagement and new forms of audience-address" (ELSAESSER, 2009, p. 16), due to an apparent crisis in the voyeuristic relation, in which the audience expects more than simply watching, but participating at some level as in Kirby's argument. Once more, "the changes brought by digitalization" (ELSAESSER, 2009, p. 17) are in the core of the possible explanations. These films address diverse issues, including "epistemological problems (how do we know what we know) and ontological doubts (about other worlds, other minds) that are in the mainstream of the kinds of philosophical inquiry focused on human consciousness, the mind and the brain, multiple realities or possible worlds" (ELSAESSER, 2009, p. 15). *Inception* (Christopher Nolan, 2010), for example, plays with the characters' ontological world in the possibility of living in one's dream and also plays with the viewers' narrative expectations of finding the truth of the story.

Shaviro's explanation of the relation between space and time in continuity further contributes to Elsaesser's: to the former, continuity structures "work to provide a certain sense of spatial orientation, and to regularize the flow of time." He explains that "[i]n classical continuity styles, space is a fixed and rigid container, which remains the same no matter what goes on in the narrative; and time flows linearly, and at a uniform rate" (SHAVIRO, 2010). *Things to Come*'s (William Cameron Menzies, 1936) narrative, for example, unrolls in the city of Everytown. This city transforms and evolves through a period of one hundred years, becoming more relevant than the characters or a character in itself, and being an example of a fixed space where narrative is constructed upon through the layers of time. On the other hand, in post-cinematic films, "plot is no longer stabilized by temporal progression […] the 'new cinema'—as innovative as it is involuntarily caught up in historical change—has arrived at a point of temporal crisis where 'chronos is sickness itself'" (SHAVIRO, 2012, p. 166-7). In other words, chronology becomes the disease. This sick chronos transverses into the mind-game stories, and reiterate Stewart's idea that the digital form changes the narrative content.

The index issue

A recurrent theme in critical views of digital image is the loss of the index.. The photographic index is the referent, the real objective that is projected through light into a virtual image; indexical signs "are causally or existentially connected to their referents" (PRINCE, 1996, p. 28) or "an index […] is a sign produced by the 'thing' it represents" (MULVEY, 2006, p. 9). Lev Manovich defines that "Cinema emerged out of the same impulse which engendered naturalism, court stenography and wax museums. Cinema is

the art of the index; it is an attempt to make art out of a footprint" (MANOVICH, 2001, p. 250). Such idea is strongly bound to André Bazin's notion of a realistic cinema, which defends film as a way to preserve the time and space of an event, to put "faith in reality" (BAZIN, 2005, p. 43) and to not manipulate the image.

But computer graphics have achieved a sound ability to simulate reality without any sort of indexical relation, which led some to question if this is really cinema. Tom Gunning counter-argues and explains that the index does not differentiate analogue from digital cinema, as "the indexical and digital need not to be opposed" (GUNNING, 2004, p. 44). Analogue photo does not mean transparency and lack of mediation or manipulation, inasmuch as digital recording does not mean a lack of referent. For Gunning, the difference lies on storage, on how the digital transforms images into numerical data, but the ultimate results of both are similar. His argument is hard to deny in relation to a realistic aesthetic cinema, which is only trying to copy the world. But other genres, which are trying to create new worlds, appear to benefit greatly from the digital.

Similarly, Rodowick finds a useful solution to the issue of index. His focus is not on the strict relation between the object and its image, their indexical relation, but on how computer processing transforms images into number. The result is that "the process of quantification or numerization is irreversible, which is another way of saying that inputs and outputs are discontinuous in digital information" (RODOWICK, 2007, p. 119). Digital technology changed picture into information.

Intriguingly, Rodowick notices that despite its many aesthetic possibilities most digital processes are channeled into realistic images, thus appealing to an indexical quality of the image. Indeed, in the article "Realism and the Digital Image," W.J.T. Mitchell argues that digital is used mostly to optimise instead of challenge or subvert ideas of credible images. Mulvey points out that this might be a transitional moment, "in which both technologies coexist, in which the aesthetic of the digital still thinks with the idea of the index" (MULVEY, 2006, p. 21). But this realistic expectation does not apply to science fiction and fantasy films, which attempt to extrapolate realism into imaginary spaces. In such narratives, the detachment from a realistic aesthetic allows digital cinema to be "less indexical and more iconic" (RODOWICK, 2007, p. 123)[6].

