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Medium Specific Uncanny in Contemporary Video Games

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Abstract. The academic discourse on the uncanny in video games usually focuses on the phenomenon of the so-called "uncanny valley" (Mori 2012). The article explores the emergence of other, medium-specific occurrences of the effect, prioritizing interactivity as a key factor in its establishment. Two unique areas are particularly prominent in the increasingly photorealistic worlds of video games where uncanny moments associated with the wider, Freudian concept can be found. These are linked to necessary (structuring) and contingent (destructuring) components of the game: namely its heterogeneous ontology and the glitches that may appear in it. The author hypothesizes that these less conceptualized uncanny situations are regular features of the gaming experience and emerge when the immersion in an iconically realistic environment has been broken and eerie absences or ghostly presences pop up either through encounters with the game's boundaries that result from the technological limitations of the software or the appearance of unintended errors in its processes.

Keywords: video games, simulation, reality-effect, uncanny, glitch, bug.

The Notion of the Uncanny in Highly Mimetic Video Games

The academic discourse surrounding the uncanny in video games is usually focused on the alienating effects of realistic-looking humanoid characters (Kätsyri, Mäkäräinen and Takala 2017; Ratajczyk 2019), invoking Masahiro Mori's (2012) concept of the "uncanny valley." There is even a claim that the ubiquity of these characters in video games and computer-generated animation changed our perception and desensitized us towards this sense of the uncanny (Tach 2013) where an ambiguity regarding the human/nonhuman, animate/inanimate nature of the character is triggered by its appearance, movement or other observable behavior (Kirkland 2009, 1). Sigmund Freud's notion of the uncanny (much of it

derived from E. A. Jentsch's essay) is much wider than Mori's "uncanny valley" would suggest. While examples and associations to the paradoxical nature of a being that is seemingly living while actually dead or inanimate can be found in Freud's discussion of the concept (referring to wax figurines, dolls, and automatons), it is not restricted to effects elicited by visual stimuli of humanoid or anthropomorphic figures. Freud writes very broadly that "the 'uncanny' is that class of the terrifying which leads back to something long known to us, once very familiar" (Freud 1955, 220) and cites "Schelling's definition of the uncanny as something which ought to have been kept concealed but which has nevertheless come to light" (Freud 1955, 241).

The present article explores the emergence of other, medium-specific occurrences of the effect that metaphorizes Mori's relatively straightforward, thoroughly mapped, and much-theorized concept. Two unique areas are particularly prominent in the increasingly photorealistic worlds of video games where uncanny moments associated with the wider, Freudian concept can be found. These are linked to necessary (structuring) and contingent (destructuring) components of the game: namely its heterogeneous ontology and the glitches that may appear in it. In the context of highly mimetic games, what comes to light (to the surface where players are confronted with them) that should have been concealed (remained hidden deep behind the interface of the game) is the algorithmic and restricted nature of the simulation either through encounters with its *boundaries* that result from the technological limitations of the software or the appearance of *unintended error*s in its processes. Both can break the simulation's resemblance to the physical world or the familiar workflow coded into its design. (Design is the keyword for the complex structure consisting of aesthetic and functional aspects.)

I hypothesize that these less conceptualized uncanny situations are regular features of the gaming experience and emerge when the "immersion" in an iconically realistic environment has been broken, or – from a different perspective – "ghostly presences" pop up in a simulation formerly believed to be "rational", that is, predictable and consistent. This can be the result of both a *systemic function* or a *systemic malfunction*. To substantiate my claim, I have to discuss the concepts of simulation, reality effect, and glitch in video games.

The Ontological Heterogeneity of Game Elements

Espen Aarseth points out that it is not satisfactory to refer to all "game content" as fiction because our relationship to games is different from the way we approach fictional stories in any kind of medium (Aarseth 2007, 36). The player can interact with the virtual environment based on the rules of the game, and her input and behaviour have real consequences in the game world.

To describe the heterogeneity of in-game objects more accurately, he distinguishes between three categories that possess different ontological qualities: they can be fictional, simulated, or real (Aarseth 2007, 36–37). I would like to keep the adjective fictional for the description of narratives in games, but preserve the essence of Aarseth's differentiation and use the broader concept of representational[1] instead for identifying individual objects or aspects that are purely decorative, and player interaction is highly limited or not possible with them at all. The dominant aspect of these elements (in respect of what they represent) are their sign-like qualities: they are mimetic in the sense that they refer to real-world objects or concepts mostly through their iconic nature. I recognize a door by its appearance in a virtual environment even if I cannot open it or pass through it with my player-character (because there is no mechanism behind the image of the door). It can be approached and serves as an obstacle, just like the wall surrounding it, but it does not function as a *door*, so it is purely representational.

