

Playing intelligence: On representations and uses of artificial intelligence in videogames

Martin Hennig

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Abstract

Computer games take up and extend traditional discourses on technology and artificial intelligence (AI). Moreover, representations of AI in computer games include not only narrative aspects but game mechanics as well. This contribution focuses on what distinguishes this kind of AI representation from other medial forms, and on how different types of AI representation can be identified within the computer games field. Overall, representations of AI make visible specific aspects and ideologies implied by the gameplay. From this perspective, it is outlined how these representations work either as support for fantasies of self-empowerment or as an emphasis on medial determination; moreover, cultural functions and meanings provided in this context are highlighted.

Keywords: AI, AI development, artificial intelligence, digital society, games, intelligence, narrative, video games

Introduction

Artificial intelligence (AI) is gaining importance in the context of the general digitisation of modern society. Likewise, it is essential for dealing with contemporary computer games in different ways. AI is used at present as a marketing strategy for propping up the sales of both game software and hardware.[1] AI is also important for gameplay, and it forms a popular motif in

computer game narratives. The latter dimension in particular precedes recent technological developments, and the topic of AI has a long tradition in games.

These aspects are related to each other. Narrative representations of AI in games can refer in a self-reflexive way to the conditions of the usage situation and the AI of the game itself. The central point of the following explanation is that representations of AI make visible specific aspects and ideologies implied by the gameplay, which otherwise remain implicit. Against this background, computer games continue traditional narrative discourses on technology and AI,[2] emphasising specific aspects, such as conflicts between man and machine – while others, like stories of the moral humanisation of AI, are less relevant here. As in many literary and cinematic predecessors[3] technical fictions in computer game and AI narratives, in particular, are frequently located in dystopian settings, which refer to classic films like *Metropolis* (Fritz Lang, 1927); within these worlds, the autonomous automaton usually indicates a disturbed hierarchy between man and machine, and a loss of human autonomy. At the same time, research has demonstrated that the concrete gameplay often impinges on the development of critical consciousness among players, so that the dystopian content of the diegesis fades into the background.[4] However, the reference to cinematic precursors of technical dystopias has a key function for contextualising gameplay dynamics. For example, playful degrees of freedom are regularly contextualised via technological fictions, like in cyborg scenarios in which the scope of action and the performance of the avatar (the played character) is optimised and made possible in the first place by technical implants.

Based on these observations, it can be assumed that the representation of the technical context of AI in computer games becomes more productive in the gameplay dimension. Hence, the central question of this article is what distinguishes this kind of representation from other medial, strictly narrative forms of AI representation. I focus on approaches from German game studies, combining them with Anglo-American perspectives. I investigate what kind of meanings are produced in the gameplay (in the sense of procedural rhetoric, according to Galloway[5]) and how these are framed by the respective narratives. In this context I will refer to AI in a broader sense, which means not only machine learning algorithms but also the various forms of their narrative ‘embodiment’ like robots and androids.

Therefore, three different constellations of AI representations are identified and get distinguished from each other based on game history: I will call

them respectively the AI as an opponent, as an intrigant (i.e. the personification of the game itself), and as an avatar; and I will analyse them in the next section. The game *Detroit: Become Human* (Quantic Dream, 2018) is then focused on in detail, since the interaction of the individual dimensions of AI representations in the computer game becomes very clear here, as well as the media specifics of the developed AI model. Finally, I analyse different productions, in which the conventionally scripted actions of computer opponents are substituted by an adaptive artificial intelligence, which gives some insight into the general role of computer games in the contemporary development of AI.

Constellations of AI representations

AI as an opponent

Dominik Orth and Ingo Irsigler identify only two dominant forms of AI narratives: a discourse of AI becoming human (this concerns in particular androids, but can also involve disembodied AIs, like in the movie *Her* from Spike Jonze [2013]), and a discourse of AI as a threat to humanity.[6] Even though the generalisation of this classification can be questioned, it nevertheless draws attention to the most influential media traditions that are also taken up by games. Especially, the second tradition is expanded through the interactive medium. AI as an antagonistic instance represents the standard case in computer game history. In the 1985 action game *Blade Runner* (Andi Stodart & Ian Foster, 1985), for example, the complex themes and ambiguities of the film by Ridley Scott (1982) are broken down to the mission of hunting artificial beings in the role of replicant hunters. The ludic system of norms is thus in contrast to the filmic one, as the latter emphasises the intrinsic value of artificial life.

In general, robots are among the standard opponents in the video game sector, which not only applies to movie adaptations like *Terminator: Resistance* (Teyon, 2019) or popular games like *Horizon: Zero Dawn* (Guerilla Games, 2017) that build their entire narrative on a technical fiction; AI also appears as a situational motif in games that tell completely different stories. For instance, *Gears of War 4* (The Coalition, 2016) narrates a war against aliens but unleashes robots as government troops on the renegade protagonists in the first levels.

