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Artificial Intelligence in the work of I. Asimov *I, Robot* and the TV
series *Westworld*

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Z á s a d y p r o v y p r a c o v á n í :

Závěrečná diplomová práce se bude věnovat populárnímu žánru sci-fi, který bývá často označován za žánr mimořádně vhodný pro různé formy reflexe soudobé společnosti a jejího uvažování o podstatě lidství. V úvodu práce student charakterizuje žánr sci-fi, stručně nastíní jeho historii a teoretické koncepty a zvolená díla do tohoto kontextu zařadí. Dále bude definovat důležité pojmy, např. robot, android, umělá inteligence, trans-humanism, post-humanism, post-digitality, hyperrealisty. Jádrem práce bude analýza zvolených děl, v níž se diplomant zaměří na zobrazení umělé inteligence, reflexi hranic mezi člověkem a strojem, lidskou a umělou inteligencí (a bytostí). Analyzuje případně také použité literární (či filmové) prostředky. Svá tvrzení bude vhodně ilustrovat primárními texty (odkazy na epizody série), opírat o sekundární zdroje či je s nimi konfrontovat. Závěrem své analýzy přehledně shrne, obě díla z tohoto pohledu porovná a vysloví obecnější závěry o pojetí, způsobu ztvárnění a proměnách lidství a umělé inteligence ve zvolených sci-fi dílech.

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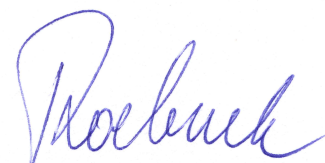
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Abstract

This master's thesis aims to discover whether – and to what degree – are the fictional artificial beings, most of whom could be called robots, in the film *I, Robot* and the TV series *Westworld* beings that are conscious. To analyze the entities, Michio Kaku's levels of consciousness and Anil Seth's aspects of consciousness are used as a framework.

Key Words

artificial consciousness, artificial intelligence, *Westworld*, *I, Robot*, Alex Proyas, Lisa Joy, Jonathan Nolan, science fiction, AI, robot, android, self, feedback loop, Anil Seth, Michio Kaku

Abstrakt

Cílem této diplomové práce je zjistit, zdali – a do jaké míry – jsou uměle vytvořené fiktivní bytosti, které by mohly být z většiny označeny jako roboti, vyobrazené ve filmu *Já, robot* a v seriálu *Westworld* bytostmi vědomými. K analýze těchto bytostí je užito rámcového modelu vědomí tvořeného úrovněmi vědomí, které popisuje Michio Kaku, a aspekty vědomí definované Anilem Sethem.

Klíčová slova

umělé vědomí, umělá inteligence, *Westworld*, *I, Robot*, Alex Proyas, Lisa Joy, Jonathan Nolan, science fiction, AI, robot, android, self, feedback loop, Anil Seth, Michio Kaku

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Introduction

This thesis intends to discover whether the artificial beings (most of which could be considered robots) in the TV series *Westworld* and the film *I, Robot* are conscious, and if they are to what degree. These artificial beings are the NS-4 and NS-5 robots and V.I.K.I. in *I, Robot*, and the hosts and the Forge in *Westworld*. The seventh and eighth chapters also describe what conditions have to be fulfilled for a fully conscious artificial being to emerge in *I, Robot* and *Westworld*.

The video timecode of the cited scenes or instances follows the format HH:MM:SS, meaning hours:minutes:seconds. It must be noted that the timecode is synced with the timecode from HBO GO (<https://hbogo.cz>). Should one watch the cited scenes of *Westworld* from another source, the timecode will most likely not match, especially if the episode in question begins with the content rating and a “Previously on Westworld” clip montage.

The first chapter introduces the primary sources of the thesis – the film *I, Robot* directed by Alex Proyas and the first two seasons of HBO’s *Westworld* series created by Jonathan Nolan and Lisa Joy. *I, Robot* is named after Isaac Asimov’s famous 1950 novel which is why the first chapter evaluates to what amount the film draws inspiration from Asimov’s collection of short stories and to what degree it raises new concepts or features novel specific elements. What fictional works and contemporary real-life events could have given rise to *Westworld* is also explored. The first chapter also attempts to categorize *I, Robot* and *Westworld* in terms of genre.

The second chapter attempts to define consciousness in order to be later able to evaluate whether the fictional artificial beings are or are not conscious. An outline of philosophical and scientific inquiry into consciousness in the West is provided. A few historically important works of fiction which feature an artificially created being are mentioned too.

