PRZEGLĄD KULTUROZNAWCZY
NR 4 (54) 2022, s. 548–569
doi: 10.4467/20843860PK.22.037.17091
www.ejournals.eu/Przeglad-Kulturoznawczy/

Ragnhild Solberg ORCID: 0000-0002-5486-2453

Department of Linguistics, Literary and Aesthetic Studies
University of Bergen
e-mail: ragnhild.solberg@uib.no

"TOO EASY" OR "TOO MUCH"? (RE)IMAGINING PROTAGONISTIC ENHANCEMENT THROUGH MACHINE VISION IN VIDEO GAMES

Abstract: This article explores how video games that valorize techno-masculine imaginaries of superhuman domination also present humans as depending on computational and non-human agencies to succeed. Through close readings of *Call of Duty 4: Modern Warfare* (Infinity Ward 2007) and *Cyberpunk 2077* (CD Projekt Red 2020), I illustrate the close connection between machine vision and militarized visions of domination and agency. The analyses show how beyond-human vision enhances player characters and players, complicating the human-machine relationship in the process. Video games can build on and feed into anthropocentric and masculinist narratives. This article demonstrates how even when the technology appears to support these fantasies of human control, there are moments when it takes over or otherwise disrupts the god-like interventions of the human. By analyzing failures, glitches, and the consistent machine participation in the assemblage, I unpack explicit cases of machine agency as part of a broader assemblage, revealing a more complex power dynamics than those that are initially presented to the player. In doing so, this article demonstrates how the superhuman machine vision was never exclusively human to begin with. Understanding vision and agency as shared with machines both enables and complicates fantasies of dominance in video games.

Keywords: video games, machine vision, distributed agency, assemblage, hero narrative, authoritarianism, glitch, *Call of Duty 4*, *Cyberpunk 2077*

Introduction

As Captain John Price and Sergeant John "Soap" MacTavish make their way into an ultranationalist occupied village in the first-person shooter video game *Call of*

Duty 4: Modern Warfare,[1] they put on night vision goggles to differentiate allies from enemies in the dark. The team cuts power to a house and enters using the low-light conditions to their advantage. With the aid of night vision technology, there is no discernable difference in terms of visual orientation between normally lit houses and the dark house. However, the cover of darkness is an impairment to their enemies, who do not have access to the same technology. As Captain Price comments to Soap, "These night vision goggles make it too easy."[2] Shortly after Price's flippant remark, the officers find what they are looking for. With the aid of this militarized vision, they take out their enemies and rescue an informant from the opposition's grasp. For Price and Soap, having vision in this situation is having complete power over others and of the environment. Notably, this visual power is further emphasized by the mission's title: "Blackout".

In contrast, machine-enhanced vision is a disorienting experience of lack of power for the mercenary and player character V in the action role-playing video game *Cyberpunk 2077*.[3] In the dystopian and technologically enhanced world that V lives in, the virtual reality machine Braindance allows one to relive others' memories, actions, and emotions. V is prompted to use Braindance as an investigative tool, but after their first session they announce, "That was… too much. Felt… could feel the guy's… pain, his stress, his… hope? Hope wrapped up in somethin' else…"[4] Braindance is presented as an intimate and addictive technology, one in which glitch aesthetics and science fiction tropes blend to create a disorienting experience resembling hallucinations or phantasmagoria. Having access to machine vision in this situation strengthens the player character's investigations in the dystopic Night City, but it is not presented as easy or risk-free, and it is not clear who or what is in power here.

These two excerpts demonstrate the close connection between power and sight. Machine vision technologies shape what player characters can see and act on – and what they cannot see and act on. By machine vision I mean technologies where machines read, process, and present visual information, following the work of Jill Walker Rettberg et al.[5] The definition includes the beyond-human augmented and virtual visions of *Call of Duty 4* and *Cyberpunk 2077*. As feminist scholar Donna Haraway reminds us, vision "is *always* a question of the power to see."[6] Combined with

1 Infinity Ward, *Call of Duty 4: Modern Warfare*, Activision, 2007 [Microsoft Windows].

2 Ibidem.

3 CD Projekt Red, *Cyberpunk 2077*, CD Projekt, 2020 [Microsoft Windows].

4 Ibidem. V is given the choice between this response and the following, both implying the visceral and disorienting sensation of the experience: "That flash of… intense shock. Can still feel it. I remember… Fuck, that last second… Ya coulda warned me how much it hurts to die." Moreover, in the Braindance after this, V cannot avoid saying "Evelyn… She… I felt her fear."

5 J.W. Rettberg, L. Kronman, R. Solberg, M. Gunderson, S.M. Bjorklund, L.H. Stokkedal, K. Jacob, G. de Seta, A. Markham, *Representations of Machine Vision Technologies in Artworks, Games and Narratives: A Dataset*, "Data in Brief" 2022, no. 42 (June), doi: 10.1016/j.dib.2022.108319.

6 D. Haraway, *Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective*, "Feminist Studies" 1988, vol. 14 (3), p. 585 (emphasis in original), doi: 10.2307/3178066.

scholarship in game studies that shows how video games can build on and feed into anthropocentric and masculinist narratives,[7] it is especially salient to investigate how vision and agency connect.

In this article, I examine the machinic visions of *Call of Duty 4* and *Cyberpunk 2077*. I argue that these human-enhancing technologies simultaneously reinforce and complicate fantasies of human domination. My goal is to challenge the prevailing techno-masculine imaginaries of solitary, superhuman abilities visible in many contemporary video games in order to show how video games that valorize human domination still ultimately present humans as depending on computational and non-human agencies to succeed.

I do this by first presenting how machine vision and military vision share a history of domination that endeavors to give the human agent power to control their environment completely. Then, through analyses of diegetic representations of visual filters outside of the human sensorium in *Call of Duty 4* and *Cyberpunk 2077*, I show how vision in video games is inherently tied to questions of agency. I pay particular attention to those moments when the technology with which we see is shown as being in control, glitching or otherwise disrupting the god-like interventions of the human. In these moments, human enhanced vision is presented as disorganized, disruptive, and overwhelming. Seeing this through a posthuman lens of distributed agency between human and machine agents, and relating this to scholarly work on glitches, I examine these moments as explicit examples of machine agency as part of a broader assemblage.[8] This contributes to research into how we can understand such distributions as fluctuations of agency that, when combined, produce a specific agentic modality.[9] Diegetic assemblages are therefore related to broader understandings of video game play and culture. In other words, the power dynamics represented through machine vision in these video games helps uncover layers of ambiguous or conflicting agencies in assemblages.

---

7 S. Fizek, *Automation of Play: Theorizing Self-Playing Games and Post-Human Ludic Agents*, "Journal of Gaming & Virtual Worlds" 2018, vol. 10 (3), pp. 203–218, doi: 10.1386/jgvw.10.3.203_1; S.C. Jennings, *Only You Can Save the World (of Videogames): Authoritarian Agencies in the Heroism of Videogame Design, Play, and Culture*, "Convergence" 2022, vol. 28 (2), pp. 320–344, doi: 13548565221079157.

8 For posthuman distributed agency in game studies, see e.g.: J. Boulter, *Parables of the Posthuman: Digital Realities, Gaming, and the Player Experience*, Wayne State University Press, Detroit 2015; B. Keogh, *A Play of Bodies: How We Perceive Videogames*, The MIT Press, Cambridge, MA 2018; R. Solberg, *(Always) Playing the Camera: Cyborg Vision and Embodied Surveillance in Digital Games*, "Surveillance & Society" 2022, vol. 20 (2), doi: 10.24908/ss.v20i2.14517. Work focusing specifically on assemblages builds on e.g.: N.K. Hayles, *Unthought: The Power of the Cognitive Nonconscious*, University of Chicago Press, Chicago 2017; T.L. Taylor, *The Assemblage of Play*, "Games and Culture" 2009, vol. 4(4), pp. 331–339, doi: 10.1177/1555412009343576. For glitches, I follow the work of e.g.: J. Janik, *Glitched Perception: Beyond the Transparency and Visibility of the Video Game Object*, "TransMissions: The Journal of Film and Media Studies" 2017, vol. 2 (2), pp. 65–82.

