1. Introduction: why open this dialogue?

Theoretical advances in semiotics usually follow analyses of yet-unconventional objects: from fairy tales and literary narratives, to – amongst others – advertising, visual arts, fashion, everyday objects and political communication. Semiotics has always managed to re-think itself, broadening its focus without losing coherence. Computer games are another kind of difficult objects for semiotic analysis that could pave the way for advances in semiotic theory.

Procedural criticism was recently originated by the developing of the notion of *procedure*, imported from computer sciences into game studies and designating algorithms which control reactions to users' operations (Murray 1997; Bogost 2006, 2007). Procedures are used by – amongst others – computer game systems to regulate play and events; procedural criticism is the practice of describing scientifically the expressive use of procedures.

In this sense, a dialogue between semiotics and procedural criticism can be useful to build a common ground and to avoid duplicating theoretical efforts. A preliminary exposition of current trends in semiotics of computer games and procedural criticism will be followed by three examples sketching the procedural figure of the *transdiegetic phone call*. Finally, I will present some considerations on player's expectations, engagement, interpretive and pragmatic cooperation as related to that figure. Those preliminary analyses will not exhaust the potential of a collaboration between semiotics and procedural criticism: on the contrary, they will simply show their theoretical compatibility and the potentialities of a dialogue between them.

2. Current theoretical trends

Computer games – like many other kinds of interactive objects – pose some difficult questions to semioticians, the majority of which deal with their textual heterogeneity and unstable actualization: semiotics of ludic systems is still a work-in-progress, whose very possibility has been questioned (Eskelinen 2003).

Video games are highly syncretic objects, containing elements whose boundaries are not easy to find. For instance, a subdivision between audiovisual elements and machine-readable source code is not fruitful. While the software governing the game and the embedded audiovisual fragments are stable, the end-user has only mediated contact with them.

Moreover, while a proper literary or filmic text is stable in its expression substance and can be read or watched several times without ever changing, on the contrary the course of a game can vary considerably between a session and the other. This means that, in the first place, pure literary analyses are not adequate and a more complex, dynamic approach should be researched. Also, traditional texts such as novels exist also if

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nobody reads them. On the contrary, the expression substance of a video game comes to existence only at the moment in which someone undertakes ludic activity: if not played, it remains in a virtual state and does not actualize any output.

This leads to the last major difficulty: their competitive, pragmatic and reconfigurative capabilities. On one hand, both manipulatory strategies and a certain amount of resistance to readers' interpretation are well known in several types of proper texts – such as advertising for the former or ambiguous artistic pieces for the latter. But, on the other hand, computer games literally challenge the player and compete against him. This is not the case of novels presenting several topics for readers to disambiguate, it deals with a system acting as a second player against the user, enacting tactics and reconfiguring the output to, for example, literally move opponents. Computer games, in other words, are designed to resist and oppose (to a certain extent) their users' actions.

2.1. Semiotic views on computer games

In the past years, the interest in semiotic analyses of interactive ludic systems has increased with the widening acceptance of computer games as an expressive medium.

Alessandro Zinna (Zinna 2004) published a comprehensive investigation about electronic writing artifacts, including in this genre both hypertexts and computer games. Zinna defined them as texts containing multiple textualities, each one of which is brought to existence by some pragmatic action of the reader, such as clicking on a link. Interactivity, in Zinna's terms, is defined by the presence of spots in which the fruition is suspended and needs the reader's action to be resumed.

Also Massimo Maietti (Maietti 2004) used hypertext theories to read computer games, but he preferred a pa-

rallelism between game systems and dense hypertexts in which the navigation between different nodes is not instantaneous but has spatial and temporal components. Agata Meneghelli (Meneghelli 2007, see also her contribution in this volume) instead focused on enunciative theories and digital protheses to describe ludic interfaces and, amongst other things, meaning-effects such as, for example, the omniscience-effect created by the minimap in strategic games.

