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The game mechanics of pervasive applications: visiting the uncanny

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“When I use a word”, Humpty Dumpty said, in a rather scornful tone, “it means just what I choose it to mean – neither more nor less.”

“The question is”, said Alice, “whether you can make words mean so many different things”.

“The question is”, said Humpty Dumpty, “which is to be master – that’s all”.
[Carroll 2007 (1865)]

In pervasive games, a virtual layer with its own logic is added to the everyday, common meaning of objects, places, and people. The departure of the signifier (“things”) from the signified (what they mean on the virtual level) is the semiotic process that allows for a double reading of the environment. Such a divorce has been explored in other cultural products (books, movies). It has been qualified as the “uncanny mode”. This article analyzes how pervasive games use their own brand of uncanny. In particular, it shows how mobility becomes the way to uncover the hidden layers of the environment and serves as a tool to experience and eventually reduce or augment the uncanny. Finally, we can point to a typology of four main types of storytelling related to different types of mobility: games that use mimetic narrative strategies veering towards “realism”; games based on the “absurd”; “aloof” games that remain independent from places; games that present a specific play on this double reading of the world and develop the “Uncanny” as a genre.

Keywords: Pervasive game; Mobility; Uncanny; Game design; Narrative; Storytelling; Semiotics; Fantastic

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Introduction: what if the toys had a different story?

As early as 1993, Rich Gold, a Xerox Park researcher coming from the toy industry, envisioned the power of things with a double meaning. Without changing appearances, objects deliver an unexpected message: “the everyday objects themselves become a kind of ruse” (p. 72). What Rich Gold pondered about was what happens when more and more ordinary objects, objects we are used to, also stand for something else. Since then a number of authors have been investigating this sense of double meaning in games by putting the emphasis on coincidences (Benford *et al.* 2006, Reid 2008), ambiguity (Dansey 2008), scales (Montola 2011) and doubles (Mc Gonigal 2003).

The purpose of this article is first to elaborate on a semiotic view on experience to show that unsettling the common interpretation of things can be defined as the “**uncanny mode**”. The particular semiotic construction entails that the signified is severed from the signifier, triggering a double reading mechanisms that has been defined as the “Uncanny” (“Unheimliche”) by Freud’s founding text and has further been analyzed by literary theoreticians. The uncanny mode structures a whole tradition of literature, films and video games that play on the discrepancy between appearances and actual meaning or impact of things and that question perception and knowledge of the everyday world. The reader’s experience is therefore structured by “a sophisticated mode of storytelling characterized by playfulness, self-reflexiveness, and a subversive treatment of established orders of society and thought. [...] It draws upon contemporary ideas about sign systems and the indeterminacy of meaning” (Atterbery 2004, p. 293). Our contribution in this context is to show that this uncanny mode is the underlying mechanism in the experience of pervasive games. We therefore show how pervasive games deploy their own specific brand of “uncanniness” and in particular how mobility becomes instrumental to the experience of the uncanny. Because the technology allows a highly flexible attribution of virtual meaning, players need to literally look at things twice. One of the direct consequences is that mobility becomes the way to test and possibly re-stabilize the players’ understanding of the world. In pervasive games, such as Mogi (Licoppe and Inada 2005) or “Reliving the Revolution” (Schrier 2007), it becomes apparent that maps play an essential role for figuring out where people or things are, or collecting clues both real and virtual, while chasing each other through streets and virtual grids. Our hypothesis is that mobility is a way to discover, manage and experience the uncanny mode.

Finally, based on the deployment of three pervasive games that we developed, we show that in fact different types of mobility are deployed along different implementations of the uncanny mode. The storytelling patterns and their related mobility consequently shape distinct genres of pervasive games. Either storytelling patterns and mobility try to reduce the gap between signifier and signified, following a “realistic” trend, or fully exploit the uncanny mode to achieve a proper uncanny “genre” that can be called “uncanny²”. We consequently propose a typology of pervasive games

taking into consideration different storytelling patterns and associated mobility.

The uncanny in the tradition of the fantastic

Despite the novelty of the genre, our hypothesis is that pervasive games tap into a tradition of fantastic literature, movie and video games. The first part of this article examines how these traditional media question our relationship to everyday life. This short historical survey shows the concept of “uncanny” to be critical in understanding storytelling patterns that focus on destabilizing perception and interpretation of “reality”.

Heimlichlunheimlich: questioning normality

Fantastic literature is about questioning “normality”. It developed precisely at the time—end of eighteenth and beginning of nineteenth century—when the realistic novel made claims about the accuracy of our description of the world. At the opposite end, fantastic literature staged our difficulty to properly perceive the world. The narrative trick relied on the **mechanism of the uncanny**: a play between what the language translates of the admitted experience and what the referent really is, and the subsequent **feeling of uncanny**, that is a suspicion that what seems “normal” might not be.