If it functions as a door in the game, we can call it a simulated object, even if some of its qualities are still just signalled. (For example, its wooden material is necessarily just a representation but has the same primary function in the game as a real door. A simulation almost always simplifies real-world mechanisms and therefore works like a model.) A simulated object is a complex one because it consists of "signs and a dynamic model that will specify its behaviour and respond to our input" (Aarseth 2007, 37). As it logically follows from Aarseth's observation, the simulated nature of game objects cannot be understood as a quality

1 The main reason I use this term here is because conceptually fiction and the quality of fictionality is not the opposite of real and reality (as Aarseth's model suggests), but that of factual(ity) as both fictional and factual are a (narrative) discourse, and both belong to the domain of representation. How can we differentiate between the fictional and factual representation of single in-game objects that represent real-life objects? Does it even make sense to talk about factual representation of objects? For example, if you encounter a famous, recognisable, unique, real door, such as the door of 10 Downing Street in the game, will that be a factual representation of a door? In my view, this is a completely different issue and has no bearing regarding the basis of the division, on how in-game objects function.

that stems solely from the properties of that single object, but from its place in the larger system: its relationship with other elements and the player(s) of the game, or rather, the object's ability to react to its virtual environment. Therefore, they are better described as objects that dynamically participate in the simulational system.[2] There is a double premise in Aarseth's conceptualization: whether the player can interact with them, and whether the resulting behaviour refers to (or recognizably resembles) the behaviour of some object outside the game.

It is worth noting that the sign-like nature of simulated objects can be twofold: they can represent an object by their forms or perceptual attributes (what they look like, how they are animated, how they sound) and by their behaviour (how they interact with other objects or with the player). In the second case, the resemblance is not realized through visual or acoustic features, but through the similarity of processes, modes of operation, which, due to their abstractness, must be of course manifested perceptually. This can be remote (visual and acoustic stimuli) or contact-based (haptic/tactile feedback). I call this latter type of semiosis (which is a unique characteristic of mimetic games) procedural iconicity (or similarity through processes).

So, the processes themselves in elements of simulation can carry representational values (large objects that can be opened and passed through with our avatars are inevitably defined as doors, moving things that can shoot you and be shot are enemies, but the very act of shooting is a name given to a simplified representation of a complex real-life interaction). In this sense, simulation is a complex, in-between realm: at the same time real – even if it has no physicality, is purely virtual, but it creates a system, a specific mode of operation – and representational, sign-like, as it refers to something beyond itself, and more importantly outside the game. The procedural iconicity or functional reference of game elements is often complemented and reinforced by a textural or traditionally iconic aspect to clarify the representational meaning of the object: the ball in *FIFA* games (EA Sports) does not only behave like a football, but it also looks like one. In games simulating physical objects, this is usually a formal (often literally surface level), but not a structural similarity.

2 As Gábor Zoltán Kiss observed, from the recipient's/player's point of view this is an adequate description of the difference between "traditional" and "new" media in a broader context, where traditional media can be characterized by a conscious and constant attention to the meaning of its elements and "provokes interpretative activity, in the case of iterative media, the user performs an extranoematic activity and operates a machine" (Kiss 2012, 252). Csaba András describes this as a different kind of interpretative work when he remarks that "the player is primarily interested in the function of the sign in the machine, i.e. how a sign affects other signs in the game. The player's focus of interest is not what a sign means, but how it behaves" (András 2019).

With simulation, we also touched on what we can call "real" elements in a game. Aarseth, perhaps unwittingly, but intuitively narrows down the category of real when he defines these types of elements as already existing concepts fully realized in the game (meaning they are also representational in some sense.) The idea is as follows: The incorporation of an object that exists outside the game only becomes a simulated object if its existence necessarily includes physical realization and if its virtual reconstruction needs substantial amplification. This is the case for most objects, but there are exceptions. If the object is already conceptual and can be digitally reconstructed without any simplification, then nothing will differentiate it from its external (real-world) counterpart. Aarseth's somewhat debatable example is the labyrinth. "If a 2D drawing or a painted or tiled floor can be a proper labyrinth (and they can since labyrinths do not require a specific height) then a 3D virtual labyrinth in a computer-simulated world is a real labyrinth since it can be navigated by the same rules as the one at Hampton Court." (Aarseth 2007, 41) I should add that categorization is not necessarily that simple if we think about a hedge maze in a game that is conceptually real in the sense of being a labyrinth, but merely represented in respect of its physicality.

Let us consider the difference between two versions of two games: chess and football. Chess played on a computer is also a real chess game, in so far as the essence of chess lies not in the materiality of the pieces, but in the rules of the game. If you can play chess on the board, you can play chess on the computer. While FIFA games are certainly simulated versions of football operating with both procedural and traditional iconicity – as there is a clear representational link between the forms and even a similar set of rules – they require skills that are very different from playing football: therefore, they are quite different games. (It is not just the physicality, but the player's role to control an entire team during a match, not only one member of it. The team-play aspect is completely lost in this digital version.)

Most processes in a simulation are simplified models of real processes that they attempt to imitate. However, the rule-based behaviour of a game object does not necessarily possess representational qualities through procedural iconicity or their traditional iconicity has nothing to do with how these objects actually function in the game. It may not imitate any pre-existing real object, mechanism or phenomenon outside the game.