The hypothesis adopted in this work is that computer games are not stable texts as narratology (Todorov 1965) or the first generation of structuralist semiotics (Greimas 1970; Greimas & Courtès 1979) define them but rather *matrices*[1] (Ferri 2007; Meneghelli 2007), semiotic devices for the creation of *game-texts*. Each computer game is constituted by a matrix, a system of possibilities producing a single game-text each time a player interacts with it[2]. This is a possible solution to the analytic impasse regarding the textual instability of games. A game-text is a unique occurrence which constitutes a text that, although quite different from literary or cinematographic ones, is at least stable in its expression substance.

Certain audiovisual portions are shown only in some game-texts: their variability suggests that the actualizable elements pre-exist in the matrix in a greater amount than what it is shown. Therefore, a matrix is an overabundant semiotic agglomerate existing before the formation of any single game-text and containing all the semantic, narrative and figurative resources that could possibly be actualized during the ludic activity. It is a complex semiotic object comprising different functions and different instances, such as victory-conditions, interfaces, links or semantic, procedural, figurative and strategic repertories.

2.2. Procedurality and procedural criticism

According to Janet Murray (Murray 1997) *procedurality* refers to the ability of a medium to execute *series of rules and conditions*. Those series are composed by interlocking algorithms defining how an interactive system will react to the users' inputs. In other words, procedural systems generate behaviours according to rule-based models; they are capable of producing many outcomes, each one conforming to the same overall guidelines. While different expressive forms – from interactive electronic systems to parlor games – have procedural capabilities, the ability to execute complex procedures almost in real time distinguishes computers from other media. "Procedural authorship means writing the rules by which the text appears as well as writing the texts themselves. It means writing the rules for the interactor's involvement, the conditions under which things will happen in response to the participant's actions" (Murray 1997, p. 152-153).

Ian Bogost, whose views on game studies are less narrative-centric than Murray's, chose procedures as one of the key concepts for his analytic approach. New media

"not only – writes Bogost – express systems of interrelated actions, but also teach us to read both technology-based works and non-technology-based works from the single perspective of their shared procedurality" (Bogost 2006, p. 47). *Procedural criticism* describes how procedures are used to generate both meaning-effects, such as immersion, and pragmatic ones, such as modifications of real-world habits in computer-generated simulations.

3. (Phone) calls for cooperation

Interpretive semiotics has already developed theoretic reflections about the reader-text cooperation, successfully applied on stable, non-interactive texts (Eco 1979; Manetti 1997; Cavicchioli 1997). While it has been briefly described how matrix-based semiotic approaches (Ferri 2007, Meneghelli 2007) deal with the highly variable expression substance of a computer gaming practice, they could also benefit from tools for the analysis of rules, conditions and their expressive use. Considering contributions from procedural criticism could be another step toward adequate analyses of rule-based, interactive systems without duplicating theoretical work.

A joint semiotic/procedural analysis will be sketched of three games, two of which (*Evidence: the Last Ritual* and *Year Zero*) are computer games, while the other one (*All the President's Zombies*) is a non-technological live-action gaming practice. This partially heterogeneous corpus was chosen to stress the trans-media applicability of both semiotics and procedural criticism. Just as there are literary and filmic figures, also *procedural figures* (Bogost 2007) could exist in computer games. These ludic objects share a *transdiegetic phone call* procedural figure, used to generate surprise and player engagement: its general algorithm determines that, when certain conditions are met, the game-system itself uses the player's own telephone as unusual, surprising output device to deliver in-game information. It is also important to note that in none of the three cases the phone is the expected gaming device.

3.1. Adventure games – *Evidence: the Last Ritual*

Evidence: the Last Ritual is an *adventure*[3] computer game developed by Lexis Numérique and released in 2006. Its background story involves a mysterious serial killer, known as the Phoenix, kidnapping different hostages, preparing a DVD containing video-clips of his victims as well as clues leading to his own hideout and sending it to the police to taunt the detectives. The packaging of Evidence: the Last Ritual actually simulates an official evidence-like enclosure, complete with seals and signed receipts: the player impersonates a detective examining Phoenix's mysterious DVD to discover its secrets.

Evidence has the ability to connect, through the internet, to a remote e-mail server and – in the French

version of the game – a text-messaging service. The players' advances through the puzzles and the textual fragments composing the game or their usage statistics – such as the time spent on a specific chapter or the preference for interacting with a specific non-playing character – are monitored and trigger, in certain situations, the appearance of in-game messages on the user's own cellular telephone and e-mail account.