There are several reasons why game opponents (particularly in the action genre) are modeled as robots. First, the AI motif serves to contextualise the gameplay. It frames the coordinated collective behavior of the opponents and validates that they follow a fixed programmed script of actions and attack at first sight. Second, the depiction of enemies as robots is supported by the retort character of opponent masses in action games, in general. The opposition of individuality/uniqueness (man) vs. collectivity/uniformity (machine) is a classical dichotomy of robot fiction. Popular in this respect are the *Terminator* films (James Cameron, since 1984) regarding the opposition from the hostile robot masses and the shape-changing (= interchangeable) antagonist T-1000 (as well as his successors) against the recurring individual (= anthropomorphic) and positively connoted protagonist T-800 (played by Arnold Schwarzenegger). This opposition becomes highly functional in connection with video game worlds and their fantasies of self-empowerment oriented toward the individual player against a faceless crowd of enemies. Here, it becomes clear that the robot motif in games often serves as a condensed form of otherness to contextualise the gameplay dimension, in which the external determination of the robots is contrasted with the seemingly self-determined actions of the players.

Overall, the representation of robot-like AI opponents is usually provided with opposite characteristics compared to the avatar. This tendency is evident when the AI is *personalised* as a central antagonistic instance in the narrative and provided with individual characteristics, whereby this can invert conventional attributions to humans and machines regarding emotionality and rationality. This includes examples like *Portal* (Valve, 2007). Here, the embodied AI GLaDOS sends the character through a series of test chambers in which players have to solve puzzles. Their logical structure, which the player must deal with, stands in opposition to the mental state of the AI GLaDOS or to that of the robot Wheatley in *Portal 2* (Valve, 2011). Both display a high degree of emotional imbalance, which they act out as antagonists. Also, in the *Halo* series (Bungie/Ensemble Studios/343 Industries/Creative Assembly, since 2001), where the AI Cortana, who is sexualised through her body, is originally conceived as a supportive entity for the players, it increasingly emancipates itself from the protagonist in the course of the series and forms the central antagonistic instance of the narrative in *Halo 5: Guardians* (343 Industries, 2015). Cortana shows signs of delusion and emotional outbursts throughout the series, and thus stands in contrast to the traditionally faceless protagonist, the Master Chief, who always wears a helmet and acts

emotionally restrained. In some games, the deviant character of AI, which frequently goes in the direction of a mental disorder, is also supported by aspects of its audiovisual presentation, such as the stuttering and multiple voices of the AI SHODAN in the *System Shock* series (Locking Glass Technologies/Irrational Games/Looking Glass Studios, since 1994).

Although there also are precursors in cinematic and literary science fiction that ascribe emotional instability to AI – such as the ‘paranoid’ HAL 9000 from the novel/movie *2001: A Space Odyssey* (Arthur C. Clarke, 1968 / Stanley Kubrick, 1968), who also stands in opposition to the sterile, scientific-rational order on board from his spaceship environment – this is not so much a criticism of a false social order or an exploration of an AI becoming human in the computer game but arises directly from its basic structure. Games conventionally (aside from intentional exceptions such as in the horror genre) provide an objective perspective on the game world for the players, in order to complete the tasks of the game, which is opposed by a contrary representation of the antagonists, which are frequently dehumanised and identified as abnormal in different dimensions (physical, psychological, regarding gender, etc.[7]). In the case of the presentation of an AI, this principle is doubled and ideologically reinforced because the deviations unfold *towards* humanity, while this humanity is itself deviant. Thus stereotypes about certain mental illnesses, or in the case of Cortana regarding a female ‘empowerment’ combined with her sexualisation, are reproduced and intensified inasmuch as they seem to exist independently from human individuals.

AI as an intrigant

The personalisation of AI also points to a larger game structural relationship. Espen Aarseth models a general antagonistic force to the actions of the players that he calls ‘intrigant’ and illustrates it with the example of the early text-based adventure games of the 1980s. In this context, the intrigant, ‘coming from both inside and outside’[8] the game, cannot be equated with the implicit author or the extradiegetic programmer: ‘the intrigant must break the illusion of free interaction and instate first thought control, then narrative control’.[9] In the context of the text adventure, ‘thought control’ refers to program responses that prevent a planned action from the outset (e.g.: ‘you rethink your planned action’), whereas ‘narrative control’ refers to the narrative sanctioning of undesirable actions in the game (e.g. by the death of the avatar).[10]