In “Das Unheimliche”, published in 1919 and translated into “The Uncanny”, Freud mentions different translations of the word “*Unheimlich*” and notices that the word can mean a thing and its contrary (Freud 1919). Basically it encompasses the question of homeliness and privacy. *Heimlich* means that we are at home with what happens. We are in a private thus secure situation. But *Heimlich* also means hidden, secret, and potentially frightening. “In general we are reminded that the word ‘*heimlich*’ is not unambiguous, but belongs to two sets of ideas, which, without being contradictory, are yet very different: on the one hand it means what is familiar and agreeable, and on the other, what is concealed and kept out of sight ” (Freud 1919, p. 79).

Freud relates this concept to the resurgence of a trauma through the experience of apparently harmless everyday situations or objects. Then he observes how the fantastic in literature stages a peculiar anxiety and unease related to a feeling of *déjà vu*. It is the latest that we want to discuss from a narrative point of view. In our imagination, below the surface of things, there is always the possibility of a hidden traumatic past or the possibility of another world with its own rules (that fantastic literature weaves with everyday life). The Uncanny has to do with the resurgence of memories, desires, experiences, that come back (hence the familiarity) as if one could do nothing about it, and one is helpless to deal with them (hence the feeling of fear). Repetitions, mirrors, doubles, coincidences, are all figures of this familiar turned strange by its renewed apparitions. Since the nineteenth and beginning of twentieth century, paintings and literature, explicitly question the appearance of things and the power of hallucinations. The uncanny is so

recurrent that it has been considered one of the key concepts of post modernism (Vidler 1992, Olsen 2003, Roye 2003). “It is a mode which interrogates all we take for granted about language and experience, giving these no more than shifting and provisional status” (Olsen 2003, p. 276) The mode finally became a “formula”—that is to say a set of “stock characters and devices” (Atterbery 2004) in particular in the gothic novel that staged mysterious and ghostly presence (Shelley 1818) and since then has been thoroughly explored in particular with Tolkien’s achievement (Sandner 2004).

The reader’s experience of the uncanny

Literary critics point to two specific aspects of “Unheimlich” literature: first, they observe how the experience is staged in the text; second, they analyse the reader’s experience of it. Fantastic tales question appearances and unravel the heroes’ efforts to figure the truth. Repetitions, coincidences are the symptoms of this hidden reality. Either they point to the strategic planning of a mastermind; or they question the sanity of the hero who apparently sees coincidences where there are none; or they hide the presence of alien forces at play. The narrative principle of the fantastic tale relies on the play between the different interpretations. There is indeed the assumption that life does not repeat itself. When it does, it raises suspicion and triggers uneasiness.

In fantastic fiction, this feeling of uneasiness is partly shared by the reader who hesitates on the status of what she reads. The story does not give a definite explanation about the recurrence of events. The reader is left in doubt. She can interpret them as a result of madness, occult forces, hallucinations, or devilish powers. Quoting numerous texts that produce such hesitations, e.g. Edgar Allan Poe’s short stories, the theoretician of literature, Todorov comes to the conclusion that three conditions are required to qualify a text as **properly uncanny** (Todorov 1970).

1. The author does not give a definite answer to the cause of the events: “The text must oblige the reader to consider the world of the characters as a world of living persons and to hesitate between a natural and a supernatural explanation of the events described” (Todorov 1970, p. 33).
2. The hesitation becomes a central theme in the fiction: “This hesitation may also be experienced by a character; thus the reader’s role is so to speak entrusted to a character, and at the same time the hesitation is represented, it becomes one of the themes of the work” (Todorov 1970, p. 33).
3. The literary genre is not assimilated to poetry. The hesitation is not read and solved as if it were a metaphor: “The reader must adopt a certain attitude with regard to the text: he will reject allegorical as well as ‘poetic’ interpretation” (Todorov 1970, p. 33). In fact the reader agrees to question the status of the text itself: either fiction or description, and to question the status of facts: either natural or supernatural. To give an example from the cinema, there is a difference between the movie: “Inception”¹

where the question remains open on how the film should be interpreted and “Matrix”,² that starts with the same kind of ambiguity, but that quickly gives a definite answer, so that the spectator is left without doubt about the presence of an evil machine.

From literature to pervasive games: a semiotic view on uncertainty

In texts, movies, videogames, the plasticity of the media has been constantly exploited so as to play on the deceptive nature of representations. It is not our purpose here to remind how staged objects, location, characters switch appearances, personalities, purposes in fiction. But everyday tangible objects cannot morph so easily. The question is therefore how pervasive technologies can open the door of our normal life to the underworld of fiction.