In the *Candy Crush* game series (2012–), the system is completely autonomous, even if it evokes various associations in us, it is a totality with an independent existence, and its particular mechanisms do not try to allude to an external reality.

If it refers to anything, it is to the way in which similar games have worked in the past (but this is an issue we are not addressing here). The fact that the moving, disappearing game elements are depicted as candy is of very little importance in terms of the laws of the game. At most, it adds to the sense of gameplay, which may be important from other perspectives, but for the understanding of the problem at hand, this matter must be separated from the feelings and associations of the player. As Csaba András has pointed out, the game's success was more due to its rewarding mechanism than to its setting or design (András 2021).

Of course, every game-element is, in a sense, a real signifier, even if not representational, because they have internal value and meaning in all software as they have a function within the system. This aspect is perhaps not present in Aarseth's discussion of "game content" because the term "real" inadvertently evokes representational elements in the game, not the system itself, which is in a sense the sum of internal operating principles and not a reference to a reality independent of the game, but an addition of something new to reality, an extension of it. The system itself is the predictable, formalizable, algorithmic construct, the abstract set of rules that govern the behaviour of its elements which can function and interact without referring to anything besides the software, they simply exist and behave in a certain way – and this is precisely what is real in them.

The "Reality Effect" of Functionless Elements – or The Dual Nature of Simulation

In games that seek to model physical reality as accurately as possible (to the extent technological and financial circumstances allow), there are still a lot of objects that are non-functional and purely decorative. Their presence may be due to necessities or artistic choices of the creators. I use the term function here not in the aesthetic sense of the word common in literary studies, but in a ludic sense, as an operational mode of a machinery, whether the given element is able to give feedback and react dynamically to the input signals it receives.

Sometimes game objects are non-functional only in the sense that they do not fulfil the function of the real-world object they denote, but they are nevertheless very important for the game. A common case is when they frame the virtual space, effectively forming the boundaries of a level. In this capacity they serve as impenetrable obstacles for the player, whatever their representational qualities may indicate, therefore they often function differently than their iconic nature would suggest (revealing an inconsistency between their representational and

ludic aspects). These expectations are even stronger if the player has already encountered the same type of object with different, richer ludic functions (revealing an inconsistency within the ludic system). Imagine a not-too-high wooden fence that you can easily jump over with your character. This is a plausible action that more or less models real-world physics given the spatial parameters of the object and the movement abilities of your avatar. But even if the game deviates from the laws of physics, the rules of movement are consistently applied within the game, because this gives us the opportunity to master the skills required for progress. Imagine that the same fence is used in the game to mark the boundary of the map, the playable area of a game level. Here, the uncanny moment occurs, as no matter how hard you try, you cannot jump over it.

In a highly mimetic level design, boundaries appear natural as signs of obstacles that fit organically into the environment (cliffs, unclimbable rocks, fences, etc.). *Half-Life 2* (Valve Software, 2004) is often praised for its inventive solutions to effectively limit the area its players can explore while avoiding the appearance of artificiality (Aarseth 2012). However, not all games put effort into this: sometimes a game simply does not allow the player to proceed forward at a certain point, without attempting to justify this limitation with any kind of recognizable, in-game obstacle: it is an eerie aesthetic experience to realize that the represented world continues while the simulated world ends.

While in some cases the absence of objects, in other cases their presence leads to haunting experiences. Certain in-game objects merely add the feeling of authenticity or realism to a location simply by their appearance/texture without being an active or functional part of the simulation. Eben Holmes describes the phenomenon as follows: "When game designers set out to design a reality in their games – by modelling terrain, lighting, A.I. behaviours, characters, buildings, cars, washing machines, and teapots – this reality is itself an elaborate reality-effect. [...] The 'ordinary reality' of the game's physics becomes uncanny in its very essence because while it produces a graphic realism that is faithful, proportioned, and believable for the player, this reality remains merely an effect played out on screen and is subject to the vicissitudes of the game's process and the player's suspension of disbelief" (Holmes 2010). His description evokes Roland Barthes's notion of the *r*eality-effect (1989) by which he draws attention to the narratively functionless elements in stories where the sole purpose of these "futile" or "useless details" is to signal the works' similarity to reality.[3] In a

3 Naturally, it is not always obvious what should be considered non-functional in a (narrative) literary text (see: András 2014, 102–103). Even in video games, this is not a clear-cut dual

medium like the contemporary video game, aren't most environmental elements designed to support realism in one way or another? Is there a scope within which we can productively apply Barthes's concept for games?

It is crucial to note that Barthes does not point out representational strategies which bring works of art closer to reality (he explicitly talks about realistic fictional narratives), nor does he even suggest that they cause the recipient to confuse the contents of the work with reality (as it might happen in the case of a trompe l'oeil). It is only a question of locally creating a kind of discourse that refers to itself, indicating the category of realness (regardless of its content).