Although Aarseth only argues in the context of the adventure, the concept of a controlling authority in the game can be further developed. In his examples the intrigant shows itself implicitly, yet simultaneously redirects the conflict of control between program and users into paths that are useful for the game (e.g. in the direction of 'correct' actions, which are functional for the achievement of power by winning the game). From this perspective, the experienced heteronomy through the intrigant forms the background for the simulation of self-empowerment of the played character and the players; situational restrictions of their freedom of action and movement are always functional for overcoming others. Consequently, the determination of the players, which is necessary for the game, is usually linked with a narrative in which the self-empowerment of the users is homologously restricted by intradiegetic antagonists or diegetic borders. Through the gradual appropriation of space in the course of the game by solving riddles or suppressing all antagonistic forces, the restrictive extradiegetic control of the game system can be transformed on the side of reception into the fiction of self-control at an intradiegetic level.[11] In this way, the illusion of overcoming external control can become the central motivation in terms of media use.

Aarseth's idea of the intrigant as a quasi-personalised representation of the game system exemplifies this concept of the redirection of control conflicts because, in contrast to the technical system behind it, a personalised intrigant always promises its own overcoming. Although Aarseth uses the term rather metaphorically, he points out that there is an instance in digital games to which we project 'winning' or 'losing' against 'the computer' that is not identical to the actual game system, but 'to that eternal whoever-it-is who ultimately controls every program we use'.[12] By getting over all intradiegetic limits, repressions, and enemies, a triumph over the intrigant is connoted, whereas actual control over the game system can be obtained only in part and within the framework predefined by the program. So, the intrigant may be understood as a representation of the game system onto which control conflicts can be projected, whereby the simulated appropriation of the digital game by overcoming the intrigant can assume compensatory functions in an increasingly digitalised and determining environment of the real world.

From this perspective, the performance of the game AI potentiates the productive effects of the conflict between program control and player control. Ultimately, game opponents as a whole personify the dimension of Aarseth's intrigant, and the more powerful their AI the greater the assumed

achievement of the players in overcoming it. Considering this functionality of the perception of a strong AI for the empowerment of the players, this already indicates that the observation of a 'good' AI is also an aspect of its presentation and does not necessarily mean that the game will be more difficult to win. In fact, one of the developers of the game *F.E.A.R.* (Monolith Productions, 2005), which is known for its advanced opponent AI, reported that the game is mainly about the *staging* of a potent AI. The hearable communication of the opposing soldiers in the game, who comment on players' behavior and suggest a coordinated group behaviour, may make the game even easier.[13] This representation of a strong AI, therefore, facilitates the self-empowerment of the players while also increasing its symbolic value, insofar as the intrigant (as the instance 'behind' the collective behaviour of the individual opponents) seems more difficult to defeat.

While AI routines in the above examples are represented as something other than technology, fully personalised representations of the antagonistic instance as an AI within the narrative potentially refer, in a self-reflexive way, to the game system as the central intrigant during gameplay. In extreme cases, this leads to a continuous self-reflexive discourse of power and control in computer games. The mentioned Portal series, for example, is known for this. When the game character, guided by the AI GLaDOS, has to pass various intelligence tests in a sequence of test chambers in the first game, extradiegetic program control and intradiegetic control by the depicted AI are largely congruent. Even the undefined character of the protagonist refers to the symbolic quality of the plot: the avatar with the speaking name 'Chell' is not able to speak and remains a heteronomous test object throughout the game that has to follow the specifications of GLaDOS, in principle, in the same way that the player follows the specifications of the program.

With the depiction of an intradiegetic strong AI, a scenario is created here that demands extreme mental efforts from the players if they want to solve the tasks of the test chambers. However, if Chell succeeds in freeing herself – first, from the test chambers, and in the last part of the game completely from the place of action of the research institution – it remains unclear to what extent the alleged liberation from the AI also belongs to the test performed by GLaDOS, just like the perception of autonomy and the overcoming of the game system are staging effects in the medium, in general. The motif of the cake promised by GLaDOS as a reward for completing the test course and its unclear status within the game world (e.g. Chell finds notes that state 'the Cake is a lie') refers to the superordinate stimulus-response and

control scheme of the game as a medium, which can be left only situational, and leads in *Portal* consequently to new imprisonment at the end of the story, which forms the beginning of *Portal 2*.