9 Agentic modalities are further explained later in this article and in S.C. Jennings, *Only You Can Save the World (of Videogames)…*, op. cit.

I compare *Call of Duty 4* and *Cyberpunk 2077* because despite their differences, both video games constantly emphasize the protagonist's agency while masking the actual agency of the technology.[10] The video games are samples from a corpus of video games registered in a database for exploring cultural representations of machine vision.[11] *Call of Duty 4* is a video game about historic warfare and power, one in which representations of domination and power are to be expected. *Cyberpunk 2077*, on the other hand, presents a cyborgian future where ontological borders are blurry at best. It would therefore be tempting to dismiss *Cyberpunk 2077* when analyzing agency through machine vision. After all, the premise is a world in which humans and technology are already inextricably linked. However, in its relationship to machine vision, the video game employs the same technique as *Call of Duty 4*; machine vision technologies give the protagonist superhuman abilities. Thus, even in vastly different settings, the player characters of both video games repeatedly turn to machine vision technologies to achieve what their unenhanced human bodies cannot. *Call of Duty 4* and *Cyberpunk 2077* both present machine vision as an omniscient tool for player characters to use; for finding the truth (one objective in Braindance is literally "uncover the truth") and fueling violence for domination and mastery. Such depictions align with hegemonic views on relationships between humans and machines, even if researchers continue to show the interdependency of humans and machines in video games.[12] Thus, in combining these two video games, I am inspired by Sonia Fizek, who asks how we can make sense of video games that do not require human agency.[13] In this article, I adapt her question to ask how we can make sense of video games that hide their machine agency.

A Unitary Military Vision

Call of Duty 4: Modern Warfare presents militaristic agency and hegemonic power through machine vision. *Call of Duty 4* is a 2007 video game,[14] but it is still (in 2022)

[10] My analysis therefore follows scholarly attempts to find the "non-human member tagging along" as T.L. Taylor phrases it in *The Assemblage of Play*, op. cit., p. 335, and to "'hear' the voice of the game object," in J. Janik, *Intra-Acting Bio-Object: A Posthuman Approach to the Player–Game Relation*, "Journal of Gaming & Virtual Worlds" 2021, vol. 13 (1), pp. 21–39, doi: 10.1386/jgvw_00026_1. I view glitches as examples of machine agency even when the video game constantly emphasizes human agency.

[11] J.W. Rettberg, L. Kronman, R. Solberg et al., *Representations of Machine Vision Technologies...*, op. cit.

[12] E.g., J. Boulter, *Parables of the Posthuman…*, op. cit.; J. Janik, *Glitched Perception…*, op. cit.; B. Keogh, *A Play of Bodies…*, op. cit.; R. Solberg, *(Always) Playing the Camera…*, op. cit.

[13] S. Fizek, *Interpassivity and the Joy of Delegated Play in Idle Games*, "Transactions of the Digital Games Research Association" 2018, vol. 3 (3), p. 142, doi: 10.26503/todigra.v3i3.81.

[14] *Call of Duty 4: Modern Warfare* created its own subseries of games, with the 2019 *Call of Duty: Modern Warfare* being the (in 2022) most recent. One notable difference between the two video games is that the 2019 version allows player characters the decision to destroy light sources to better utilize their

the highest ranked *Call of Duty* video game in the series.[15] It was the first in the popular *Call of Duty* series to turn away from a historical World War II setting and look to contemporary warfare technologies. The campaign of *Call of Duty 4* presents a story of ultranationalists starting a civil war in Russia and a separatist group seizing power in an unnamed Middle Eastern country. The player assumes the role of different officers in the US Marines and British SAS forces sent to gather intelligence and fight against the uprisings, although during a large part of the video game the player controls the previously mentioned Sergeant John "Soap" MacTavish.

Sergeant Soap and the other officers of the US and British special forces are presented as powerful white men who can engage with and have impact on the world in ways that others cannot. Their access to infrared, ultraviolet and X-ray wavelengths gives them the ability to see beyond their embodied biological possibilities. In this, they have adapted to become top predators enabled by this technology, as night vision presents as a cohesive and god-like enhancement of the player characters in *Call of Duty 4*. In low-light environments, they can still see shapes and movement, albeit in a green hue. The tinted green overlay that accompanies night vision representation in video games is a remnant of older night vision technologies (new digital imaging methods can reproduce night vision in full color from low light conditions) but is still widely used in popular culture as an indicator of the technology at hand. Night vision as a visual aesthetic has become a trope alongside the power it brings its viewer. Other machine vision technologies available to the player characters in *Call of Duty 4* include aerial drones, satellite images, enhanced zoom lenses and motion sensors. In combination, these technologies extend and enhance vision to unnatural (here meaning not humanly possible) lengths. Machine vision technologies' spatial and temporal dominance gives the tactical advantages needed to win wars.

This militarized imaginary of machine vision in warfare is not novel. It is a specific fantasy of agency that connects with power and domination, and which leads to military victory because those who possess the technology are always two steps ahead. Such attempts at attaining divine perspectives are seen again and again in mil-

night vision technology instead of it being a prerequisite of the mission. Additionally, technological advancements since 2007 made possible the curious addition of "spectral rendering" to the 2019 video game's engine: This means that the engine essentially runs visuals in both the (diegetic) human wavelengths and in infrared wavelengths when played, in case the player character equips night vision goggles. See M. Drobot, D. Hodgson, *Modern Warfare Initial Intel: Call of Duty: Modern Warfare's Game Engine Is Put through Its Paces*, "Activision Blog", 26.06.2019, https://blog.activision.com/ca/en/call-of-duty/2019-06/Initial-Intel-Call-of-Duty-Modern-Warfares-game-engine-is-put-through-its-paces (accessed: 20.07.2022).

15 See e.g., *IMDB*, n.d., https://www.imdb.com/title/tt1125798/ (accessed: 18.07.2022); *Best Call of Duty Games of All Time*, "Gamespot", 29.04.2022, https://www.gamespot.com/articles/best-call-of-duty-games-of-all-time/1100-6496028/ (accessed: 20.07.2022); *The 10 Best Call of Duty Games of All-time*, "GamesRadar", 27.10.2022, https://www.gamesradar.com/uk/best-call-of-duty-games/ (accessed: 28.11.2022).

itary history and military-themed video games alike,[16] perhaps most controversially with the unmanned aerial perspectives of drones, but also in the disembodied perspectives that many strategy and simulation video games present, including *Call of Duty 4*. As Helen Berents and Brendan Keogh explain, viewing war from a distance, as these technologies allow for, obscures the embodied consequences of its aftermath.[17] Moreover, this superhuman vision can provide tactical advantage on ground level, as seen with night vision goggles.