Since both Barthes's effect and realism denote a conceptual, representational discourse, it is problematic to apply them to the mechanical, algorithmic system of the game which – as I argued – can be regarded as an extension of reality generated by the game itself, not a mere sign of it. (Consider the operation of software that performs a specific function and does not represent external reality in any way.) The purely mechanical/rule-based aspect of the game cannot really be linked to the reality-effect (the expression implies the process of semiosis), since this domain contains *realized* (albeit virtual) objects or actions as the program *executes* a sequence of operations. (Even if this aspect of the game is not directly observable as the vast majority of the algorithmic processes are either hidden from the player – and can only be inferred by their effects – or the game objects that display these operations also possess representational qualities.)

The situation is different if we approach the issue from the concept of simulation, which would describe a system supported by signs referring to the world outside the game that can create a "referential illusion" (Barthes 1989) or an "aesthetic illusion"[4] while having their own mode of operation: in a simulation, the player engages in real action, real activity that imitates (models) another kind of activity. The game adds a layer to the player's actions and virtual "events" (not necessarily in the narrative sense) to be the representation of other kinds of interactions. Simulations in mainstream video games are dual in nature: they are working systems in themselves and representations of other systems or environments that are usually found in our physical reality. But how do they become representations? We

opposition, but the medium facilitates differentiation, since a ludic function is less a matter of interpretation and more a present or absent mechanism.

4 "Aesthetic illusion consists primarily of a feeling, with variable intensity, of being imaginatively and emotionally immersed in a represented world and of experiencing this world in a way similar (but not identical) to real life. At the same time, however, this impression of immersion is counterbalanced by a latent rational distance resulting from a culturally acquired awareness of the difference between representation and reality" (Wolf 2011).

should complement Aarseth's formula that a "simulated object" consists of "signs and a dynamic model" with the observation that the semiosis here happens on two distinct levels. First, when the algorithmic operation itself contains procedural iconicity (points are counted according to the same basic rules in *FIFA* games as in real football: the basic condition is that the ball has to reach the goal line), and second, when this system is reinforced by traditional (formal, audiovisual) iconicity (the playing field, the players and the ball actually resemble their real-life counterparts). Because of the consonance between the two modes of imitation (both the processes and the audiovisual characteristics of the simulation refer to the same signified), it can be seen as a redundant way of signalling/representing.

If we are looking for an analogy with Barthes's concept, the representational devices (both kinds of iconicities) here are explicitly linked to (ludic) *functions* and are not elements that are specifically and exclusively responsible for a (representational) effect, so at best, we should distinguish this game-specific dynamic phenomenon by calling it a simulation-effect.

We can risk saying that the "effect of reality" can be located in game elements that do not actually have the functions that their formal similarity (representational nature) would imply.[5] (For example, the object that looks like money on a table is merely a decoration, a texture of the referred object if it cannot be used in the game to buy things with it, even if it can be moved or picked up.) The purpose of these representational references is to create the *sense* of an audiovisually authentic reality, in essence, they refer to a reality (i.e. some aspect of a world beyond the game text) rather than creating (or being a part of) it. Most mainstream games utilize these kinds of aesthetically significant elements to compose spectacular segments where the atmosphere, the feeling of a virtual world is more important than the main game mechanics or progression in the game, amplifying a kind of cinematic character, where the medial channels of hearing and sight (distant, observational) become dominant instead of the possibilities of interaction, manipulability, and control (close, participatory). A much-cited example of this kind of episode is the Tibetan village in *Uncharted 2* (Naughty Dog, 2009).

In a simulation, precisely the capacity of these elements for the "reality effect" causes the disruption in the game experience when they are revealed as mere representations, evoking an unsettling feeling because of what is expected from them in a dynamic environment: they do not work as their reference suggests. This points to the fact that a simulation highlights the sign-like nature of traditional

5 My phrasing suggests that as part of a simulated environment all elements must necessarily have some kind of algorithmic aspect.

iconicity (heightening our "culturally acquired awareness" of the difference between representation and reality), in opposition to procedural iconicity's inherent autonomy, its ability to realize – even if by simplifying the signified – instead of only representing.

These objects may have a certain type of function (e.g. the stack of money that can be moved, and picked up, even its physicality fits into the game's space-time), but they do not have the primary function that their representational aspect implies (the money has no exchange value). The effect of the uncanny is triggered precisely when this discrepancy between representation and ludic function is exposed. Something that is familiar behaves in a strange or reduced way, where this strangeness is usually the result of the limitation or lack of a central, key function. What is also revealed at this point (to varying degrees depending on the situation) is the model-like, limited nature, finiteness, and purposiveness of the simulation system behind the representation, which is reflected in the object's reduced or missing functions.

Glitches and Bugs

In the previous section, I tried to point to certain features of the game's virtual reality itself as the source of uncanny experience, but in fact, this is much more discussed in connection with glitches, that is, anomalies resulting from the unintended operations of the game. Here again, I focus on features that are unique to the medium and not just stimuli caused by perceptual or visual distortions. It is important to conceptualize the difference between glitches and other related phenomena (variously called bugs, errors, crashes, faults, anomalies, exceptions, etc.) from a ludological and aesthetic perspective to understand why the glitch is the one that is primarily associated with the uncanny.