AI as an avatar

If the AI is embodied by the players the basic constellations, analysed so far, vary slightly. This becomes clear when AI opponents and the AI personified by the players directly face each other. A good example of this constellation is the *Mega Man* series (Capcom, since 1987). In every episode, a human-like battle android competes against the generic robots of his creator, the mad scientist Dr. Wily, to prevent him from conquering the world. Mega Man shows a typical conception of the hero in computer games. The protagonist indicates humanness in his physiognomy and physique, as well as in the context of his acrobatic movements; his oversized eyes evoke the innocence and playfulness of a child. At the same time, the avatar's machine-like nature is beyond doubt: his arm ends in a ray gun, and the android's superhuman abilities manifest themselves in combat. Thus, Mega Man stands as an instance of alterity between familiar (human) and alien (machine) characteristics.[14] Only because the hero has machine-like abilities he is able to successfully compete against Dr. Wily's robotic army, while, at the same time his human traits distinguish him from the purely mechanical antagonists.[15]

Overall, Mega Man is characterised and individualised by his ability to adapt and develop: when he defeats a robot boss, he gains new weapons and abilities. This way, the progress of the game is represented by the body of the avatar and by the acquisition of an additional body prosthesis, whereby the technical context indicates not only a new weapon but, at the same time, an absorption and consumption of the abilities of the respective antagonist. Therefore, Mega Man remains a tool, which has a high degree of adaptability to different situations via mastering different technical contexts (regarding the central robot antagonists). Here, too, the computer game follows the traditional dichotomy of individuality (player) vs. collectivity/uniformity (opponents) from AI cinematographic narratives; yet it adds a game-specific meaning – the 'individual' robot performed by the players expresses exactly the ambivalent subject position inherent in games in general, because individuality in game contexts that are, in principle, designed for efficiency and optimisation shows itself in mechanical features.

This self-referential significance of a player-controlled, artificial body will now be examined in more detail. Nohr discusses the computer game as an interactive, data-based ‘performance dispositive’, [16] in which players usually have to fulfill tasks with increasing levels of difficulty, whereby statistics and rankings constantly provide new incentives to optimise one’s playing behavior. At the same time, the medium shows a general affinity to discourses of self-optimisation and transhumanism regarding the avatar, because, for instance, the game principle of constant self-improvement is contextualised through references to cyborg narratives. A central field for this is the genre of the military shooter. In *Call of Duty: Advanced Warfare* (Sledgehammer Games, 2014), for example, soldier Mitchell is equipped with technical prostheses and, above all, an artificial arm after an accident, which serves to expand his scope of action (improved climbing, shields, slow down time, etc.). The basic constellation of the *Robocop* films is cited here, particularly because a ruthless economic leader acts as an antagonist in both the game and the first movie (Paul Verhoeven, 1987). In the game, the technique is associated with fantasies of self-empowerment on the part of Irons, the company boss responsible for the production of the prostheses, who shows his ambitions of world domination in the course of the story. So Irons’ technology is devalued as long as it not only affects the protagonist/avatar himself, who makes very successful use of it. Only at the showdown on a burning high-rise building Mitchell has to cut off his artificial arm to let Irons, hanging on it, fall into the depths. The destruction of the body prostheses, which is the consequence of the technology-critical narrative of the game, is thus only realisable at its end, which is no longer followed by interactive challenges because the gameplay was only realised based on a technology utilisation. Due to the danger caused by Irons, a societal state of emergency is created in the narrative, which legitimises the player’s use of technology, whereby a departure from problematic technology can only be projected into the future, which, however, no longer plays a role in the actual gameplay.

Even though we are talking here about a man-machine hybrid and not artificial intelligence, the example shows a typical structure for the representation of transgressions between man and technology: game-mechanisms are framed and made plausible by references to traditional (usually cinematic) technological dystopias and popular motifs in this context (such as the reference to the objectification of man and his physicality as a result of hypercapitalism). The fact that the use of technology is, at the same time, necessary for

the game, produces an ambivalent ideological framing and necessitates the rhetoric of instrumental rationality and lack of alternatives.[17]

Apart from these cyborg fictions, however, few games allow players to slip into the role of a disembodied AI. One of these is the recent adventure *Observation* (No Code, 2019), where an AI named SAM supports the astronaut Emma Fisher who is on a space station in search of the cause of a catastrophe. In this narrative framework, the AI has only indirect access to the diegesis. SAM has no body and his vision is often limited; he can only interact with Emma through computer interfaces or using a drone. Players in the role of SAM must use various interface menus (Fig. 1) and mini-games to manipulate the diegesis to enable Emma to fulfill her tasks and protect her from danger. In this way, SAM has to repair other computer systems, open doors, extinguish fires, or send transmissions into outer space.



Fig. 1: The perspective of AI in *Observation*.