First, we base this research on an analysis of exemplary games, “Mogi” (Licoppe and Inada 2005), “Barcode Battler” (Borries *et al.* 2007), the “Beast” (Mc Gonigal 2003), the “Big Urban Game” (Lantz 2007), “Rexplorer” (Walz and Ballagas 2006), the “Journey” (Montola *et al.* 2009), “Insectopia” (Peitz *et al.* 2007). All these pervasive games show the uncanny as a peculiar semiotic communication mechanism. But it was our hypothesis that this semiotic mechanism could be staged in very different ways giving rise to different storytelling patterns. To explore this hypothesis, we developed and tested three pervasive games namely: “Treenor”, “Team Exploration” and “The Secrets of the Museum”³ (Gentes *et al.* 2008, Gentes and Jutant 2011). Computer scientists and social science researchers, game-designers, urbanists, and curators participated in creating these games. The first one, Treenor⁴, based on the visualisation of a spontaneous network on a pocket PC (iPAQ WiFi H5550), was a “shooting” game taking place in Gare Montparnasse (railway station in Paris) where actual train arrivals and departures served as the starting point for a virtual battle of space crafts (tests were conducted in January and February 2006, with 20 testers. There were observations and in-depth interviews of the players). This first game tested the hypothesis of aloof storytelling pattern and “unusual” mobility that is to say a way of questioning our usual comings and goings.

Team Exploration⁵, also based on a MANET⁶ and PDA (Nokia N770), with an interface representing “hops” between players, offered to canvas a scenic neighbourhood of Paris (La Butte aux Cailles) and to gather the different parts of a puzzle made of architectural and urban details (Tests conducted in 2008 included 16 players, observations and in-depth interviews) (Gentes *et al.* 2008). This game helped us understand how space can be a poetic exploration of the uncanny staging change of scales, but also where the only link to reality can be other player’s positions.

“Plug: The Secrets of the Museum”⁷ was based on a distributed RFID architecture in the Museum of Arts and Crafts and played on Nokia 6132 NFC (Near Field Communication). Players could collect cards representing different families of artefacts. They could also hide these cards on different RFID displays in the Museum. In other words, the contents of tags could be

changed, displaced so that other players would not find them easily. For “Plug – the secrets of the museum”, tests were conducted during two days (22 and 23 November 2008). Twelve game sessions were held, with a total of 96 teams and 150 players. For this project, we got players feedback through a comprehensive methodology of observation of the experimentations and in-depth qualitative interviews with testers as well as questionnaires (Gentes and Jutant 2011). This last game pushed the logic of the uncanny the farthest as it allowed players to change the fabric of the fictitious “underworld”.

These games allowed us to investigate various aspects of the uncanny through our particular semiotic view on pervasiveness: namely what is the outcome of the divorce between the signifier and the signified? What is the relation between attention and suspicion? What is the difference between exploratory and creative mobility?

Divorce between signifier and signified

Our relationship to the world is based on a certain number of assumptions: we all agree to inhabit a world in which things are what they appear to be. To take an artistic metaphor, our relation to the world is more like the artist Joseph Kosuth’s *Three chairs*. We assume that there is a link between a real chair, the photograph of a chair, and the concept and the definition of a chair. It is precisely this assumption that is challenged by pervasive games. They do not try to augment the everyday fabric of the world in a spectacular way but they undermine our assurance in what this “everyday” means, both and at the same time familiar and unfamiliar: *Heimlich/Unheimlich*.

Amongst our three games, “Plug: the Secrets of the Museum” pushed the logic of severing the signified from the signifier the farthest. NFC mobile phones enable the “reading” and “writing” of virtual cards, gathered and exchanged among mobile phones and tags on display (Figure 1).

Players could therefore decide to leave or to take a virtual card after having read the interactive display. They could either download the proper tag (one that shows a loom close to a loom) but they could also store it in the tag next to the wrong artefact. Therefore, nobody could be sure of what was stored in the display, though the tags theoretically illustrated the exhibited objects. The loom card could also be on somebody else’s mobile phone. Under the guise of a treasure hunt, players could in fact deliberately shuffle tags and contents. The same place, the same artefact could have not one but several other meanings. Meaning was no longer fixed and an ambiguity was established that relies on this shifting meaning based on a new layer of text that Björk alludes to (Björk 2007). It is a dynamic process that—if the game allows it—can go on forever. As a matter of fact, our game tried to limit the dispersion by giving points to players who re-united signifier and signified (i.e. re-stored the right card next to the right artefact). Nevertheless, because of the fleeting meaning of things, attention turns into suspicion and mobility becomes a way to check on things.