The superhuman fantasy of domination is also tied to the idea of player agency. It is no news that many video games build on and feed anthropocentric narratives that place the human player at the center of the game experience, depicting the player as somehow inherently and solely possessing agency. According to Sonia Fizek, this reveals "a very binary worldview: an active human player versus an acted upon non-human game."[18] For Stephanie C. Jennings, such "world-savior games" foster a myth of a "universal human experience."[19] As Jennings explains,

> prevailing concepts of player agency risk fostering expectations that players *should* be able to palpably, meaningfully impact gameworlds; and further, they risk commending players' experiences as dominant authorities over in-game events, nonhumans (both living and not), and other human beings.[20]

Therefore, such enhanced and privileged perspectives uphold patriarchal structures inscribed in technology.[21] These narratives perpetuate a hegemonic masculine ideal that builds on militarized command and technological mastery, or "techno-masculinity."[22] The techno-masculinity that depicts the subject as authoritative and emotionally detached is found in the origins of video game culture,[23] and is perpetuated in video game content to this day. It is closely connected to the pervasive myth of a (universal) hero's journey, wherein the world serves at the hero's behest.[24] The rhetoric of many video games, especially first-person shooters like *Call of Duty 4*, continues

16 For aerial perspective's military history, see e.g., A. Bousquet, *The Eye of War: Military Perception from the Telescope to the Drone*, University of Minnesota Press, Minneapolis–London 2018. For military-themed video games that present the same perspectives, see e.g.: H. Berents, B. Keogh, *Virtuous, Virtual, but Not Visceral: (Dis)Embodied Viewing in Military-Themed Videogames*, "Critical Studies on Security" 2018, vol. 6 (3), pp. 366–369, doi: 10.1080/21624887.2018.1432531.

17 Ibidem, pp. 366–367.

18 S. Fizek, *Automated State of Play: Rethinking Anthropocentric Rules of the Game*, "Digital Culture & Society" 2018, vol. 4 (1), p. 206, doi: 10.14361/dcs-2018-0112.

19 S.C. Jennings, *Only You Can Save the World (of Videogames)…*, op. cit., p. 328.

20 Ibidem, p. 326.

21 B. Keogh, *A Play of Bodies…*, op. cit., p. 176.

22 R. Johnson, *Technomasculinity and Its Influence in Video Game Production* [in:] N. Taylor, G. Voorhees (eds.), *Masculinities in Play*, Palgrave Macmillan, Cham 2018, pp. 249–262; C.A. Kocurek, *Coin-Operated Americans: Rebooting Boyhood at the Video Game Arcade*, University of Minnesota Press, Minneapolis 2015.

23 Ibidem.

24 As identified in S.C. Jennings, *Only You Can Save the World (of Videogames)…*, op. cit.

to draw on the fantastical agency that machine vision technologies can provide by constructing experiences that glorify warfare and individual heroism.[25]

The Human in the Loop

Call of Duty 4 presents "fantasies of destruction that laud settler colonialism,"[26] and these are perhaps nowhere as evident as in the infamous "Death from Above" mission. The mission requires player characters to use thermal vision to gain military dominance of the battlefield. In "Death from Above", the player assumes the role of an unnamed operator on an AC-130 gunship. Players provide cover fire and assistance to a squad on the ground – a squad consisting of the protagonists Sergeant Soap, Captain Price and the rest of their crew. From the onset, then, there is a connection drawn between the unnamed operator and the importance of protecting and helping the ground units through exerting power over others.

"Death from Above" relives the "too easy" sentiment that the earlier "Blackout" mission presented. Enemy units cannot retaliate against the overwhelmingly superior weaponry of aerial cover fire combined with infrared/thermal vision. Using thermal radiation as vision enables sight even when there is no light source, making it superior to night vision when viewing objects that radiate heat. In the video game, thermal vision shows people, animals and recently used vehicles as white hot on a darker background or black hot on a lighter background (depending on which setting the player chooses). To avoid friendly fire, Soap and the ground crew have blinking infrared strobes so that they can be easily distinguished from their enemies on the operator's screen. The meaning is clear: if it does not blink, shoot it. Such enhanced and detached visions of people in war zones as presented in "Death from Above" are increasingly common for contemporary warfare at the expense of face-to-face confrontations.[27]

Nevertheless, in such a setting, it can be easy to forget that the white or black dots symbolize people. The operators of the gunship certainly seem to be detached from the scenery on the ground; they are confident and repeatedly celebrate with statements like, "Yeah, good kill. I see lots of little pieces down there," "Woahhh!" and "This is gonna be one hell of a highlight reel." The praise from coworkers is constant, spurring more shots. It is a seemingly god-like and "objective" perspective, one

[25] For an account of such experiences in first person shooter video games, see: H. Pötzsch, *Selective Realism: Filtering Experiences of War and Violence in First- and Third-Person Shooters*, "Games and Culture" 2015, vol. 12 (2), pp. 156–178, doi: 10.1177/1555412015587802.

[26] T.M. Russworm, *A Call to Action for Video Game Studies in an Age of Reanimated White Supremacy*, "The Velvet Light Trap" 2018, no. 81, pp. 73–76.

[27] T. Welsh, *Face to Face: Humanizing the Digital Display in Call of Duty: Modern Warfare 2* [in:] G.A. Voorhees, J. Call, K. Whitlock (eds.), *Guns, Grenades, and Grunts: First-Person Shooter Games*, Continuum International Publishing Group, New York 2012, p. 392.

which feminist scholars such as Haraway remind us is not possible,[28] but one which *Call of Duty 4* repeatedly aims to present. The unnamed and unseen player character aids this presentation of objectivity and of being both everywhere and nowhere in particular.

Not all detached experiences of machine vision are intended to uncritically build this objective perspective. In the years since *Call of Duty 4* was released, video games have attempted to critique the totalizing myths of superiority that *Call of Duty 4* presents. For instance, the third-person shooter *Spec Ops: The Line*[29] has the player play through a similar mission to *Call of Duty 4*'s "Death from Above" but without the safe distance, emphasizing instead the horrors of the player character's actions. *Spec Ops: The Line* subverts the trope of machine vision as an objective way to view the world; a trope perpetuated in video games and machine vision technologies alike. The player character (and player) is built into a superhuman agent given the supposedly objective and disembodied viewpoint of aerial thermal imaging and access to firepower, but is not free from the consequences of using this vision. The pixelated targets of *Call of Duty 4* and the face-to-face horrors of *Spec Ops: The Line* lead Brendan Keogh to conclude that the player character and player of *Spec Ops: The Line* are "forced to see the true technological superiority of virtualised war: not precision, but indiscrimination; not less killing, but easier killing."[30] Even when faced with the brutal aftermath of warfare, god-like views enabled by machine vision technologies indeed make it, in Captain Price's words, "too easy."

Although *Spec Ops: The Line* makes its argument explicit, I would argue that the surety of a god-like view begins to crack even in *Call of Duty 4*'s "Death from Above" mission. The plane's operators, the main base crew and the ground squad all sound uncertain and confused. In their praise and celebration, they frequently miscommunicate which building, location or road they are talking about, which leads to the gunship flying around looking for the desired location or target. Thermal vision can help identify the heat that bodies give off, but it makes it harder to navigate this world in the way that one would normally do. It is still not a habitualized way of seeing the world but rather a distinctly non-human and othered vision that is sometimes at odds with human vision. Additionally, the thermal vision is often blurred and lags when the camera is in motion, which makes the strobe lights harder to find because the still lights of the enemies sometimes seem like they are pulsing.

This god-like perspective presents difficulties in discerning location and identity. It offers military power but also presents logistical challenges. Ultimately, human interpretation is the imperfection that causes this confusion. Whereas the night vi-

[28] D. Haraway, *Situated Knowledges…*, op. cit.

[29] Yager Development, *Spec Ops: The Line*, 2K Games, 2012 [Microsoft Windows].

[30] B. Keogh, *Spec Ops: The Line's Conventional Subversion of the Military Shooter* [in:] *Proceedings of DiGRA 2013: DeFragging Game Studies*, Atlanta 2014, http://www.digra.org/digital-library/publications/spec-ops-the-lines-conventional-subversion-of-the-military-shooter/ (accessed: 15.07.2022).

sion goggles create a seemingly perfect filter for the player character's point of view in low light conditions, the thermal vision is presented as pixelated and glitchy. In a sense, the thermal vision is computerized, further removed from the human senses, and it becomes more of a struggle to reconcile human and machine vision. This does not mean that *Call of Duty 4* is somehow absolved of its techno-masculine fantasy of colonial destruction and dominance that TreaAndrea M. Russworm identifies.[31] It is certainly a world imbued with these ideologies – but examining the cracks of this vision draws attention to how the diegetic machine vision technology is both enabling and complicating this fantasy.