The fictional framework sets the initial state that the capabilities of the AI were severely limited by the catastrophe and have to be reconstructed successively in the course of the game. This means that dimensions of self-empowerment typical for computer games are distorted here from the very beginning and have to be restored. Since there are human players who embody the AI, the possibility of a failure due to a task is a natural part of the gaming process, which is contextualised in the narrative to the extent that SAM appears to have been manipulated by a foreign instance (and is itself responsible for the catastrophe, which also refers to filmic predecessors like *2001: A Space Odyssey*). Consequently, human characteristics are attributed to him from the beginning (memory loss, fallibility, etc.). As a result, the role of the AI-human hybrid here indicates a loss of power and disrupts the typical fan-

tasies of omnipotence in the usage of computer games in general. This restriction is, of course, also functional for the specific game context. The playable AI in *Observation* generally works as a personification of the cybernetic control circuit in which, according to Galloway, the players of a computer game have to integrate themselves *per se*:

[l]earning, internalizing, and becoming intimate with a massive multipart, global algorithm. To play the game means to play the code of the game. To win means to know the system. And thus to *interpret* a game means to interpret its algorithm. I suggest that video games are, at their structural core, in direct synchronization with the political realities of the informatic age.[18]

Observation makes this cybernetic circuit playable and places the players far more offensive in the command executing position, in which they find themselves regularly in computer games. In the role of SAM, it is necessary to follow Emma's commands to the letter, without further narrative contextualisation needed, since it is the general task of the depicted AI to follow human instructions.

Whereas in the previous examples, the AI motive was designed in opposition to the players, this variant makes explicit that the players' position also follows technical paradigms. Of course, for the players, there are other secondary motivations to act (e.g. to find out the cause of the catastrophe), but overall Emma personifies the game system (that masks itself behind the human figure), and the narrative setting offers an opportunity to play and follow the algorithm, by finding out how an instruction from Emma can be executed correctly (see Galloway: 'to interpret its algorithm'). This constructs a subject position that contains a drastic reduction of complexity, insofar as traditional characteristics of a position of power in the game (e.g. staged autonomy, authority to act) are suspended in the role of AI. The only thing left to do is to follow orders, as in the military setting of *Call of Duty: Advanced Warfare* described above, which has the same effect. We are only told about the ethical conflicts that arise in both scenarios through the narrative framing, but for the actual gameplay they do not play any role. Especially in *Observation*, the control experienced through the game becomes the actual game content, whereby the complex political present is suspended for a moment (in a context of technical control that is, of course, symptomatic for it).

Case study: *Detroit: Become Human*

In *Detroit: Become Human*, several of the tendencies discussed come together. Here, players act in the role of three different androids, whereby differences concerning the negotiation of disembodied AIs and androids (i.e. AIs in artificial, human-like bodies) become apparent. AI routines increasingly permeate mainstream media discourse and also form the standard case in computer games (if AI is added to non-human bodies), while human-like androids are still primarily discussed as philosophical constructs. As the title *Become Human* suggests, the game negotiates the relationship between humans and androids in a future society. By 2038, the production of androids has become a mass-market; they are used as workers, domestic helpers, or sex robots. In the course of action, there arise more and more conflicts between humans and androids, which players can actively influence. The game mechanics are mainly based on the exploration of the locations and the selection of alternatives for dialogue and action, which are presented in the interface in textual form. Thus, the plot takes a slightly different course every time the game is played.

Especially at the beginning, the game introduces a self-referential dimension: there are several sequences in which the playing situation and the played situation are homologous. In digital games, mission information and objectives are usually displayed in the game interface. This is also the case in *Become Human*, except that these media-typical visualisations are interpreted here as the specific perspective of the androids. This 'double' structure of the interface permanently underlines the character of the digital game as a control device (projected onto the representation of the robot interface as a further digital medium) and leads to an absence of usual strategies to conceal it. *Become Human* stages generic mission goals, like pick-up and deliver objectives, as exactly that: pick-up and delivery services for changing clients of the androids.

However, this staging of everyday life and the external determination as part of the gameplay, which is made visible here, are functional for the narrated story, which is based on the patterns of an emancipation story. Narratively, the androids are integrated into social contexts, which determine a relationship of subordination, whereby the narrative in all cases describes the androids' emancipation from a once-servile position. This emancipation of the characters is repeatedly staged as a violation or expansion of their pro-

gramming. When the house robot Kara, who suffers under a violent patriarch, receives an order from her oppressor to remain in her spatial position, the players have to cross a spatial boundary (visible only to Kara) by repeatedly pressing a key, whereby the spatial movement indicates the 'mental' crossing of her programming. Against the background of the narrative emancipation scenarios, such game mechanics also connote a 'liberation' of the players from the technical-algorithmic control logic of the game itself, because as the depicted androids detach themselves from their programming and the instructions in the interface this also stages a (situational) overcoming of the programmed control system based on the doubling of layers described above (the digital game simulates a robot interface in its interface).