Two, often interchangeably used concepts gained prominence and are associated specifically with the unintended behaviour of games and other software: bugs[6] and

6 Bug and "debugging" are the wider and undoubtedly older expressions. Fred R. Schapiro writes that "the legend derives the terms from an actual moth found inside an early computer by the pioneer computer scientist Grace Murray Hopper" (1987, 376). However, the wording of her log entry on the incident is revealing: "First actual case of bug being found" – which suggests that "Hopper and her colleagues must have thought the discovery of the moth remarkable because mechanical defects were ALREADY called bugs" (Schapiro 1987, 377). In fact, as Schapiro points out, "it is plain from citations in the OED Supplement and the Dictionary of Americanisms and the 1878 Edison quotation that, moth notwithstanding, the computer term bug was merely a specialized application of a general engineering term dating from the 1800s" (1987, 377).

glitches.[7] Patrick Capriola's description represents a widespread contemporary view of the glitch as something mystical and perplexing in nature as opposed to the software bug: "A glitch is a short-lived fault in a system and can, more often than not, usually correct itself once you have restarted your computer. On the other hand, a bug is an error, failure, or fault in the program that generally arises [...] from mistakes and errors made by people in either a program's source code or its design" and adds that because the glitch "eventually corrects itself" it is "challenging to troubleshoot" (Capriola 2021). Alex Pieschel's definition outlines a similar contrast, with a slightly different emphasis regarding the severity of the issue: "In general internet nomenclature, both words refer to errors that work against authorial intent, but 'bug' is often cast as the weightier and more blameworthy pejorative, while 'glitch' suggests something more mysterious and unknowable inflicted by surprise inputs or stuff outside the realm of code." (Pieschel 2014) Holmes's description of the glitch is more poetic, but belongs to the same interpretative tradition: "To think of glitches in terms of their uncanny presence is to think about ghosts. Like ghosts (and Derridean *traces*), glitches appear negatively. They are present as an absence, as revenants and null-values returning to haunt the gamic reality" (Holmes 2010). It is often conceptualized not by its positive form, but by the unexpected change and difference it represents (Menkman 2010). Perhaps the distinction based on the identifiability of the glitch's source is less useful if we want to explore its impact on the average player, but its predictability and the extent of subversion may be a more relevant consideration.

For a more tangible and grounded distinction, I turn to a tripartite taxonomy elaborated by Chris Lewis, Jim Whitehead, and Noah Wardrip-Fruin. They distinguish between the concepts of fault, error, and failure. For them, a "fault is a phenomenon that leads to an error in the system" and although it can be hardware-related, they focus on the type that is "a mistake during the design or implementation of a video game." Error refers to "the manifestation of a fault during the software's execution that creates a state that could contribute to a failure," which is described as "a *user-observable* deviation from the expected behaviour of the system" (Lewis et al. 2010, emphasis mine). For us, it is not the

7 According to popular history, the modern meaning of the Yiddish-derived term glitch was first used and promoted by John Glenn, an astronaut who co-authored the 1962 book *Into Orbit* with his colleagues from Project Mercury, the first human spaceflight program of the United States. Glenn wrote that "another term we adopted to describe some of our problems was 'glitch.' Literally, a glitch is a spike or change in voltage in an electrical circuit which takes place when the circuit suddenly has a new load put on it" (quoted by Zimmer 2013). But Ben Zimmer points out that "by the time that glitch entered the space program in the '60s, it had enjoyed a long life in radio and television, referring to a variety of technical problems" (Zimmer 2013).

specific terms that are of interest here, but the logic behind the division, which does not present the concepts as different types of defects in the game, but as different aspects of a single phenomenon, ranging from a fault in the code to an anomaly in the gameplay.

They further isolate the concept of the glitch from its root cause and position it at a fourth level of this whole mechanism, when they claim that "these failures create unexpected 'glitches' in the game world" (Lewis et al. 2010). They practically define it as a surface effect or symptom which can only be understood as such in its relation to the player. Another important factor worth mentioning regarding the causal chain between the concepts as "not all faults will inevitably lead to errors, as some dormant faults may never be exercised by the game during operation. Similarly, not all errors will lead to failures, as some errors in the game state might not have any adverse effect at a user-visible level" (Lewis et al. 2010). In this sense, the user does not necessarily encounter the bug as an aesthetic or any other kind of experience, as it can remain hidden at a layer of the game not accessible to the player.

Perhaps it is now clear that it is not the "mystical" aspect in the above definitions that prompted me to associate the glitch with the uncanny, but the fact that, by any definition, it is something noticeable, its essence lies in its display, it necessarily manifests itself for the player. As Rosa Menkman puts it: "glitches do not exist outside of human perception" (Menkman 2010). For Agata Waszkiewicz, the glitch is primarily "audiovisual" as it "brings to the foreground what is usually Invisible" (Waszkiewicz 2019, 218). From this perspective, the glitch is the perceptible result of an unintentional process, a consequence of an error that is revealed during gameplay.