Figure 1. Screen shots of “Plug – “The Secrets of the Museum”” November 2008.

Attention as suspicion

Applying such a semiotic view, the whole world can be looked at suspiciously: do we miss something, is this object hiding another meaning? This potentiality disrupts our normal relation to the world. Examples of games such as “The Beast” (Mc. Gonigal 2006) or “Botfighters” (Sotamaa 2002) anchored their narratives in reality by using everyday methods of communication (i.e. the Internet, posters, trailers, voicemail messages, fictional websites, phone calls), and actors as “story-delivery mechanisms”. They also turned the whole environment into a questionable situation. What is more real? Or what is under the real?

The “willing suspension of disbelief” analyzed by Samuel Coleridge and described as the attitude towards fiction (Coleridge 1985 [1817])—we know that it is not real, but we decide to do as if—is challenged in pervasive games because players *wish* to doubt about the reality of the enunciation system. The desire to believe that fiction is real is called the “Pinocchio effect” by Jane MC Gonigal who points out that “the best pervasive games *do* make you more suspicious, more inquisitive, of your everyday surroundings. A good immersive game will show you game patterns in non-game places; these patterns reveal opportunities for interaction and intervention. The more a player chooses to believe, the more (and more interesting) opportunities are revealed.” (Mc Gonigal 2003, p. 13)

We had examples of this suspicion when, in the Arts and Crafts Museum, visitors, who did not participate in the “Secrets of the Museum”, tried their personal phones on the displays to see if anything happened. More generally, people watching us play “Team Exploration” in the streets were intrigued by

the unusual activity but more to the point they inquired about what we “saw”. The reality of everyday things and places is diverted for the game. Attention is therefore based on a renewed interest for surroundings plus a suspicion about what might be there that triggers an exploring mobility. As analyzed by David Sandner, the trick of the fantastic is that “the reader wants to know what it might [the word, the situation] mean – and the narrative moves by that desire” (Sandner 2004, p. 5). In the case of pervasive games, it is the fabric of everyday life that is affected. Mobility is therefore first a way to encounter uncanny elements and situations; and second a way to resolve or to augment the uncanny, either by re-establishing some kind of fixed meaning, or by changing the virtual layers of the game.

Exploratory and creative mobility

The first reading of the world, that organises our day-to-day activities, and normal progression in public places, is challenged by the underlying narrative of the game. Pervasive mobility consists in finding where, in the real world, fiction emerges. It becomes an active search for the “Unheimlich”. Mobility is therefore perceived in all our tests as exploratory. The difficulty for players was to partly disregard their usual orientation process. “*Generally, in a museum, there’s a ‘direction’ and, well, here, we forgot about that entirely*”. “*You don’t notice the path taken, it’s completely arbitrary when compared to the traditional visit. It’s very free*” (extract of interview). Players also considered that their trajectory was less “logical”. The whole environment is felt like a fluctuating place. As a consequence, players have to give their mobility a new meaning. In Mogi or “The Secrets of the Museum”, players changed the way they circulated, disturbing their routines. Moving became the way to check on what had or had not changed (Figure 2).

Eventually, mobility is a way to either increase the confusion or to reduce it. Mobility turns into a creative force. In the game “Plug- the Secrets of the Museum”, players could “write” with their NFC enabled mobiles. “*Here I transpose something onto the display, whereas usually, it’s not like that, it’s the other way around. Usually you’re told, ‘Go here, listen to the commentary!’ You’re not the one to carry the information, unlike here*” (extract of interview). As the player reaches out her arm, she “drags and drops” the information from her phone to the terminal. Some players described the phone as a magic wand. “*While there it’s me, I can give something at any point in the trajectory. That’s unique*” (extract of interview).

Players considered that the pervasive system gave them a new tool to handle their mobility as it allowed them to create their own narrative. They could change the hidden layers of the world. They could either augment the confusion by scattering images deliberately, or lessen the confusion by “tidying” images and placing them in their rightful place to make it easier for others to find and win points (“civic points”). In other words, people could set the chaos right if they felt disturbed by the severance of signifier from signified and therefore they created rational collection but they could also