So, *Become Human* accentuates the aforementioned function of the game space that underlies digital games in general, by simulating how the player overcomes the control that the game has over him (i.e. the victory over Aarseth's 'intrigant'). However, within the framework of the AI motif, it is significant that the game stages no direct fighting against AI; rather, players in the role of the AIs overcome their simulated programming as a secondary AI instance.

Within this transformation of the androids there is another dimension of meaning linked to the cultural and historical context of the production in 2018 and the worldwide refugee conflicts. The game mechanics of *Become Human* are based primarily on making 'moral' decisions, in which the conflicts between humans and machines, conventionalised in robot and AI narratives, form the background. However, the issue of the androids' 'humanity', which is central to such narratives, is never put in the game focus since its central ludic mechanic is the selection from several alternatives for answers and action, and this already requires 'moral' reflection. The game discusses 'humanity' on another level because it projects a discourse on migration onto the conflict situation. Although the place of action, Detroit, has flourished here due to the success of the robot company 'CyberLife', the social unrest is evident as the poorer classes fear to lose their jobs because of increasing robotisation, and hatred develops against the artificial life forms. Against this background, the game creates a field of experimentation in dealing with a foreign group, reversing the usual attributions: since *Become Human* is consistently narrated from the perspective of artificial humans, it is not possible to act against them. Instead, the players act as androids against the depicted xenophobic human social system, which forms the actual foreign element. Starting with the emancipation of the three played artificial humans, the

game narrates the building of a new society, in which it is the players' task to establish a new social order by constituting the values central to this society in dealing with the group of humans. According to this, they are constantly forced to choose between servility and confrontation in dealing with humans in the context of situations with moral decisions.

Become Human thus merges the aforementioned two dominant patterns of AI narratives (the empowerment of AI against mankind vs. the humanisation of AI). It speaks about technical emancipation (from programming and its fixed rules), which becomes moral emancipation for the androids (in the sense of the establishment of an own set of values) and connotes their humanity. So the game is designed as a continuation of discursive tendencies for humanising androids, since its principle consists precisely in tracing artificial intelligence back to human (value) dimensions – both within the narrated story (in which the AI motif symbolically expresses cultural conflicts that are typically human), and in the embodiment of the AI by the players. At the same time, the embodiment of the AI creates a space of its own, which makes it possible for the players to inscribe, on the level of values, in the externally determined technical context of the game, which puts them in the same subject position as the androids in the narrated story, who morally emancipate themselves from their programming. *Become Human*, as a part of an increasingly technologised, externally determined environment, thus stages a continuity of anthropocentric world models which culminate in the motif of the playable AI. Playing in the context of the moral conflicts that make up the game is synonymous with humanising. Ian Bogost's philosophical problem 'What is it like to be a thing?' in the context of his 'tiny ontology'[19] must be answered here, based on the players' experience, in an epistemologically reassuring manner: it is like being a human (player).

Computer games and contemporary AI developments

The previous remarks have shown that the representations and uses of AI in games are always functional to simulate a position of power for the players – or, on the contrary, a strictly follow-the-orders position in order to develop individual experiences of playing. This semantic connection and negotiation of power between humans and AI is also relevant in current AI development, which will be discussed in the conclusion. The function of this paragraph is

also to update the discussion on videogames and AI by referring to recent AI developments related to new machine learning algorithms based on big data.

Just like the topic of artificial intelligence always refers to the technical context behind the game in the previous examples, the game has also a central function for AI research: '[T]he AI methods adopted in commercial game development have often provided input and inspiration to game AI research, and occasionally technologies from academia have crossed the border into commercial game AI as well.' [20] Even beyond the pure game development context, games are used in general AI development and, above all, in its marketing in order to present the seemingly superior learning ability of AI compared to humans. For example, the capabilities of Google's AI DeepMind were demonstrated using the arcade classic *Breakout* (Atari, 1976). A rapid learning process of the AI is shown in this context. Relying on the text inserts of the official video presentation, the AI plays after two hours like an expert, and after about 4 hours it identifies the ideal strategy in order to 'clear all the pieces' on the playground as quickly as possible, 'and improves itself to a superhuman level'. [21] Against the background of optimisation represented herein, the game functions as a 'harmless' context in which the efficiency of the machine does not (yet) connote any real consequences (in the sense of economic rationalisation, job losses, etc.). It is precisely the 'purpose-free' nature of the game [22] that enables the projection of 'human' attributes onto the behavior of the AI, which makes clear that conventional cultural projections on AI and strategies of humanisation become rhetorically effective in AI marketing. [23] At the same time, the game offers a regulated, formalised space that seems to be operationalisable for the AI. [24]