Even when it emerges as a perceptual, non-interactive phenomenon and renders the player as its passive observer, its existence (and its impact) is the consequence of its systemic context. The player's recognition of its anomalous, rogue nature in the simulation and the lack of intent on the designer's part contribute to the effect of the glitch. A glitch very often breaks the player's immersion by distorting the mimetic (traditionally or procedurally iconic) aspects of the game, but it also focuses the attention on the operation of the algorithm. It is really revealed here that the formal similarity of the constructed virtual reality and the one it represents hides deep structural differences, that behind the surfaces of objects and the scenery accessible during ordinary gameplay lies another type of reality, often the absence of the represented reality. Think about experiencing empty interiors (of large objects) and off-map spaces that are normally inaccessible by

game rules. (The game world must only be explored along certain paths and perspectives by which the illusion is created that the simulation is similar to reality, with all its complexity and without limits.)

It has also been pointed out that this type of in-game event is not exclusively negative in the context of its impact on the player. According to Matthew Bellinger, "moments of failure are not assumed to be inherently 'bad,' and are instead read as unanticipated functions that subvert the normal, procedural rhetoric of the device or platform, then error messages become legible as a kind of supplementary rhetoric – a discursive 'add-on' meant to convince users that a particular form of functioning was not supposed to happen" (Bellinger 2016). Waszkiewicz argues that "the use of error becomes art in its own right and points to another way in which video games engage players" (Waszkiewicz 2019, 219). Wilma Alice and William Sims Bainbridge theorize that common players often take advantage of software errors and utilize them like cheat codes to advance in a game and achieve success or go even further: "exploiting glitches and cheats can be moves in a metagame, in which the player rejects the rules that the video game manufacturer established and sets new criteria for winning" (Bainbridge and Bainbridge 2007, 72).[8]

The glitch can be understood as a deviation from the references the system has set up with similar or exactly the same in-game situations. As Waszkiewicz puts it, the glitch "is a symbol of (its own) transgression from one state to the other" (Waszkiewicz 2019, 219). Aesthetically, what becomes visible with the glitch, is its own difference from the ordinariness and normality that the game itself has previously created. A glitch is not simply a radically new experience, a strange view, or a perplexing sound; it appears when the well-known elements of (the virtual) reality are assembled in strange, new, and surprising ways when the familiar behaves in an unfamiliar way.

The fluctuating electrical current (which was associated with the early usage of the term) and its uncertain driving forces are good reminders that a glitch does not necessarily arise from the code or the game algorithm, but any external factor can contribute to its emergence, validating associations with its ghostly nature. Consequently, each occurrence of a glitch means a different kind of relationship to the faults and errors (or in summary: bugs) of the program. Some glitches can

8 Tamás Pólya interprets this type of player attitude as an "oppositional position" in the lines of Stuart Hall's encoding/decoding model of communication. In this sense, while the player perfectly understands the suggested courses of action, "it bypasses, undermines, subverts, ridicules, disregards the dominant code that shapes the game text and the dictates of the game-developing power" (Pólya 2021).

always be invoked by generating known game situations, while others are truly one-offs and cannot be deliberately repeated.

Whether something is really an unintentional glitch (a malfunction) is also not entirely objective and it is often a matter of critical judgement whether it is poor design or a specific bug causes it. Bainbridge and Bainbridge draw attention to a phenomenon that stems from what they call the discrepancy between the game's display model (representational dimension) and its world model (systemic dimension): "discrepancies between the two models […] might perhaps be described as design limitations rather than programming bugs, but under either name they are errors" (Bainbridge and Bainbridge 2007, 65). But who is to say whether, in the case of games, an "incorrectly" set parameter that makes the game too easy or too difficult is really a bug or just a feature of the game? (Which nevertheless can be re-adjusted or patched in the next version to improve the gaming experience.) According to Lewis, Whitehead, and Wardrip-Fruin it is easier to decide with other types of software that "either performs a service (such as an operating system or a web server), is a tool (such as a word processor or spreadsheet) or is a controller (such as the software inside cars and planes)" if they do "not provide necessary functionality" because games are much more complex in this respect, their "goal is to evoke a certain emotional reaction, be it entertaining and/or meaningful" (Lewis et al. 2010).

While bugs mainly refer to algorithmic malfunctions, glitches always have an aesthetic side as they distort the representation: "During a glitch, things in the game appear to stretch and warp; objects become caught in wall and surfaces or hover frozen in midair; 'dead' objects and characters come (back) to life; strange apparitions emerge in the geometry" (Holmes 2010). Moreover, the phenomenon is interesting precisely for this reason: much of the online discourse on video game glitches focuses on their (aesthetic) impact on the recipient. However, it is important not to confuse glitch aesthetics or glitch art with the aesthetic dimension of genuine glitches. In her Glitch Studies Manifesto, Menkman clearly speaks of the glitch as a liberating phenomenon in the context of art, "an alternative way of representation or a new language" that "does not only invoke the death of the author, but also the death of the apparatus, medium or tool" (Menkman 2010). Menkman is well aware of the paradox that lies at the heart of glitch art: "to design a glitch means to domesticate it. When the glitch becomes domesticated, controlled by a tool, or technology (a human craft) it has lost its enchantment and has become predictable" (Menkman 2010). Therefore she distinguishes between "true glitch" and "design glitch." In glitch art, the glitch no longer appears only