Dismantling Hegemonic Structures?

Machine vision is an important agent and contributor in creating the superiority of "the hero." The god-like vision and agency presented here are components that build the experience of *Call of Duty 4* as a distinctly authoritarian agentic modality. Stemming from Jennings' account of authoritarianism as an agentic modality in *Horizon Zero Dawn*,[32] the concept brings to the fore the various agents in the assemblage that contribute to this (individualistic) agency. An agentic modality is the *experience* of agency that arises during play. This experience of agency is based on elements which "exert unique agencies, but agency is not a property that belongs to any single component."[33] The experienced agency in any given situation will be influenced by the context-dependent combination of agents. Thus, the concept can hold the experienced or presented agency in mind while examining the components that build this experience. Such a consideration of the parts that make up the whole is important because, as Aleena Chia and Paolo Ruffino remark, distributing agency might not indicate a symmetrical power relation or similar agency for all agents involved.[34] Indeed, Jennings concludes by stating that understanding authoritarianism as an agentic modality is the first step to imagining new modes of agency.[35]

I see agentic modality as aligned with the posthuman assemblage: the interdependent agential and cognitive systems between humans and non-humans. Because machines increasingly interpret and shape human's view of the world, I build on posthuman assemblages as seen in N. Katherine Hayles[36] in considering machines such as *Call of Duty 4*'s infrared cameras and *Cyberpunk 2077*'s virtual reality systems (but also video game systems) as agents in themselves. Through the assemblage and

31 T.M. Russworm, *A Call to Action for Video Game Studies…*, op. cit.

32 S.C. Jennings, *Only You Can Save the World (of Videogames)…*, op. cit.; Guerrilla Games, *Horizon Zero Dawn*, Sony Interactive Entertainment, 2017 [PlayStation 4].

33 S.C. Jennings, *Only You Can Save the World (of Videogames)…*, op. cit., p. 326.

34 A. Chia, P. Ruffino, *Special Issue Introduction: Politicizing Agency in Digital Play after Humanism*, "Convergence" 2022, vol. 28 (2), pp. 313, doi: 10.1177/13548565221100135.

35 S.C. Jennings, *Only You Can Save the World (of Videogames)…*, op. cit., p. 339.

36 N.K. Hayles, *Unthought…*, op. cit.

agentic modalities therein, we can examine the oscillation of activity between human and machine. Adding to the work of Jennings and Hayles, I focus on the visual component of this human-machine relationship. In other words, humans and machines cooperate to create vision in virtual worlds, in contrast to the experienced agentic modality of solitary and superhuman ability that is visually presented.

The specific way I discuss machine agency is meant to uncover the contribution of agents that might otherwise disappear into the background when video games foreground a certain kind of player engagement. In my machine vision-focused reading of video games, I propose that the glitch, which, as Justyna Janik emphasizes, is an explicit manifestation of video game agency and/or autonomy,[37] is a way in to imagining Jennings' new modes of agency.[38] Video games can give rise to military imaginaries of objective and omniscient perspectives, but this experience is built on human collaboration with machine agency. As a technological artefact, diegetic machine vision is capable of glitching, failing, or otherwise drawing attention to its otherwise hidden agential role. In examining such moments, even *Call of Duty 4*'s myth of totalizing vision and agency begins to unravel.

In this article, I am interested in the machine agency of machine vision technologies used in video games and the machine agency of the video game itself. Scholars have described the ways many video games emphasize machine agency by refusing a player's control as signaling the posthumanity of games.[39] For instance, video games use computational control and human unplayability to examine machine agency for the purpose of disrupting hegemonic discourses.[40] Moreover, denying choice for players can highlight the voices of marginalized designers,[41] and instances of idle play show how non-human agents are important in the overall production of play.[42] Regardless of the chosen strategy, emerging scholarship on ableism and agency shows that alternative perspectives to hegemonic discourses must be considered in all stages of game production and play.[43]

37 J. Janik, *Glitched Perception…*, op. cit.; J. Janik, *Intra-Acting Bio-Object…*, op. cit.

38 S.C. Jennings, *Only You Can Save the World (of Videogames)…*, op. cit., p. 339.

39 B. Ruberg, *After Agency: The Queer Posthumanism of Video Games That Cannot Be Played*, "Convergence" 2022, vol. 28 (2), pp. 413–30, doi: 10.1177/13548565221094257; S. Fizek, *Automation of Play…*, op. cit.

40 T.M. Russworm, *Dystopian Blackness and the Limits of Racial Empathy in The Walking Dead and The Last of Us* [in:] J. Malkowski, T.M. Russworm (eds.), *Gaming Representation: Race, Gender, and Sexuality in Video Games*, Indiana University Press, Bloomington 2017, pp. 109–128; P. Ruffino, *There Is No Cure: Paratexts as Remediations of Agency in Red Dead Redemption 2*, "Convergence" 2022, vol. 28 (2), pp. 345–358, doi: 10.1177/13548565221081062.

41 S.C. Jennings, *A Meta-Synthesis of Agency in Game Studies. Trends, Troubles, Trajectories*, "G|A|M|E Games as Art, Media, Entertainment" 2019, vol. 1 (8), pp. 85–106, https://www.gamejournal.it/?p=3912 (accessed: 29.06.2022).

42 S. Fizek, *Automated State of Play…*, op. cit.

43 A. Fox, *The (Possible) Future of Cyborg Healthcare: Depictions of Disability in Cyberpunk 2077*, "Science as Culture" 2021, vol. 30 (4), pp. 591–597, doi: 10.1080/09505431.2021.1956888; S.C. Jennings, *A Meta-Synthesis of Agency in Game Studies…*, op. cit.

Although valuable scholarship has been published on machinic agency at the cost of human agency, my focus is on uncovering how machine agency influences the experience of human agency in machine vision imaginaries in video games. The filter of machine vision influences other agents in the assemblage but is mostly hidden behind the presentation of the enhanced hero. The night vision in "Blackout" and thermal vision in "Death from Above" both illustrate how machine vision is necessary in contemporary warfare (video games). The norm is an asymmetrical relationship where night vision and thermal vision are presented as tools necessary to complete a goal, but with limited agential power in themselves. However, these filters also show that collaboration with or interference by these technologies can lead to ambiguous results. Agency is distributed or shared with technology, and this collaboration can be the cause of confusion and error on behalf of the human.

Using the assemblage and the specific agentic modalities it produces as a starting point provides a vocabulary for explaining the relations between machine and human agency through alternating and parallel processes. The English term "assemblage" is a translation of Deleuze and Guattari's French "*agencement*," which indicates in its etymology that agency is created in the relation or arrangement.[44] This shows how the assemblage is fundamentally about adaptive relational components, a perspective that has been useful for adapting the term for posthuman game studies.

The Machine in the Loop

In the 2020 action roleplaying video game *Cyberpunk 2077*, machinic agencies are more explicitly influential than in *Call of Duty 4*. That machine vision technologies are featured as agential in *Cyberpunk 2077* is perhaps of no surprise; the game takes place in Night City, a dystopian futuristic paradise of innovation and technical modification. Night City's depiction of technological prowess in society also shows a breeding ground for pollution and social and economic inequality. *Cyberpunk 2077* casts the player as V, a customizable (the player chooses V's background story, gender, visual appearance, and voice) mercenary cyborg whose frequent visits to "ripperdocs" (doctors who can install cybernetic parts and prostheses) result in new or upgraded cyberware implants. V's cyborg body is further emphasized when they discover that they share their mind with Johnny Silverhand, a supposedly long-dead rock star. Silverhand's consciousness is alive and well in the microchip that is now embedded in V. In fact, Silverhand is in the process of overwriting V's person with the aim of resurrecting himself in V's body. V's mission is to find a way to stay alive long enough to get rid of the encoded chip.