On the first night after a user has started the game, the remote messaging system connected to Evidence sends the player a text-message or an e-mail, apparently from the Phoenix himself, saying "What's the matter, little friend? Tired already, are we? You don't even hear us knocking at your door...". In addition to this, the game regularly sends advice from computer-controlled non-playing characters, fictional investigators also working on the same case, along with "Where did you go?" prompts if the user stops playing for a few hours.

3.2. Alternate reality games – *Year Zero*

Year Zero is an *alternate reality game*[4] developed by 42 Entertainment, released in February 2007 and tied to the alternative rock band Nine Inch Nails. Year Zero is set in a dystopian future in which the American government is trying – amongst other things – to restrict the citizens' access to art.

The website *freerebelart.net*, part of the Year Zero ARG, can be found by a player through different ways, such as following the clues disseminated across other sites and on merchandise given away during Nine Inch Nails concerts or receiving a hint from a fellow player. It is, apparently, a rebel site like *artisresistance.com* – a key site previously visited during the game – with which it shares different visual aspects. In the top-right corner is a box where users can enter their name and telephone number to receive "something to help fight back against this Administration". After filling the form, the message "The password is RESISTANCE. Please stand by" appears on screen. If the number provided actually corresponds to a real telephone, it rings after a few minutes. On answering the call, players hear a recording of a woman saying the name registered on the site and asking for the password. Replying 'Resistance' causes the audio message to proceed: it informs the player that *freerebelart.net* is a trap set up by the government to spot rebels and that he has implicitly plead guilty of treason under "statute 24.2.1" by signing on it. His e-mails, phone calls and movements – says the recorded voice – will be monitored.

3.3. Live-action RPG – *All the President's Zombies*

All the President's Zombies is the first *live-action role-playing game* to have been exhibited as an artistic collective performance at the Art In General Gallery in New York in 2007. The participants improvisationally enacted a meeting of the President of the United States with some of the highest members of his government to decide a course of action on an outbreak of zombies near Atlanta. The conflict driving the improvisational role-play was the difference between each member's political agendas and the absurd political situation represented.

The performance was paced by phone-calls, enacted by a non-playing organizer, to each player's phone. This feature allowed a timing for the event – game supervisors could decide exactly when each character received information and directions – and also enhanced the conflict represented, letting players choose whether to share or not the content of their phone calls.

As noted above, this playful practice is partially heterogeneous compared to the other two: for example, it is not enacted using digital hardware, the phone call comes from a human narrator and it happens during play-time. However, the players are not told that they are going to receive calls on their mobile during the performance – thus maintaining a surprising common ground with the other examples. Also, this example has been included, in spite of its differences, to stress the trans-media applicability of procedural figures: the differences between digital and legacy ludic systems are many and fall outside the scope of this paper but this concept can help finding common points.

4. Player's expectations

"*I believe that you can reach the point where there is no longer any difference between developing the habit of pretending to believe and developing the habit of believing*"

Umberto Eco, *Foucault's Pendulum*, p. 386

Marvin Minsky, the cognitive scientist whose work is the basis for Eco's view on frames, defined them as data-structures for representing a stereotyped situation like "going to a birthday party" (Minsky 1975) or, paraphrasing his example, "playing a computer game". Also, the idea of a spatiotemporal frame in which games take place originated from the metaphor of the "Magic Circle", used by Dutch historian and cultural theorist Johan Huizinga (Huizinga 1955). Both the concept of frame and that of the magic circle have been discussed in game studies (Salen & Zimmerman 2004) but their critique is not the scope of this work. For now, it will be enough to say that such frames, in games, define the users' preliminary acknowledgment of a playful situation: we could call this outer system of expectations *this-is-a-game* (TIAG) layer.