Regarding the more specific development of game AI, it is significant in the recent game history that there are more and more examples in which the conventionally scripted actions of computer opponents are substituted by an adaptive artificial intelligence. Examples are offered by the behavior of enemies in *Alien: Isolation*, *F.E.A.R.*, or *Middle-earth: Shadow of Mordor*, which act with an at least partial autonomy, depending on the course of the game and the specific strategies of the players. However, while the enemy AI in *F.E.A.R.* of 2005 was still a unique selling point in its own right and was advertised accordingly, more recently it can be observed that AI advances advertised as such are provided with a wider and prominent function in the gameplay. For example, *Middle-earth: Shadow of Mordor* (Monolith Productions, 2014) uses the so-called Nemesis system, through which every opponent in the game is individualised in appearance and name, becomes stronger, and rises in the

simulated hierarchy system and rank within the enemy orcs when he kills the player. So, the nemesis system simulates an independent culture within the enemy masses (if, for example, an opponent without rank has risen to become a war chief in the next confrontation with the player and is therefore more difficult to defeat), without individual enemies being equipped with an advanced AI. The relationship between player and opponents is thus provided with history (e.g. opponents have burn scars, if they were thrown into a fire earlier and so on) and this suggests an individual development of the enemies, which ascribes higher importance to individual battles between humans and single opponents.

In a similar way, player behavior and opponent behavior are directly linked to each other in *Echo* (Ultra Ultra, 2017). This means here that the AI-controlled characters only have the players' behavioral repertoire, i.e. only if the avatar has already jumped once or fired a weapon, then its digital copies, the echoes, are also able to do so. Hence, the level of difficulty increases the more one uses his/her characters' abilities to cope with situational game requirements. The game thus sets a central hierarchy between humans and AI, which cannot be overcome by the AI copies. However, it is essential for the human players to limit their avatar in its range of action. Therefore, less individuality as in the first example, but rather the capacity of the AI to adapt is emphasised here by making it the central gameplay element and challenge for the players.

In the *Hello Neighbour* series (Dynamic Pixels, since 2017), the players' task consists in freeing abducted children from a sinister neighbor. Here, the advertising of the game is based on a constantly evolving experience in which the neighbor's AI learns from the movements of the players.[25] However, this happens only to a limited extent and mainly refers to the fact that the neighbor sets traps on players' earlier paths in a new game try. A similar mechanism is used in the horror games *Alien Isolation* (Creative Assembly/Sega, 2014) and *Song of Horror* (Protocol Games/Raiser Games, 2019). Both games are also promoted by the fact that the AI reacts dynamically to the progress of the players. In which way exactly this happens remains unclear for the recipients. Yet this uncertainty is functional for the dynamics of a horror game, as a reviewer from *Song of Horror* on Steam notes:

The game features an AI known as the Presence that will be watching and studying your progress – even the concept is enough to make you feel you are being watched and adds to the tense atmosphere and pressure that you need to solve the mystery quickly enough to have a chance to survive.[26]

In all these cases, the semi-autonomous AI is functionalised in order to create the unpredictability of the game process, with the AI being a 'black box'. Here, too, it is less relevant what the AI achieves in terms of 'intelligent' character behavior, but rather the creation of a feeling of uncertainty and helplessness of the players in relation to an AI that reacts dynamically and unforeseen to player performance.

What is central to all these examples, therefore, is not so much the actual performance of the AI in play, but how it is staged. On this level, the rule-guided and complexity-reduced context of games is functional to demonstrate the progress of general AI development (in the example of DeepMind, as well as in games for the mass market), because precisely the conventionalised de-individualised opponent masses discussed above and rigid game scripts of computer games form a background against which the (staged) 'adaptivity' and 'individuality' of an AI become particularly apparent. At the same time, the staging of a strong game AI as a representative of Aarseth's intrigant supports the actual game experience in the sense of victory over a 'serious' (human-like) opponent.

Conclusion

The topic of AI in computer games is a way of reducing the complexity of dealing with the position of humans in digitalised societies. Similar to the science fiction films since the 1980s, where AIs increasingly serve as an instance of alterity and a projection surface of anthropological discourses, the increasing identification with AI can also be demonstrated in computer games, where AI no longer functions merely as an antagonistic instance but also as a role that players can slip into. In this sense, the representation of AI functions here as a symbol of the man-machine connection in the medium, and can either support or inhibit the gaming experience of autonomy. In other words, AIs work either as supports for fantasies of self-empowerment or, precisely, as instantiations of medial determination.