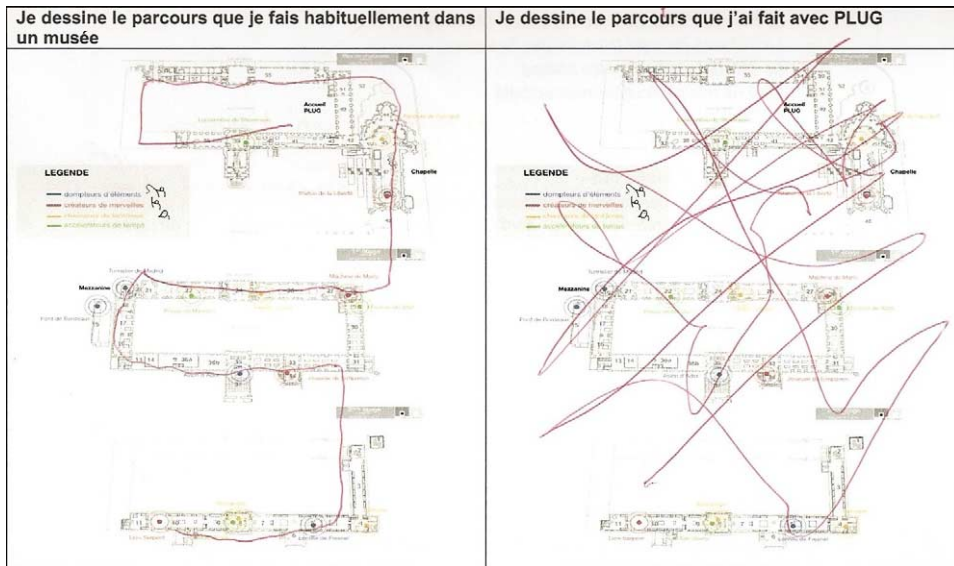


Figure 2. Representations of PSM trajectories: players were asked to draw first their normal trajectory, then the trajectory induced by the game.

contribute to spread the chaos. These acts of “reading” and of “writing” transformed the players’ activity into an authorial experience: *“I bring my contribution to the system. I complete it, right, it’s fun but it’s also as if there were a gap, something missing and ‘bingo!’ I find the missing bit, I finish the Lego and ‘wham!’ I manage to make it whole, like a construction. There’s participation, there’s choice”* (extract of interview). In either case, mobility is no longer taken for granted. It becomes reflexive.

A typology of pervasive games: qualifying the relationship between virtual and tangible

Pervasive games allow players to discover, settle or augment the semiotic gap. To qualify this relation as coincidence (Reid 2008) is not enough to encompass the different narrative strategies. The uncanny mode is the foundation for the corrosive mechanics of pervasive games and it produces different types of stories. Some of them challenge the “natural order of things”, some do not.

Storytelling is usually divided in between two poles: mimetic or realistic and fantastic. Northop Frye argues that the mimetic pole, which tends to verisimilitude and accuracy, opposes the mythic pole (Frye 1957). The specificity of pervasive games lead us to challenge this bipolarity as we need to take into consideration the place devoted to real events and things in the game play, and the way the game incorporates these elements. In the following parts of this article, we point to the tensions between four opposite poles, or four types of storytelling, and their specific handling of mobility. In the first part, we present the three options that use the uncanny as a mode but

do not fully exploit its potential. We devote the last part of this article to scenarios that fully embed the uncanny as a storytelling pattern (Figure 3).

Mimetic storytelling and exploring mobility

At one of the poles, pervasive games do not challenge our usual perception of things but rather, as in audio-guides, comment on it (and add encyclopedic information about it). Most of the games that augment our relationship to the environment are based on what we call the “museographic paradigm”. They provide objects or places with a “name or title plaque”. This trend of games is related to the mimetic or realistic pole of literature. The quality that is sought after is based on the accuracy of the narrative, its relevance to the immediate surroundings.

REXplorer⁸ is an example of such a type of game. It “is a mobile, pervasive spell-casting game designed for tourists visiting Regensburg [UNESCO world Heritage medieval city], Germany. The game uses location sensing to create player encounters with spirits (historical figures) that are linked to historical buildings” (Borries *et al.* 2007, p. 366). Players have to help a certain Professor Rex to understand the specificity and the magic of the city. Thanks to their “paranormal activity detector” (a device with a mobile phone and a GPS receiver) players can connect to these “location-based” spirits that tell the story of their locations. Tour guides, historians and game designers worked together to create the specific contents in the game. This type of storytelling does not question our perception of the surroundings but rather enriches it. Mobility is designed so that people find the right items. It is an exploring mobility: people have to follow or find a path in relation to a visit where artifacts are given an added value. Mobility is organized as a trajectory. It is a specialized mobility devoted to the discovery and explanation of places and things. It is specifically designed for this purpose. In this kind of games,