on the receiving end, but also on the side of the creator, because it is intended, or at least not erased. Nevertheless, Menkman's approach confirms our assumption that even true glitches have a unique aesthetic quality that can be used as an artistic tool. When the 2016 video game *Oxenfree* (Night School Studio) utilizes glitch aesthetics (intentional, domesticated glitches) as a rhetorical device, it becomes a heavily self-reflexive strategy and medium-conscious gesture. It is no coincidence that in the game, glitch aesthetics are connected to the theme of ghosts and the uncanny. However, Waszkiewicz warns us that "in this case it is a part of the aesthetic and narrative layer rather than the ludic one" (Waszkiewicz 2019, 221).

A glitch can make progress in the game more difficult, even impossible, or it can also facilitate it. Either way, it modifies the game experience, and it spoils the original, intended gameplay. Take, for example, the technique called "vomit roping" in *Red Dead Redemption 2* (Rockstar Games, 2018), where the glitch actually makes navigation easier in the virtual world. You eat something rotten with your character and while it pukes you can descend from a great height without hurting yourself because the game can only manage one event that happens to the character (this is also expressed in its animation), and it prioritizes the vomiting over the falling, which will then have no in-game consequences as it would otherwise.

The adjectives most often associated with glitches shed light on the split perspective between (aesthetic and dramatic) player involvement and an ironic distance from them (their non-seriousness): some quick google and youtube searches show that glitches are most often described both by professional content creators and commenters as funny, hilarious, but at the same time creepy, bizarre, horrifying or terrifying. What often makes these glitches really uncanny (a blend of contrasting effects) is the lack of (physically and psychologically) adequate reactions to them from within the gameworld, other characters, etc. No one notices or reacts properly to them, all the glitching/deformed objects/characters behave like nothing extraordinary happened as they are not programmed to give authentic, relevant, or any kind of response to unforeseen situations. This differentiates the effect of glitches from a horror-effect where the impact comes just as much from the environment's reaction and the context of the monster as from the appearance of the monster itself.

What is highlighted or revealed by both intended and unintended characteristics of the game: the functionless objects and "perceptible symptoms of errors in the game's processes" (Holmes 2010) is not only the algorithmic structure of

games which is typically obscured by the primary audiovisual and interactive experience but also the whimsical and volatile nature of the simulational system which was assumed to be predictable and familiar. On the one hand, a purely decorative, non-interactive element most often has a role to reinforce the realism of the game by audiovisual similarities to reality (giving a sense of a world that has been carefully worked out in detail), but unlike Bartes's literary examples of the reality-effect, the purely representational character of such objects are contrasted with the dynamic nature of the simulation. Uncanny situations emerge from the inoperability or unexpected functioning of these objects, which quality is revealed by the impossibility or limitation of interacting with them. On the other hand, the glitch breaks both the spectacle of familiar representations and the belief in the knowability and transparency of the game. Beneath the recognizable interface, there is a depth of a radically alien, de-humanized, and unknowable machinery that flashes when these limitations and errors become apparent. When the inadvertently generated spectral phenomena disrupt the ways one perceives and understands the simulated reality, attention is drawn to the deficient ways of imitation, the fragility and imperfection of the automaton, eliciting that uneasy feeling when we witness something that should have remained hidden as part of an imperceptible realm of existence.

References

Aarseth, Espen. 2007. Doors and Perception. *Intermédialités* / *Intermediality* Number 9, Spring, 35–44. *https://www.erudit.org/en/journals/im/2007-n9-im1814828/1005528ar/*. Last accessed 25. 10. 2023.

Aarseth, Espen. 2012. FDG'12: A Narrative Theory of Games. In *Proceedings of the International Conference on the Foundations of Digital Games*, New York: ACM Press: 129–133. *https://dl.acm.org/doi/10.1145/2282338.2282365*. Last accessed 25. 10. 2023.

András, Csaba. 2014. Az összeesküvés-elméletek poétikája – Intenció és véletlen az irodalmi szövegek és a "világ" olvasásakor [The Poetics of Conspiracy Theories – Intention and Chance In The Reading of Literary Texts and The "World"]. *Literatura*, 2: 99–108.

András, Csaba. 2019. Elkötelezett játékok [Commited Games]. *Apertúra* Winter. *https://www.apertura.hu/2019/tel/andras-elkotelezett-jatekok/*. Last accessed 25. 10. 2023.

András, Csaba. 2021. Türelemjáték. A The Longing és az idő [A Game of Patience. The Longing and Time]. *Apertúra* Spring. *https://www.apertura.hu/2021/tavasz/andras-turelemjatek-a-the-longing-es-az-ido/*. Last accessed 25. 10. 2023.