Users' cooperation with an interactive matrix generates a ludic discursive universe inside the TIAG layer in which gaming interactions are acknowledged to be fictional. When the focalization (Genette 1972) is shifted inside it, users abide to TIAG interpretive rules and temporarily set aside encyclopaedic knowledge of the world – not being surprised, for example, by the height of Super Mario's jumps.
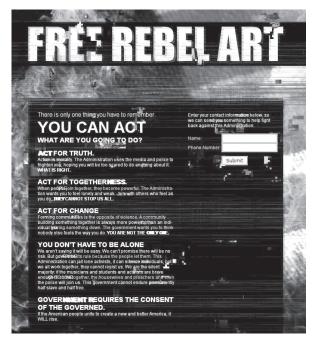
Fig. 1 – freerebelart.net © 42 Entertainment

Fig. 2 – artisresistance.com © 42 Entertainment

Although the narrator of "Foucault's Pendulum" is afflicted by self-delusion and paranoid interpretive habits, on the other hand the three above-presented games feature engaging strategies based on similar, but non-pathological, semiotic/procedural mechanisms. Immersive games feature a second nested system of expectations inside the TIAG layer. Quoting "Foucault's Pendulum", this second intradiegetic frame asks players to adopt "the habit of pretending to believe that this is not a game": we could call it *this-is-not-a-game* (TINAG) system. Meaning-effects of engagement are, in immersive games, created by the ambiguity between TIAG and TINAG systems.

4.1. TIAG vs TINAG ambiguity and the "transdiegetic phone call" procedural figure

For brevity, only Year Zero will be detailed – but the description could be extended to the others. Analyses of game-text excerpts from the *freerebelart.net* section of Year Zero highlight the coexistence of two discursive strategies, one conveying TIAG expectations and the other asking for TINAG cooperation. In alternate reality games, TIAG strategies are – by design – not prevailing as clearly as in other games.

The viewing context, a web browser, allows many kinds of practices – from browsing real-world news to reading science-fiction – each one suggesting frames and expectations. Elements of the expression plane such as layout and composition anomalies (blurry letters, interference-like patterns, repeated and overlapping words) mark the difference between freerebelart.net and ordinary pages and, at the same time, constitute a regularity – a figurative rhyme – with every other website
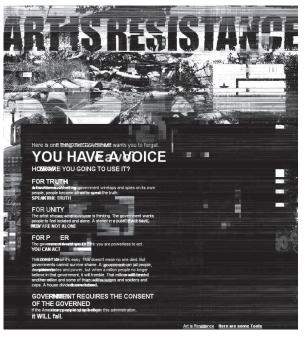
composing Year Zero. Moreover, while some items of the narrative/gaming world (the year 2022 being cited as the present date) are clearly incoherent with shared encyclopaedic knowledge, others are ambiguous ("We have got to fight back against this Government").

While abductive reasoning for topic selection is clearly constrained toward fictional/ludic topics by strong TIAG elements such the year 2022, the TINAG strategy is emerging and creates reality-effects based on the consistency of the ludic universe and its redundancy and persistency across different instances, websites and media.

The unexpected procedural figure of the transdiegetic phone call amplifies the ambiguity between expectations-breaking elements of the TIAG set, such as:

Unity and coherence of space and time dedicated to play;

Player's ability to completely switch off the game;

The expected output device for game data.

Receiving in-game data during non-playing time recalls the user back into an internal TINAG focalization. Thus, transdiegetic calls are at the same time:

Calls for interpretive cooperation, asking for a difficult assessment of the ambiguous ludic status of the portions of game-text;

Figures of procedural authorship, calls for pragmatic cooperation, asking the player to re-engage in playing even if he temporarily quit.

4.2. Interpretive cooperation and procedural authorship

"What [..] is that element of a phenomenon that renders it surprising, in the sense that an explanation for

it is demanded?" asked Charles Sanders Peirce (CP 7.190). He argued against the assumption that irregularity alone could be the fundamental characteristic of surprising facts – it constitutes the majority of human experience and could not always generate surprise. On the contrary, the need to start an abductive process is felt when an expected, anticipated regularity is broken: a subject had foreseen an event basing on a known rule but that event does not happen or happens differently. A phone call or a text message coming from an in-game character is foreseeable within a TINAG set of expectations but not in a TIAG one: game elements are supposed to be confined, for example, within the spatiotemporal boundaries of the game.