However grim the setting of *Cyberpunk 2077* is, the virtual reality of Braindance is full of promises for the future of technology. In Night City, Braindance appears to

[44] M. Müller, *Assemblages and Actor-Networks: Rethinking Socio-Material Power, Politics and Space*, "Geography Compass" 2015, vol. 9 (1), pp. 27–41, doi: 10.1111/gec3.12192.2015.

be primarily used for pornography, but there is also a market for other virtual reality experiences such as gaming, extreme sports, and novel experiences one could not encounter in everyday life. A Braindance is presented as a virtual rendition of the world. It is a nod to the fantasies of fully immersive environments that offer their user all-encompassing agency, like the now famous holodeck from the TV series *Star Trek*.[45] A Braindance is watched from a first-person view (the recording as experienced through the eyes of the person who recorded it) or, with extra equipment, V can enter a third person editor mode to analyze audio and visual signs in each recording, as well as thermal signs if the recording optical apparatus had that technology enabled. This means that once inside a Braindance, V is enhanced by the same machine vision technology as player characters in *Call of Duty 4*, although it is presented differently. For one, V is experiencing someone else's memories instead of having an augmented view of the world around them.

In the narrative of *Cyberpunk 2077*, Braindances are investigative tools framed as aiding their human users. It is explained in the video game as "a very useful tool," situating it as a technology that aids in achieving a goal. Nevertheless, it is a tool that can do things that humans cannot, as one character aptly explains: "Good for analyzing details human perception, even boosted, doesn't grasp." Braindance "records everything, every little detail. Even the sights and sounds the roller was never aware of." In other words, Braindance provides a vision similar to *Call of Duty 4*'s machine vision in that it senses outside of the human perceptual apparatus and translates this into a human-readable format. The technology registers the human's experience as they encounter it but also the machine's experience of the same environment. As such, V's experience with Braindance exemplifies how the heightened capacities of machines to see, create and otherwise influence the world challenge preconceptions of the relations between humans and machines.

In the video game, the Braindance technology functions as a stand-in for how the player can perform actions that are not humanly possible. Tanya Krzywinska and Douglas Brown explain how the more-than-human enhancement of cyborg player characters makes them convenient vehicles for the player's increased agency without breaking narrative immersion.[46] Entering other people's memories, extracting oneself from an embodied perspective, analyzing cues not registered by human senses: it all makes perfect sense for the augmented bodies in the science fiction-laden universe of *Cyberpunk 2077*. In this way, machine vision becomes a justification that reinforces the existing hegemonic power dynamics between human and machine.

However, in its diegetic framing, the technology is also presented as immersive and intrusive to the point where V's physical body is "overtaken" by the experience

[45] As theorized by J.H. Murray in *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*, e-book, Free Press, 2016.

[46] T. Krzywinska, D. Brown, *Games, Gamers and Posthumanism* [in:] M. Hauskeller, T.D. Philbeck, C.D. Carbonell (eds.), *The Palgrave Handbook of Posthumanism in Film and Television*, Palgrave Macmillan, London 2015, pp. 192–202, doi: 10.1007/978-1-137-43032-8_20.

of being-in-the-machine. V is clearly confused in the visceral meeting with the machine vision of Braindance. They are not in control and struggle with separating what is real from what is not real. The physical and emotional strain of being in Braindance shows how V is initially subjugated by machine vision. This is illustrated in the Braindance setup, an elaborate process between human and non-human agents where perceptions and emotional responses are modeled and adjusted so "the raw BD won't overwhelm you." Even after calibrating the Braindance, the experience is not *Call of Duty 4*'s "too easy"; it is, as V states, "too much."

The overwhelming technological sensations described early in *Cyberpunk 2077* explicitly emphasize that Braindance's creation and use depend on the fluctuating assemblages that humans and machines participate in. For V in *Cyberpunk 2077*, the experience of Braindance is much more corporeally immersive than the filtering effect of night vision and it has longer intervals of required input than what is seen in *Call of Duty 4*. The Braindance technology is set up and initiated by humans, but once initiated, the technology itself maintains the infrastructure. Thereafter, agency is presented as belonging to the user who can influence the virtual environment, but it is still within the experience of the (recorded or manipulated) recording. After V's choices, another set of systems take over and both execute V's tasks and continue their own (autonomous) choices – working in parallel, much like a player playing a video game.

As Sonia Fizek shows, some video games already emphasize this machinic agency, challenging existing understandings of video games as systems for human agency.[47] Fizek demonstrates how Robert Pfaller's and Slavoj Žižek's concept of "interpassivity" can be used to explain how humans can become spectators and video games the players. In interpassivity, play is perceived as delegated onto the machine rather than being interactive.[48] This concept can help decipher the machine agency of bots and macros, of cinematic sequences like cutscenes, and of watching streams of others playing video games.[49] The concept of interpassivity focuses on delegated enjoyment in idle video games where player participation is optional or not possible, which means that it does not fully account for video games like *Call of Duty 4* and *Cyberpunk 2077* that laud player agency. Its contribution to the present article is that it puts the spotlight on the machine's hidden automation as an agentic contribution.

Seeing Some Things, Hiding Others

Like Braindance, V's cyborg body is also a site of tension between humans and machines. More specifically, it is a site for distributed and sometimes conflicting agencies between human and machine components. V is themselves a complex as-

47 S. Fizek, *Interpassivity and the Joy of Delegated Play…*, op. cit.
48 Ibidem.
49 Ibidem.

semblage. In addition to various cybernetic upgrades, V's struggle to discern what is themselves and what is the virtual rendition of others' experiences is further emphasized once the holographic "ghost" of Silverhand presents itself. It becomes unclear "where one character ends and the other begins,"[50] blurring the lines between agents in the assemblage.

Cybernetic, augmented, and virtual vision can veil the fact that it is not only allowing us to see the world with its enhancements, but also reinforcing hegemonic structures. Tanya Krzywinska and Douglas Brown fear that the cyborg, initially considered as something beyond the human, becomes an excuse to reinstate the human in a mode that destroys and dominates[51] – which, incidentally, is what *Call of Duty 4* overtly attempts to do under the guise of a savior narrative. Video games such as *Call of Duty 4* and *Cyberpunk 2077* show how machine-enhanced protagonists and the cloak of cyborg fantasies can become a nightmare. This is illustrated by *Cyberpunk 2077*'s reception as representing the "inescapable dehumanization of trans people" as it fetishizes and commodifies trans bodies and identities.[52] Elise Vist argues that high-budget AAA video games (like *Call of Duty 4* and *Cyberpunk 2077*) are antithetical to the values of what they call cyborg games, that is, video games that disorient normative bodies and players.[53] This dominating cyborg is mimicked by Jonathan Boulter when he states that science fiction narratives present bodies that "can be modified, constructed, extended, and manipulated, all to the point where the question of what constitutes identity as such becomes problematic, becomes the point of fetishistic departure and interest."[54] In these accounts, the cyborg becomes a dystopian being, reinforcing the power relations it is constructed to break free from. Indeed, after the first few Braindance experiences, V (and the player) have mastered the technology and have no further comments about overwhelmed emotions. Perhaps V's initial experience is as much about setting a low bar for the player's identification with the novelty of this video game world as it is about showcasing futuristic technology: if V finds it new and scary, players are also allowed to find it new and scary. As all good humanistic narratives, however, V/we quickly conquer the technology at hand.