Bainbridge, Wilma Alice and William Sims Bainbridge. 2007. Creative Uses of Software Errors: Glitches and Cheats. *Social Science Computer Review* vol. 25, issue 1: 61–77.

Barthes, Roland. 1989. The Reality Effect. In *The Rustle of Language*, ed. François Wahl, 141–14. Berkeley: The University of California Press.

Bellinger, Matthew. 2016. The Rhetoric of Error in Digital Media. *Computational Culture. A Journal of Software Studies* vol. 5 (15 January). *http://computationalculture.net/the-rhetoric-of-error-in-digital-media-2/*. Last accessed 25. 10. 2023.

Capriola, Patrick. 2021. Bug versus Glitch: Understanding the Difference, *https://strategiesforparents.com/bug-versus-glitch-understanding-the-difference/*. Last accessed 25. 10. 2023.

Freud, Sigmund. [1919] 1955. The Uncanny. In *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, Volume XVII (1917–1919), ed. James Strachey, 217–253. London: The Hogarth Press. Holmes, Eben. 2010. Strange Reality: Glitches and Uncanny Play. *Eludamos: Journal for Computer Game Culture* vol 4, no. 2: 255–276. *https://eludamos.org/index.php/eludamos/article/view/vol4no2-9/5985*. Last accessed 25. 10. 2023.

Kätsyri, Jari, Meeri Mäkäräinen and Tapio Takala. 2017. Testing the 'Uncanny Valley' Hypothesis in semirealistic Computer-Animated Film Characters: An Empirical Evaluation of Natural Film Stimuli. *International Journal of Human-Computer Studies* vol. 97 (January), 149–161.

Kiss, Gábor Zoltán. 2012. A részvétel módjai és a rövidformák – Folytatásos regények, epizódok és tévésorozatok [Modes of Participation and Short Forms – Serialised Novels, Episodes and TV Series]. In *Befejezetlen könyv*, ed. Thomka Beáta, 251–263. Budapest: Kijárat Kiadó.

Kirkland, Ewan. 2009. Horror Videogames and the Uncanny. In *DiGRA '09 - Proceedings of the 2009 DiGRA International Conference: Breaking New Ground: Innovation in Games, Play, Practice and Theory*. Brunel University, September vol 5. *http://www.digra.org/wp-content/uploads/digital-library/09287.25453.pdf*. Last accessed 25. 10. 2023.

Lewis, Chris, Jim Whitehead and Noah Wardrip-Fruin. 2010. What Went Wrong: A Taxonomy of Video Game Bugs. In *FDG'10:* Proceedings of the International Conference on the Foundations of Digital Games, New York: ACM Press: 108–115. *https://dl.acm.org/doi/10.1145/1822348.1822363*. Last accessed 25. 10. 2023.

Menkman, Rosa. 2010. *Glitch Studies Manifesto*. (Self-published.) *https://amodern.net/wp-content/uploads/2016/05/2010_Original_Rosa-Menkman-Glitch-Studies-Manifesto.pdf*. Last accessed 25. 10. 2023.

Mori, Mashimiro. [1970] 2012. The Uncanny Valley. *IEEE Robotics & Automation Magazine*. (June): 98–100.

Pieschel, Alex. 2014. Glitches: A Kind of History. *The Arcade Review*, issue 3 (Summer). *https://web.archive.org/web/20160812024715/http://www.arcadereview.net/published/2014/11/7/glitches-a-kind-of-history*. Last accessed 25. 10. 2023.

Pólya, Tamás. 2021. A videójáték mint ideológiai olvasat. A Stuart Hall-i dekódoláselmélet és az aktív videójátékos közönség [The Video Game as an Ideological Reading. Stuart Hall's Decoding Theory and The Active Video Game Audience]. *Apertúra* (Spring). *https://www.apertura.hu/2021/tavasz/polya-a-videojatek-mint-ideologiai-olvasat-a-stuart-hall-i-dekodolaselmelet-es-az-aktiv-videojatekos-kozonseg/*. Last accessed 25. 10. 2023.

Ratajczyk, Dawid. 2019. Uncanny Valley in Video Games: An Overview. *Homo Ludens* vol. 12, no. 1, 135–148.

Tach, Dave. 2013. How Video Games Could Be Flattening the Uncanny Valley. *poligon.com*, September 4. *https://www.polygon.com/2013/9/4/4695108/video-games-flattening-the-uncanny-valley*. Last accessed 25. 10. 2023.

Waszkiewicz, Agata. 2019. Glitch as the Representation of the Uncanny in Oxenfree (2016), *Homo Ludens* vol. 12, no. 1: 213–225.

Wolf, Werner. 2011. Illusion (Aesthetic). In P. Hühn et al. *The Living Handbook of Narratology*, Hamburg: Hamburg University. Available online: *https://www-archiv.fdm.uni-hamburg.de/lhn/node/71.html.* Last accessed 25. 10 .2023.

Zimmer, Ben. 2013. The Hidden History of "Glitch." *https://www.visualthesaurus.com/cm/wordroutes/the-hidden-history-of-glitch/*. Last accessed 25. 10. 2023.