A portion of game-text like one of the calls described in this paper could, at a first reading, be interpreted without expecting it to be part of a ludic experience – a truly surprising fact in the peircean sense, since it defies the subject's previous forecasts. The subsequent abduction should consist in imagining a game-system, with which the user had previously interacted but is not apparently running at the moment, able to communicate remotely with the player even if he is not actively playing. Such abduction would make the surprising event explainable, thus changing the topic of – for example – the text-message sent by Evidence on the player's cellular phone from *menaces from an unknown sender* to *fictional taunt from a character of the game*. Meaning-effects are generated, in these cases, by creating a possible secondary expectation for every message received through telephone or e-mail: Evidence and similar games problematize everyday experience introducing a gap of uncertainty in otherwise unproblematic topic selections – *is my phone ringing because a friend is calling me, or will it be a coded message from the computer game I played this afternoon?*

It has already been noted in the first part of this paper how procedural authorship – as Murray describes it – refers both to writing the actual content of an interactive system as well as the rules, conditions and algorithms defining its procedures for actualizing an output in relation to the user's moves. A subset of this, procedural player engagement, deals with motivating users to continue their interaction with the system and, thus, calling for pragmatic cooperation. The procedural figure of the transdiegetic phone call provides game-related data at unexpected times when users are not interacting with the system. This way, players' attention is kept focused on a ludic situation even when they are far away from their gaming devices, generating different effects. Subjects are reminded of the game when they stop playing regularly (*In Memoriam*), or discover a new section of the system in a surprising way (Year Zero) or are given specific clues at very specific times (All the President's Zombies). In all these cases, the phone calls suggest the users to take certain in-game action, thus generating player engagement.

5. Temporary conclusions and future developments

This is a preliminary study, yet the possibility of a dialogue between semiotics and procedural criticism looks promising. The scope of both is to provide a description of how expressive strategies inscribed into significative objects generate meaning-effects for a reader. Semioticians, originally, considered only non-interactive texts while procedural critics worked extensively on interactive systems. The analysis sketched here – even if it is simply an outline – shows how the two disciplines can complement each other.

In this case, peircean semiotic tools (surprising events and unconfirmed expectations as starting point for abductive processes) have been used together with literary theory (diegesis and focalization) to describe a procedural figure shared across three immersive games. Transdiegetic phone calls are, thus, requests for both interpretive and pragmatic cooperation, enhancing player engagement and immersive effects.

Notes

[1] How a matrix-based approach relates to a textualist paradigm is open to debate. For example, Meneghelli introduced the term "matrix-text" (Meneghelli 2007) considering computer games compatible with a broad textualist stance (see also her article in this volume) and, at the same time, providing bases for the players' creative/performative activity. Instead, I adopt the term "interactive matrix" (Ferri 2007) because they do not seem to qualify as proper texts for different reasons including their incomplete actualization and the instability of their Expression Plane.

[2] Two articles in this volume contain other compatible models with which I agree. My idea of the interactive matrix goes in the same theoretical direction of Siabra-Fraile's definition of virtual world. Likewise Lehto's model of a Player-Response generating those portion of text that are missing from still-unplayed games is another stimulating approach – a sort of reverse-solution – to the same problem I tried to tackle with the relationship between interactive matrix and game-texts.

[3] Adventure is a video game genre with strong emphasis on narrative, exploration and puzzle-solving. Its narrative structure borrows elements from other media, mainly movies or novels – the most common sub-genres include detective stories, mysteries, or sci-fi. The story line is the crucial point of the game, it is predetermined and unfolds one step at a time following the players' progress through investigation. Mysteries usually include "inventory puzzles," solvable by finding objects in different places and combining them, "dialogue puzzles", dealing with interaction with computer-controlled characters, or "environmental puzzles", tied to the exploration of the game-space.

[4] Alternate reality games (ARG) are web-based computer games that, while relying mostly on content hosted on internet, incorporate trans-media gaming practices – resembling cross-media treasure hunts. ARGs are a relatively recent genre and are not codified as much as – for example – adventure games. ARG players follow hints hidden both in web sites created

ad-hoc for the game and real-world media (with an attitude similar to 1st April hoaxes) and solve puzzles requiring computer-based actions, such as cracking codes and finding hidden links, and concrete ones, such as actually reaching specific geographic coordinates at a certain time to get clues hidden in remote locations.

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