Nevertheless, the hegemonic fantasies embedded in these representations of machine vision are challenged when they are read through the lens of the distributed agency of an assemblage. Such a framework can remove the veil of authenticity

[50] C. Petit, *Cyberpunk 2077 Is Dad Rock, Not New Wave*, "Polygon", 7.12.2020, https://www.polygon.com/reviews/22158019/cyberpunk-2077-review-cd-projekt-red-pc-ps4-xbox-one-stadia (accessed: 20.07.2022).

[51] T. Krzywinska, D. Brown, *Games, Gamers and Posthumanism…*, op. cit.

[52] C. Petit, *Cyberpunk 2077 Is Dad Rock…*, op. cit.; A. Gramuglia, *How Cyberpunk 2077 Perpetuates Transphobia & Why Gamers Are Calling It an Act of Violence*, "Comic Book Resources", 8.12.2020, https://www.cbr.com/cyberpunk-2077-transphobia/ (accessed: 7.06.2022).

[53] E. Vist, *Cyborg Games: Videogame Blasphemy and Disorientation*, "Loading... The Journal of the Canadian Game Studies Association" 2015, vol. 9 (14), pp. 55–69.

[54] J. Boulter, *Parables of the Posthuman…*, op. cit., p. 7.

that machine vision creates and help illuminate variations of agencies beyond simply dominating or being dominated. Importantly, understanding how the machine influences the human does not dismiss the video games' authoritarian agentic modalities, but emphasizes how the superhuman machine vision was never exclusively human to begin with.

More specifically, it allows for examining different components of the assemblages at hand. Machine vision technologies such as Braindance comprise many different technologies in a joint interface, made legible for a human user. Although much of the technology is unavailable for scrutiny, the interfaces yield insights into the systems beneath. Braindance's three filters and two perspectives result in different agentic modalities for V. Switching between first person and third person perspective seems particularly tied to visceral sensations, as it is V's first-person experience that makes them overwhelmed. The third-person perspective available in Braindance is not embodied through a specific agent but allows the player to move around freely in three axes to study a given scene, much like the disembodied visions of *Call of Duty 4*. This third-person perspective retains a sense of agency as the domination of a space, but the embodied first-person perspective counters this. It is when V loses the sense of agency afforded by the third-person perspective that they become physically overwhelmed.

The narrative framing of machine vision can be ambiguous. This is shown in the contrast between V's embodied interpersonal experience in Braindance and *Call of Duty 4*'s disembodied and distanced perspective. The difference is also evident within the same technology and video game. Braindance is both a tool for disembodied investigation and an embodied visceral experience of a human-machine assemblage. In *Call of Duty 4*, thermal aerial imaging is distanced and precise yet glitchy and confusing. Using the technologies within these video games to examine the components of this presentation shows how ambiguities can conflate into one modality or experience of agency. While the experiences are presented as solely the player's, in actuality, the perception of singular experience is constructed from a distribution of agency.

Beyond the Video Game

It is in moments when the technology is not performing the way we expect that we find its agential interference. Filter effects such as night vision and thermal vision aim for immediacy and transparency that obscure the positions from which they are used. But the fact that the machine is not apparent to us does not prevent it from having agency, as emphasized in N. Katherine Hayles' account of machine agency that is too fast to comprehend for human eyes[55] – a clear challenge to anthropocentric and ocularcentric systems of perception and knowledge. In many ways, filters are as habitu-

[55] N.K. Hayles, *Unthought*..., op. cit.

alized as a pair of reading glasses – something to look through that we notice only if they have a crack or are ill-fitting.[56] For technologically mediated vision the concept is the same, although it is "smarter" (i.e., using artificial intelligence and neural networks) and works in assemblages with other technologies. Glitches and malfunctions allow humans to easily identify machine agencies that are always present, but usually less visible. Studying glitches in video games has become popular precisely because of the insight it yields into how technological agency operates, prompting reflection on the video game technology itself.[57]

Augmented and virtual visions are of course not only experienced by Soap and V in their respective video game narratives, but also by the player. The machine vision technologies that Soap and V encounter are presented as part of the diegesis of the virtual environment, but the player is also part of the assemblage that is video game play.[58] Thus, it is worth examining how the player can be considered as participating in and possibly disrupting this agentic modality. Moments of machine interference that influence player behavior show how both human and machine agencies are present, to varying degrees.[59] The beyond-human infrared and digital visions that these video games represent constantly maintain the vision, but in moments of machine interference beyond the frame of the video game's world, "the game object reminds

[56] Postphenomenologists would refer to this with different "relations". See e.g. P. Verbeek, *Cyborg Intentionality: Rethinking the Phenomenology of Human–Technology Relations*, "Phenomenology and the Cognitive Sciences", 26.06.2008, vol. 7 (3), pp. 387–395, doi: 10.1007/s11097-008-9099-x.

[57] Aptly framed by Justyna Janik as "making the video game object visible," in: J. Janik, *Glitched Perception…*, op. cit.

[58] J. Boulter, *Parables of the Posthuman…*, op. cit.; S. Lammes, S. de Smale, *Hybridity, Reflexivity and Mapping: A Collaborative Ethnography of Postcolonial Gameplay*, "Open Library of Humanities" 2018, vol. 4 (1), doi: 10.16995/olh.290.

[59] Conversationally, distributed agency through machine vision imaginaries is also evident in the creation of these video games. The developers of *Cyberpunk 2077* explain how they deliberately tried to replicate data visualization errors such as datamoshing (a blurred or smeared effect that happens when transitioning from a complete image file to the next is unable to read the next file) in order to create "dream-like" transitions and "never-before-seen representations of digital realities in a 3D video game," see O. Świerad, P. Ankermann, K. Krzyścin, *The Tech and Art of Cyberspaces in Cyberpunk 2077*, "SIGGRAPH '21: Special Interest Group on Computer Graphics and Interactive Techniques Conference Proceedings / ACM" 2021, July, doi: 10.1145/3450623.3464662. The recreation of such effects can be seen as distributed agency where the autonomy of a technical system is reproduced as an aesthetic by the human developers, to be experienced in the player-and-game relationship. This is a version of what Shane Denson calls "discorrelated images," see S. Denson, *Discorrelated Images*, Duke University Press, Durham 2020. Such digitalized visual effects are common and show that machine vision continues to shape how we perceive and imagine the world. It reminds players of how our agency is situated "as one relational element among others being computed in the process of generating the image" and of "our real situation as players as much as the fictional situation of the computer-driven characters." (ibidem, p. 217). In this light, the experience of agency through machine vision in a broader assemblage of different players and designers, software and hardware, and historical and geographical contexts merits further investigation.

the player that she is not playing alone."[60] Similarly, in the fiction of the game, the agential interference of glitches and other machine features help us realize that the human does not operate alone.

Machine vision as a persistent diegetic justification for player agency demonstrates the close connection between vision and agency and uses this to keep the player in a position of power. *Call of Duty 4* and *Cyberpunk 2077* use machine vision technologies as justifications for computational possibilities and limitations set upon the player. As possibilities, they are convenient ways of representing superhuman actions because video games often feature unique and heroic player characters who are increasingly enhanced as the video game goes on. But they also constrict possibilities in their narrativized and mechanical framing. Just as the sources of fear in the horror genre are passivity and loss of control,[61] the representations of machine vision in *Call of Duty 4* and *Cyberpunk 2077* show that the fear of losing control is a pervasive source of tension in a broader video game perspective. Confusing, unstable, and bodily intrusive technologies with which player characters interact thematize ever-persistent fears of human-machine relationality. Of course, seeing new and speculative technologies as faulty, dangerous and overwhelming is hardly a novel representation in video games or popular culture in general. It is, however, influencing the way humans meet, interact with and think about these technologies. In this sense it is interesting that, although there are different requirements for them, players of Soap and V have no choice but to use machine vision throughout the main narratives of their respective video games. Regardless of whether it depicts contemporary war or imaginings of the future, machine vision is a mandatory component.