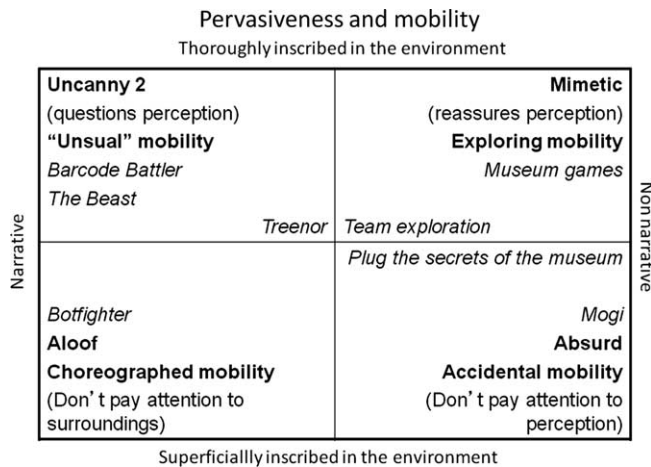


Figure 3. Typology of storytelling.

we are very far from what Todorov considers as a “proper uncanny”. Though it is used as a game mechanism, the uncanny mode must not last. The partition between signifier (for instance, historical monuments) and signified (for instance, spirits) only serves to justify the quest. Once the monument is found, the uncanny mode must disappear.

Aloof storytelling and choreographed mobility

At the other end of the spectrum, there are games where the narrative is severed from where it takes place. As pointed out by Reid (2008), some games are not really anchored in the place they use. They exploit the spatial qualities that allow for moves to become strategic: people move to find or attack or defend themselves. In those games, the relationship with the environment is minimal and the narrative lives a life of its own without really taking advantage of the social or anthropologic environment other than the space that it opens.

In “PacManhattan” (Lantz 2009), “Pirates!” (Björk *et al.* 2001), “Epidemic Menace” (Lindt 2007), for instance, it is obvious that the space is never a place (contrary to mimetic games that rely heavily on the natural, anthropological data of the place) but a game board with geographical coordinates that structures the here and there of the hunt without adding anything typical to it. The metaphor of the game board is exploited in the “Big Urban Game” (Lantz 2007), where huge inflated game pieces were dragged by players through Minneapolis and St Paul after their movements had been voted by online players. What matters most in those games, is the way players are positioned in relation to each other. As players told us in “Team Exploration”: “people are the network”. They could indeed check their distance on their PDA (Nokia N770). This can be qualified as a choreographed mobility. Just as pawns, players move to change their position and gain some advantage. People’s coordinates are anchoring the game in reality. In this kind of game, no hesitation about the status of participants is necessary, though it can certainly be an added bonus. To pick up Todorov’s definition, these games do not have any uncertainty at their core. They do rely on the uncanny mode (the gap between the place in the game and place as it is used in reality) but do not represent the uncanny as a genre (the decorrelation between the two spaces is such that there is no uncertainty or doubt.)

The absurd storytelling and accidental mobility

The absurd as a language totally escaping its function of fixing things and making communication possible (Sandner 2004), is another end of the spectrum of pervasive games: a play on things and meanings with a poetical purpose. “*When I use a word*”, Humpty Dumpty said, in a rather scornful tone, “*it means just what I choose it to mean – neither more nor less*” (Carroll 2007 [1865]). The absurd takes several forms: first, the semiotic loss of reference. Things are re-named without consideration for mimetic, realistic, socially

shared meaning. For instance, the game “The Journey”⁹ uses cellular phone positioning just to decide that the player, who became an infamous detective, has moved enough and can follow on discovering new information and new virtual places that are not linked at all to the real situation of the player but to a mysterious fictitious case. This “detective story progresses through a variety of fictitious places. Even though the experience can be absurd and surreal, with a cellular phone claiming that you are in a bar when you are really at a metro station, the act of walking itself (...) can give the story additional flavour” (Montola *et al.* 2009, p. 43). “Insectopia” is another example of game using Bluetooth connections to discover hidden pieces of information. In this case, the tangible device delivers a bug or a butterfly, which have no relation to the game situation or the identity of the devices (Peitz *et al.* 2007).

Second, the absurd in storytelling can use the tangible loss of reference by playing on scales, loss of orientation, questioning of landmarks. The way we organize our moves, our gestures, our mobility is suddenly challenged by the storytelling: a small door for a large person, a huge house for a suddenly microscopic character. While this disorientation remained symbolical in works of fiction, it is actually put into practice in pervasive games.