The discontinuity between the input, what is registered, and output, what is processed and results, displaces the indexical value of the image onto the symbolic. Following this perspective, the possibility of a change in narrative due to of the digital would emphasise

6 In here, Rodowick refers to philosopher C.S. Peirce's theory of signs in which the latter differentiates icon, index and symbol. Stam, Burgoyne and Flitterman-Lewis explain that "The iconic sign represents its object by means of similarity or resemblance; the relation between sign and interpretant is mainly one of likeness, as in the case of portraits, diagrams, statues, and on an aural level, onomatopoeic words […] An indexical sign involves a causal, existential link between sign and interpretant, as in the case of a weather cock, or of a barometer or of smoke as signifying the existence of fire […] A symbolic sign, finally, involves an entirely conventional link between sign and interpretant, as is the case in the majority of the words forming part of 'natural languages'" (5-6).

the iconicity of the graphic images rather than realism. Stephen Prince's concept of perceptual realism enhances science fiction's iconic tendency. He explains that the notion of a realistic image is a matter of perception instead of a referent. Think for instance of *Jurassic Park*'s (J. A. BAYONA, COLIN TREVORROW, STEVEN SPIELBERG, JOE JOHNSTON, 1990) dinosaurs that look impressively real, although we have no visual register of dinosaurs, they might as well have been purple instead of green.

This ability to create incredible perceptual realistic films leads Mulvey to recognise the lyricism behind the digital image: "In the 1990s digital technology brought back the human element and man-made illusions" (MULVEY, 2006, p. 19). Adding to this, Manovich compares digital composition to painting. Digital as an animation cinema, as a return to a hand-made craft instead of simply mechanic. This return to cinema as a manual art traverses Walter Benjamin's argument of film as a mechanical art, which might have lost an aura, bringing new theoretical perspectives to the study of cinema. It also explains science fiction film's capacity to seduce its audience through the special effects, rather than the narrative twists, reiterating the value of the image in itself. In Manovich words:

> The manual construction of images in digital cinema represents a return to nineteenth century pre-cinematic practices, when images were hand-painted and hand-animated. At the turn of the twentieth century, cinema was to delegate these manual techniques to animation and define itself as a recording medium. As cinema enters the digital age, these techniques are again becoming the commonplace in the filmmaking process. Consequently, cinema can no longer be clearly distinguished from animation. It is no longer an indexical media technology but, rather, a sub-genre of painting. (MANOVICH, 2001, p. 250)

Mulvey presents a further relevant argument, in which she revises Raymond Bellour's concept of the pensive spectator. The latter proposes that the stillness within the moving image creates a "pensive spectator," who reflects on cinema, since he/she becomes conscious of his/her role as a viewer. Mulvey suggests that "with the spread of digital technologies this kind of fragmentation of film [such as delay, repetition, return, mostly observed in experimental avant-garde cinematographers as Kiarostami] has become easier to put into practice" (MULVEY, 2006, p. 144). Consequently, digital cinema can contribute to the delay cinema, which inspires the pensive spectator. I want to further stretch this idea, proposing that the fascination generated by the special effects and its narrative pause in science fiction films can also generate pensive spectators. They are not only dazed by the image, but can also brood on the visual implications of the computer graphic images.

In sum, Deleuze's pure time is reconfigured in the post-postmodern American science fiction. If before it was an uncommon aesthetic value to Hollywood cinema, now it becomes a recurrent practice, morphing into Stewart's timespace-image, detached from the literal movement of the filmstrip. Although this time perpetuates in a different cultural context,

it still maintains similar aesthetic purposes of creating pensive spectators. The special effects call attention to the cinematic device and experience, causing what Paul Willemen refers to as an inflated narrator. The time of this post-cinema relates to digitalization, culturally and technologically, because although a sense of duration, *durée,* implodes, the layers of the digital allows a framed time that creates Huels's "ambivalent temporalities" (HUELS, 2009, p. 8) in fiction films.

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