The Hero, Revisited

If the hero narrative's persistence is now the convention that spirals into "repetitive and uninterrupted design practices" catering for "the preponderance of white masculinity across imagined target audiences,"[62] machine vision is the means by which this enhanced hero is able to save the world. Through machine vision technologies, protagonists – and by extension, players – are enhanced. It is a convenient way of illustrating how these characters can do what is not humanly possible. The technologies do not seem disruptive but appear as means to organize, make sense of, and control the world – and perhaps kill some bad guys in the process. Possessing this technology, then, feeds the narrative of the hero who is individualistic and unique. For the player, engaging with the machine vision of the video game makes it possible for them to dominate and eventually win over or win against the machine.

60 J. Janik, *Glitched Perception…*, op. cit.
61 S.C. Jennings, *A Meta-Synthesis of Agency in Game Studies…*, op. cit.
62 S.C. Jennings, *Only You Can Save the World (of Videogames)…*, op. cit.

Nevertheless, the often privileged and enhanced machine vision perspectives are complicated when technological agencies are shown to be at odds with human vision. As noted above, when the technology glitches or does not perform as a human user expects it to, its agential interference becomes more obvious. In such cases, players are reminded of how human agency is situated in an assemblage. As Soap's "too easy" and V's "too much" experiences illustrate, agentic modalities are user-, technology- and context-dependent. Examining the "moving configurations of human and nonhuman agencies that compose instances of gameplay"[63] shows how the components in oscillation create agentic modalities. Understanding vision and agency as shared with machines therefore both enables and complicates fantasies of dominance in video games.

This tension is seen in *Call of Duty 4*'s presentation of agency as a matter of domination through machine vision and firepower. In using night vision and thermal vision, player characters gain tactical advantages by controlling the space they occupy. Yet the machine is constantly influencing and enabling this vision, even if it is not drawing attention to itself. *Cyberpunk 2077* shows the world as always mediated in a cyborgian intermingling of machinic and biological life. However, this representation quickly falls into the hero narrative that it attempts to distance itself from. In other words, the god-like vision is not truly god-like and the cyborgian critique is not truly cyborgian. The contrast between the detached and easy vision of *Call of Duty 4* and the raw and overpowering vision of *Cyberpunk 2077* proves to be smaller than initially presented. By looking at failures, glitches, and the consistent machine participation in the assemblage, other power dynamics than those that are initially presented in the video games become apparent.

Even if a video game's "structures of rules and regimes of representations may appear masculine, exclusionary, and hegemonic, the meanings of those forms are not static."[64] Video games such as *Call of Duty 4* and *Cyberpunk 2077* can be easily dismissed as elitist. They are, in Stephanie C. Jennings' words, "masculine, exclusionary, and hegemonic."[65] They certainly cater to a specific able-bodied audience that sees any encounter as a challenge they can triumph over if they invest enough time and expertise. But through depictions of machine vision, these video games sometimes reveal how human and machine agents are both complicit in this experience, if only you know where to look. Distributed agencies in an assemblage therefore both enable the fantasy of dominance in video games and challenge, disrupt, or complicate this very fantasy.

63 Ibidem.

64 S.C. Jennings, *The Horrors of Transcendent Knowledge: A Feminist-Epistemological Approach to Video Games* [in:] K.L. Gray, D.J. Leonard (eds.), *Woke Gaming: Digital Challenges to Oppression and Social Injustice*, University of Washington Press, Seattle 2018, p. 170.

65 Ibidem.

Conclusion

In this article, I have demonstrated how machine vision technologies are often presented as tools that are easily controlled by a human user, furthering narratives of anthropocentric domination and mastery. However, even when video games present machine-enhanced protagonists, it is still possible to uncover machine agency. Instead of dismissing *Call of Duty 4* and *Cyberpunk 2077* as coherently god-like or cyborgian, an assemblage approach to determining how machine vision is imagined in these video games reveals varying degrees of collaborative delegation between human and machine agents.[66] This finding challenges the prevailing techno-masculine imaginaries of superhuman abilities that are visible in many contemporary video games, because it demonstrates that the player character is dependent on computational and non-human agencies to succeed.

My analysis has demonstrated how the representation of machine vision simultaneously enables and complicates fantasies of human domination. The relational focus of assemblages provides a productive foundation to understand how agency is negotiated and distributed between human and machine agents. Distributed agency in machine vision highlights how the posthuman assemblage can untangle the presented authoritarian agentic modality. Understanding agency as a relational phenomenon and not inherent to an agent can help reconceptualize this to a collaborative and distributed practice of oscillating agential relations.

Although *Call of Duty 4* and *Cyberpunk 2077* do not appear to challenge the techno-masculine fantasy of disembodied agency, they subvert it, subtly demonstrating negotiated and distributed agencies between humans and machines – agencies we increasingly encounter in daily life. As playing with machine vision in video games opens onto new ways of seeing, perhaps the machinic agency of *Call of Duty 4* and *Cyberpunk 2077* opens onto new human-machine relationships that do not enforce the technocratic image of a human enhanced by a machine. To reimagine human and machine agents in this way helps us understand video games better because it shows that, contrary to narratives of superhuman abilities and world-savior roles, humans and machines cooperate and adapt to each other to create this vision and perspective of the world. This vision is neither a machine vision nor a human vision, but an approximation between the two – like a pidgin language where neither is fluent. This can appear in a seamless fashion, or it can be messy – "too easy" or "too much" – but it is never unmediated.

[66] Which aligns with the way that Donna Haraway used the cyborg metaphor in the first place, as an ambiguous and hybrid creature. See D.J. Haraway, *A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the 1980s* [in:] eadem, *Simians, Cyborgs, and Women: The Reinvention of Nature*, Routledge, London–New York 1991, pp. 149–181.

Funding

This research is supported by the Machine Vision in Everyday Life project, which has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (Grant Agreement No. 771800).

References

Berents H., Keogh B., *Virtuous, Virtual, but Not Visceral: (Dis)Embodied Viewing in Military--Themed Videogames*, "Critical Studies on Security" 2018, vol. 6 (3), pp. 366–369, doi: 10.1080/21624887.2018.1432531.

Boulter J., *Parables of the Posthuman: Digital Realities, Gaming, and the Player Experience*, Wayne State University Press, Detroit 2015.

Bousquet A., *The Eye of War: Military Perception from the Telescope to the Drone*, University of Minnesota Press, Minneapolis–London 2018.

CD Projekt Red, *Cyberpunk 2077*, CD Projekt, 2020 [Microsoft Windows].

Chia A., Ruffino P., *Special Issue Introduction: Politicizing Agency in Digital Play after Humanism*, "Convergence" 2022, vol. 28 (2), pp. 309–319, doi: 10.1177/13548565221100135.

Denson S., *Discorrelated Images*, Duke University Press, Durham 2020.

Drobot M., Hodgson D., *Modern Warfare Initial Intel: Call of Duty: Modern Warfare's Game Engine Is Put through Its Paces*, "Activision Blog", 26.06.2019, https://blog.activision.com/ca/en/call-of-duty/2019-06/Initial-Intel-Call-of-Duty-Modern-Warfares-game-engine-is-put-through-its-paces (accessed: 20.07.2022).

Fizek S., *Automated State of Play: Rethinking Anthropocentric Rules of the Game*, "Digital Culture & Society" 2018, vol. 4 (1), pp. 201–214, doi: 10.14361/dcs-2018-0112.

Fizek S., *Automation of Play: Theorizing Self-Playing Games and Post-Human Ludic Agents,* "Journal of Gaming & Virtual Worlds" 2018, vol. 10 (3), pp. 203–218, doi: 10.1386/jgvw.10.3.203_1.