In the case of the depiction of AI opponents, self-empowerment against AI is supported on a level of values and norms and the formation of further oppositions, which go back to the rich history of AI narratives in other medial forms (player individuality vs. AI collectivity; rational player vs. emotionally unstable AI, etc.). In addition to these dichotomies, it can be assumed that the

accentuation of the AI of computer opponents, in general, is suitable for supporting the power fantasies of the players because it projects and constructs a cross-situational game instance comparable to Aarseth's intrigant, against which, in contrast to the game system as a whole, one can win, while referring to the technical basic structure of the game and connoting its overcoming. Current trends in game development also point in this direction, which explicitly accentuate the performance of AI through various staging strategies (as described above).

The determination by AI within the narrative, on the other hand, refers to medial characteristics of the game situation, as in *Portal*. In the case of the AI embodiment, the latter game situation can be positively reinterpreted because, as Gadamer has emphasised, an attraction of the game always consists of the experienced heteronomy and a situation of 'being played'.^[27] Alternatively, the AI embodiment can even result in secondary empowerment like in *Detroit: Become Human*, which makes technical heteronomy visible in the form of android programming and at the same time resembles a self-determined renegotiation of the balance of power in computer games and negotiates values in digitalised societies on a wider scale.

And just as AI motifs and the mediality of the game always refer to each other, the role of the game in the current AI development also reflects an ideological reinforcement. The game is an adequate advertising context for AI skills, since here they are ordinarily embedded in simulations of *human* power. And this, of course, is also a key potential. Summing up, the computer game is one central place where the human-machine relationship in society is negotiated, and where hybrid positions of action between autonomy and heteronomy are simulated, since within gameplay experiences of autonomy always include an external determination. This relationship comes to the fore in AI representations, whether in the form of the symbolic overcoming of the technical determination or by interpreting technical heteronomy positively. Moreover, since the computer game depicts discourses on AI and at the same time represents a central part of real AI development, it could also be the site where the underlying cultural projections on AI and ambivalences of technology development in society become visible.

Author

Dr. Martin Hennig currently acts as a substitute professor in Media and Cultural Studies at the University of Passau. His current research project is devoted to cultural discourses on digitisation in fictional and factual texts. His research interests include semiotics of texts and culture, theory and analysis of digital media, narrative theory, media history, culture and mentalities. Further information: <https://www.phil.uni-passau.de/neuere-deutsche-literaturwissenschaft/team-prof-dr-decker/dr-martin-hennig-lehrstuhlvertretung-ss-19-ws-1920> .

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Notes

- [1] For example, the forthcoming PlayStation 5 is expected to include an AI voice assistant, which should provide useful hints while playing: 'This means you could ask the game where the closest health pack is, and then it'll mark it on your map.' Tweaktown 2019.
- [2] See for details Telotte 1995; Liebert & Neuhaus & Paulus & Schaffer 2014.
- [3] See Chilese & Preußner 2014; Akremi 2016.
- [4] Cf. Orth 2013, p. 126.
- [5] Cf. Galloway 2006.
- [6] Irsigler & Orth 2018.
- [7] See Hirstein 2020 for many examples.
- [8] Aarseth 2011, p. 235.
- [9] Ibid., p. 236.
- [10] Such forms of control have become even more complex and subtle within the historical development of the video game (for example, in the form of staged decision-situations in which all possible variants of the decision are ultimately subject to the same set of values and have similar narrative consequences) and are still central to the user experience.
- [11] See in detail Hennig 2017.
- [12] Aarseth 2011, p. 236.
- [13] Cf. Rüegg 2018.
- [14] For the distinction between identities, alterities, and alienity see Todorov 1985.

- [15] Somewhat different are the central robot antagonists of the respective levels, whose special position is also partly represented by a 'more' of humanity, which is indicated by the name equivalences in relation to the played character: Oil Man, Time Man, etc. However, the naming indicates a proximity to the mechanical, since all bosses are named after and characterised by exactly one central ability.
- [16] Nohr 2015, p. 381.
- [17] Another example of this rhetoric would be the *Deus Ex* series (Ion Storm Austin/Eidos Montreal, since 2000).
- [18] Galloway 2006, p. 91.
- [19] See Bogost 2012.
- [20] Yannakakis & Togelius 2014, p. 330.
- [21] Two Minute Papers 2015.
- [22] Cf. Huizinga 2013.
- [23] AI marketing as a whole is significantly characterised by strategies of confidence building. In this context, one need only think of the personalisation of AI assistance systems (Alexa, Cortana, etc.) and the emotionalisation and intimate nature of the relationship between people and AI in the corresponding advertising campaigns (see Hennig & Hauptmann 2019).
- [24] Games like *Starcraft 2* (Blizzard Entertainment, 2010) are also interesting for AI researchers because there is a large data pool of online players that the AI can access. Cf. Bäumler 2017.
- [25] Cf. Hello Neighbour.
- [26] Steam 2019.
- [27] Cf. Gadamer 1986, p. 112.