“Team exploration” was designed by us with this idea of a change of scale. We made a photographic reportage on street art, including such artists as Misstic¹⁰, or Space Invaders¹¹. We wanted to change the point of view on the city not by giving any comments, or tying things in a narrative, but by having people crouch or stretch to look for street art that could be as small as a few inches. We therefore played on the scale of our relationship to the city, pushing people to look at very small details of the urban landscape. Players appreciated that the change of scale revealed unseen elements of the urban landscape. It shook their certitude based on familiarity. Moreover, it did introduce some measure of poetical play with the environment. Todorov warned us that this use of imaginary patterns is not what we can call a proper uncanny storytelling. It points to our play with words but does not necessarily introduce suspicion as structuring our relation to the world. Suspense is relieved by a metaphorical interpretation. Moves have no definite meaning either. Players stumble upon augmented or distorted elements by chance. Even though as in Mogi or “Team exploration”, players can anticipate where to look at, their moves are not organized in a sequence of events, but rather as Haikus, propose a certain vision of things, a detachment from everyday life. We can qualify this mobility as accidental. Poetic twists can happen anywhere. The player wants to be surprised but does not follow a predetermined path (Figure 4).

The proper uncanny or uncanny²: “unusual” mobility

In our typology, the uncanny as a “mode” can be fully exploited to produce a storytelling pattern that “reveals that which must be concealed” (Olsen 2003). It is the fourth pole of our model: the uncanny as a “genre” that can be considered as the ultimate embodiment of the uncanny as a mode. This



Figure 4. Screen shot of Team Exploration.

proper uncanny could be called uncanny² as it is based on the uncanny mode and takes it as its main narrative focus.

Reversal of social values in the uncanny²

As described by Todorov, the uncanny genre is a reflexion on the status of things and our relation to them. Pervasive games introduce a reversal or disruption of values and social expectations in public places. They belong to a tradition of Carnival as defined by Bakhtin. “Very characteristic for carnival thinking is paired images, chosen for their contrast (high/low, fat/thin, etc.) or for their similarity (doubles/twins) [...] this is a special instance of the carnival category of eccentricity, the violation of the usual and the generally accepted, life drawn out of its usual rut” (Bakhtin 1984, p. 126).

“Barcode Battler”, developed and published by Epoch Co in 1991, can be considered as one of the first pervasive games and is a case in point. Thanks to a barcode reader device, stickers delivered not the price of the product but attributes to the players: strength, weapons, magic points, life points, etc. In this game, it is not only a question of a magic feeling when the user reads the barcode with the black handheld, nor is it limited to the pleasures of collecting. The effectiveness of the game lies in its redistribution of values.

Usual distinctions do not apply: quality or quantity, or price say nothing about the value of the object within the game. The economic order of things is happily and sacrilegiously denied. But this transgressive interpretation is hidden and it needs a device to be revealed. Attention is therefore funneled, “harnessed” as Foucault would define it, through this particular framework of a reading/revealing device within an environment that we can no longer take for granted.

Hesitation

True to Todorov’s definition, hesitation is at the core of the storytelling pattern of the uncanny genre. During the game “Uncle Roy all around you” (Flintham *et al.* 2003) players never know if the characters they meet are actors and part of the game. It “steadily blurs the boundary between the game and ordinary life, between the fantastical terrain of espionage and the quotidian streets of work, tourism, and shopping” (Montola *et al.* 2009, p. 231).

The situation that we staged with Treenor in the railway station precisely played on this hesitation. In Treenor, the striking feature was the synchronization of virtual and real world along actual events happening in the railway station, that is to say the arrivals and departures of trains. Like everyday commuters, players had to post themselves in front of the boards announcing the departures of trains. When a real train was to depart they received a message that a virtual flight was to begin and that they should go to the appointed platform. Even for only a second, players hesitated in their assessment of the information: was it the game, was it some train information? They all agreed afterwards that such doubt was the core of the experience. The blending of reality and fiction—through the simultaneous timing in the virtual and the real world—was unanimously noted by the players to be the strongest feature of the game (Figure 5).



Figure 5. Screen shots of Treenor.

“Unusual” mobility

Eventually, the player is not only questioning her interpretation of events and things, she also questions the meaning of her mobility. Within pervasive games, “the ARG is a genre of storytelling that combines the Internet with real-world events, locations and channels of communication to blur the lines between fiction and reality” and to structure the gameplay (Mc. Gonigal 2003, Borries *et al.* 2007). These games create what are called “rabbit holes” (Montola *et al.* 2009), which look like and function as real artifacts but are also devices that topple over the player into the game world: Perplex city (2005) (Montola *et al.* 2009), Chasing the Wish (2006) (Montola *et al.* 2009), or Sammeees (2006) (Montola *et al.* 2009), as well as games related to television series, as Alias online Adventure, the Lost Experience (Askwith *et al.* 2007), and Heroes Evolutions (Catania 2009).