Fizek S., *Interpassivity and the Joy of Delegated Play in Idle Games*, "Transactions of the Digital Games Research Association" 2018, vol. 3 (3), pp. 137–163, doi: 10.26503/todigra.v3i3.81.

Fox A., *The (Possible) Future of Cyborg Healthcare: Depictions of Disability in Cyberpunk 2077*, "Science as Culture" 2021, vol. 30 (4), pp. 591–597, doi: 10.1080/09505431.2021.1956888.

Gramuglia A., *How Cyberpunk 2077 Perpetuates Transphobia & Why Gamers Are Calling It an Act of Violence*, "Comic Book Resources", 8.12.2020, https://www.cbr.com/cyberpunk-2077-transphobia/ (accessed: 7.06.2022).

Guerrilla Games, *Horizon Zero Dawn*, Sony Interactive Entertainment, 2017 [PlayStation 4].

Haraway D., *A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the 1980s* [in:] eadem, *Simians, Cyborgs, and Women: The Reinvention of Nature*, Routledge, London–New York 1991, pp. 149–181.

Haraway D., *Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective*, "Feminist Studies" 1988, vol. 14 (3), pp. 575–599, doi: 10.2307/3178066.

Hayles N.K., *Unthought: The Power of the Cognitive Nonconscious*, University of Chicago Press, Chicago 2017.

Infinity Ward, *Call of Duty 4: Modern Warfare*, Activision, 2007 [Microsoft Windows].

Janik J., *Glitched Perception: Beyond the Transparency and Visibility of the Video Game Object*, "TransMissions: The Journal of Film and Media Studies" 2017, vol. 2 (2), pp. 65–82.

Janik J., *Intra-Acting Bio-Object: A Posthuman Approach to the Player–Game Relation*, "Journal of Gaming & Virtual Worlds" 2021, vol. 13 (1), pp. 21–39, doi: 10.1386/jgvw_00026_1.

Jennings S.C., *A Meta-Synthesis of Agency in Game Studies. Trends, Troubles, Trajectories*, "G|A|M|E Games as Art, Media, Entertainment" 2019, vol. 1 (8), pp. 85–106, https://www.gamejournal.it/?p=3912 (accessed: 29.06.2022).

Jennings S.C., *Only You Can Save the World (of Videogames): Authoritarian Agencies in the Heroism of Videogame Design, Play, and Culture*, "Convergence" 2022, vol. 28 (2), pp. 320–344, doi: 13548565221079157.

Jennings S.C., *The Horrors of Transcendent Knowledge: A Feminist-Epistemological Approach to Video Games* [in:] K.L. Gray, D.J. Leonard (eds.), *Woke Gaming: Digital Challenges to Oppression and Social Injustice*, University of Washington Press, Seattle 2018, pp. 155–171.

Johnson R., *Technomasculinity and Its Influence in Video Game Production* [in:] *N. Taylor, G. Voorhees* (eds.), *Masculinities in Play*, Palgrave Macmillan, Cham 2018, pp. 249–262.

Keogh B., *A Play of Bodies: How We Perceive Videogames*, The MIT Press, Cambridge, MA 2018.

Keogh B., *Spec Ops: The Line's Conventional Subversion of the Military Shooter* [in:] *Proceedings of DiGRA 2013: DeFragging Game Studies*, Atlanta 2014, http://www.digra.org/digital-library/publications/spec-ops-the-lines-conventional-subversion-of-the-military-shooter/ (accessed: 15.07.2022).

Kocurek C.A., *Coin-Operated Americans: Rebooting Boyhood at the Video Game Arcade*, University of Minnesota Press, Minneapolis 2015.

Krzywinska T., Brown D., *Games, Gamers and Posthumanism* [in:] M. Hauskeller, T.D. Philbeck, C.D. Carbonell (eds.), *The Palgrave Handbook of Posthumanism in Film and Television*, Palgrave Macmillan, London 2015, pp. 192–202, doi: 10.1007/978-1-137-43032-8_20.

Lammes S., de Smale S., *Hybridity, Reflexivity and Mapping: A Collaborative Ethnography of Postcolonial Gameplay*, "Open Library of Humanities" 2018, vol. 4 (1), doi: 10.16995/olh.290.

Murray J.H., *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*, e-book: Free Press, 2016.

Müller M., *Assemblages and Actor-Networks: Rethinking Socio-Material Power, Politics and Space*, "Geography Compass" 2015, vol. 9 (1), pp. 27–41, doi: 10.1111/gec3.12192. 2015.

Petit C., *Cyberpunk 2077 Is Dad Rock, Not New Wave*, "Polygon", 7.12.2020, https://www.polygon.com/reviews/22158019/cyberpunk-2077-review-cd-projekt-red-pc-ps4-xbox-one-stadia (accessed: 20.07.2022).

Pötzsch H., *Selective Realism: Filtering Experiences of War and Violence in First- and Third-Person Shooters*, "Games and Culture" 2015, vol. 12 (2), pp. 156–178, doi: 10.1177/1555412015587802.

Rettberg J.W., Kronman L., Solberg R., Gunderson M., Bjorklund S.M., Stokkedal L.H., Jacob K., de Seta G., Markham A., *Representations of Machine Vision Technologies in Artworks, Games and Narratives: A Dataset*, "Data in Brief" 2022, no. 42 (June), doi: 10.1016/j.dib.2022.108319.

Ruberg B., *After Agency: The Queer Posthumanism of Video Games That Cannot Be Played*, "Convergence" 2022, vol. 28 (2), pp. 413–430, doi: 10.1177/13548565221094257.

Ruffino P., *There Is No Cure: Paratexts as Remediations of Agency in Red Dead Redemption 2*, "Convergence" 2022, vol. 28 (2), pp. 345–358, doi: 10.1177/13548565221081062.

Russworm T.M., *A Call to Action for Video Game Studies in an Age of Reanimated White Supremacy*, "The Velvet Light Trap" 2018, no. 81, pp. 73–76.

Russworm T.M., *Dystopian Blackness and the Limits of Racial Empathy in The Walking Dead and The Last of Us* [in:] J. Malkowski, T.M. Russworm (eds.), *Gaming Representation: Race, Gender, and Sexuality in Video Games*, Indiana University Press, Bloomington 2017, pp. 109–128.

Solberg R., *(Always) Playing the Camera: Cyborg Vision and Embodied Surveillance in Digital Games*, "Surveillance & Society" 2022, vol. 20 (2), doi: 10.24908/ss.v20i2.14517.

Świerad O., Ankermann P., Krzyścin K., *The Tech and Art of Cyberspaces in Cyberpunk 2077*, "SIGGRAPH '21: Special Interest Group on Computer Graphics and Interactive Techniques Conference Proceedings / ACM" 2021, July, doi: 10.1145/3450623.3464662.

Taylor T.L., *The Assemblage of Play*, "Games and Culture" 2009, vol. 4 (4), pp. 331–339, doi: 10.1177/1555412009343576.

Verbeek P., *Cyborg Intentionality: Rethinking the Phenomenology of Human–Technology Relations*, "Phenomenology and the Cognitive Sciences", 26.06.2008, vol. 7 (3), pp. 387–395, doi: 10.1007/s11097-008-9099-x.

Vist E., *Cyborg Games: Videogame Blasphemy and Disorientation*, "Loading... The Journal of the Canadian Game Studies Association" 2015, vol. 9 (14), pp. 55–69.

Welsh T., *Face to Face: Humanizing the Digital Display in Call of Duty: Modern Warfare 2* [in:] G.A. Voorhees, J. Call, K. Whitlock (eds.), *Guns, Grenades, and Grunts: First-Person Shooter Games*, Continuum International Publishing Group, New York 2012, pp. 389–414.

Yager Development, *Spec Ops: The Line*, 2K Games, 2012 [Microsoft Windows].