A case in point is certainly “The Beast”¹² that was designed by Microsoft as a marketing campaign for Spielberg’s movie, “Artificial Intelligence”. Trailers and posters of the movie featured strange information. In particular, they announced the collaboration of a “machine therapist” within the production team. As the players were searching to know who this person was, they discovered a full-fledged mystery in relation to a murder as well as dozens of web sites and blogs, phone numbers, faxes, and private emails. The game was built on a denial of the gameness of the experience. The illusion was carefully crafted so that players could question every detail of their surroundings. But a balance was struck between this pretence of reality and firm roots in fiction: for instance the game was set in the future (the year 2142) and there were coalitions for robot freedom (www.inourimage.org was an active pro artificial intelligence web site).

What strikes us in these examples is how much they question movement in itself. These games are not based on specialized paths (like a visit) or do not rely so much on people as pawns on a grid. They are not totally poetically opened either. They rely on habits and usual ways of managing comings and goings. This type of mobility plays on both the familiarity and the uncertainty of what these moves will bring along. We call this “unusual” mobility that is to say a mobility that is explored for itself and diverted for other purposes. Commuting for instance is filled with a diversity of meanings: in “Treenor” the player waits for her train and starts an attack on a spacecraft; in “The Beast”, players are followed by different means of communication in the street, home, or workplace, as advertising boards as well as faxes can relay the gameplay.

Conclusion: uncanny mode/uncanny genre

The semiotic system of pervasive games is based on the severance of signifier and signified. Each place, object, can be given a number of meanings on the virtual plane. This highly volatile and fluctuating attribution of meaning has been qualified as the “uncanny mode” inheriting from a long and very much alive tradition of fantastic in literature, cinema and videogames. The uncanny

mode in pervasive games implies a double reading of the world and a subsequent disorganization of mobility, either to discover “dubbed” artefacts, to ascertain their various meanings or to contribute to the dispersion of possible interpretations. Thus, game design becomes a decision of how much stability or how much fluidity one gives to a transient semiotic system and what part the players are given in this semiotic game on things and interpretation. Our analysis of pervasive games shows that different design strategies are indeed possible. A typology of pervasive games is therefore established around four main poles that relate storytelling patterns with forms of mobility. First, some games rely on a mimetic relationship between the virtual contents and the tangible environment. Mobility is based on a museographic paradigm and follows a designed path, like a visit in museum: it is an exploratory mobility. Other games only use space as a gaming board where players are geographical coordinates chasing each other. The environment as such does not really matter but mobility is choreographed. Third, accidental mobility is at the heart of poetic games that open a creative distance to our world by introducing changes of scales, or unexpected items more or less related to the actual place. Finally, the uncanny as a genre, the “uncanny²”, questions what things and ordinary mobility mean and how they should be interpreted.

Some narrative options are probably less easy to integrate in a gameplay: the poetic storytelling, as in *Alice in Wonderland* or *Roger Rabbit*, is very interesting in terms of narrative, but it can be more difficult to place in a game. The mimetic and realistic genre tends to spread the museographic quality of the world but look a lot like multimedia audio-guides. Aloof storytelling limits the local references to spatial dimensions. It is our opinion that the uncanny not only as a mode but as a proper genre or uncanny² as defined in this article, can bring about the real narrative potential of pervasive games. But these genres are not incompatible. They can be mixed: a game can use both and at the same time a museographic quality and a play on scales as our game “*Team exploration*” did. “*The secrets of the Museum*” mixed museographic qualities with the uncanny as a genre, etc.

Notes

- [1] *Inception*, Director Christopher Nolan, 2010, Warner Bros.
- [2] *The Matrix* Directors Larry and Andy Wachowski, 1999, Warner Bros.
- [3] Information on these games is available at: <http://codesignlab.wp.institut-telecom.fr/http://vimeo.com/3691509>
<http://vimeo.com/8697274>
- [4] 2003–2005, ANR – RNRT, adhoc wifi research project SAFARI. <http://codesignlab.wp.institut-telecom.fr/research-projects/safari/>
- [5] 2006–2008, ANR – RNRT, adhoc wifi research project Transhumance. <http://codesignlab.wp.institut-telecom.fr/research-projects/transhumance/>
- [6] Mobile Adhoc NETwork
- [7] 2007–2009, ANR-RIAM, *Play Ubiquitous Game*, and *Play more*. <http://codesignlab.wp.institut-telecom.fr/research-projects/plug/>

- [8] Commercially available in 2007 and 2008.
 [9] <http://journey.mopius.com>
 [10] Photographies of Misstic murals may be seen at: <http://www.missticinparis.com/>
 [11] [http://en.wikipedia.org/wiki/Space Invaders](http://en.wikipedia.org/wiki/Space_Invaders)
 [12] <http://www.42entertainment.com/beast.html>

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