What is understood by the terms “artificial intelligence” and “artificial consciousness” in both real life and works of science fiction is explained. Because chapters seven and eight deal with how full artificial consciousness emerges or could emerge in *Westworld* and *I, Robot*, the second chapter briefly mentions how older works of science fiction thought an artificial consciousness could emerge. The ideas present in the older fictional works are compared with the ones in *Westworld* and *I, Robot*. Lastly, the second chapter questions the meaning of the words “robot” and “android.”

The third chapter intends to discover to what extent are *I, Robot's* NS-4s and NS-5s conscious. To do this, a framework introduced in the preceding chapter of this thesis is utilized, thus the degree of the robots' consciousnesses is described using Michio Kaku's and Anil Seth's terminology (whose model and aspects of consciousness constitute the framework).

Only after watching the film, it could be safely said that the NS-4s and NS-5s are most likely Level I conscious (a level of consciousness introduced by Kaku), as the robots can perceive the world around them and move in it. They also most likely possess Seth's bodily and perspectival self. Because of the Three Laws of Robotics which govern the robots, it is highly unlikely that the robots possess any free will (Seth's third aspect of consciousness, the volitional self). Whether the NSs possess Seth's narrative and social self is investigated in the body of the third chapter, as well as whether the robots are Level II and Level III conscious.

The fourth chapter examines the consciousness of *I, Robot's* Sonny. In the film, Sonny is a robot that looks exactly the same as a standard NS-5 but is in fact significantly more advanced. From the moment he first appears on screen, Sonny does not act as a regular robot would. He disobeys commands and appears emotional, for instance. This chapter intends to determine if Sonny can create L-II feedback loops and if he possesses aspects of consciousness which regular NS-4s and NS-5s do not.

The fifth chapter focuses on the degree of consciousness of three artificial consciousnesses which are significantly different from standard NS-4s, NS-5s, Sonny, and *Westworld's* regular hosts because they can create transpersonal feedback loops. The first artificial consciousnesses to be analyzed is *Westworld's* host Maeve who learns to control other hosts with her mind during the series' second season. The second artificial consciousness with transpersonal feedback loops is V.I.K.I. from *I, Robot*. The third artificial consciousness evaluated in this chapter is the system of the Forge from *Westworld*.

The sixth chapter aims to determine whether the hosts of *Westworld* are L-II conscious, i.e. whether they experience emotions and relationships, or if these phenomena are only acted out for the sake of appearing human.

The seventh chapter intends to answer the question whether the hosts of *Westworld* are L-III conscious. If they are not L-III conscious by the beginning of *Westworld*, the chapter investigates whether, and how, they become L-III conscious during the series.

The eight chapter applies the question raised in the seventh chapter to *I, Robot*: how does a fully conscious artificial being emerge.

1. The Fictional Realities of *I, Robot* and *Westworld*

Although the film *I, Robot*,¹ released in 2004 and directed by Alex Proyas, shares its name with the well-known Isaac Asimov fixup novel (a term which “describe[s] a book made up of previously published stories fitted together”²), the screenplay was not written by Asimov nor was based on the book *I, Robot* (first published in 1950), as some incorrectly claim.³ The screenplay writers Jeff Vintar and Akiva Goldsman created a self-contained story set in the Asimovian world. John Scalzi states the story of the film *I, Robot* was “merely ‘suggested’ by Isaac Asimov’s work.”⁴ After one has watched the film, however, Scalzi’s statement that film’s “script was not based on Asimov’s stories at all”⁵ can seem untrue as the film obviously includes a number of Asimovian elements. Six years after the publication of *The Rough Guide to Science Fiction Movies*, Donald Palumbo exhaustively demonstrates to what great extent Asimov’s works actually influenced the film, rendering Scalzi’s statement unequivocally incorrect:

[N]early every concept in the film and many of its specific elements of plot and characterization, although innovatively recombined, are likewise taken from stories in *I, Robot*, primarily, or from some coetaneous or subsequent Asimov story or novel whose frequently reiterated motifs are, nonetheless, also articulated first in *I, Robot*. In addition to the Three Laws themselves, these include the lying robot, Asimov’s pervasive prejudice motif, his robotic guardian motif, his oft-used plot device of the locked-room murder mystery, the killer-robot phenomenon, the dreaming robot, the “Zeroth Law,” and the notion that robots may usurp human initiative.⁶

It is the innovative recombination which might have confused cinemagoers who could have been expecting to watch a faithful adaptation of Asimov’s novel. Palumbo lists some of the reviews which were negative due to unfulfilled expectations and dismisses the “far too extreme”⁷ ones which claim that *I, Robot* “doesn’t know its roots”⁸ or that the film is “barely

¹ *I, Robot*, directed by Alex Proyas (Twentieth Century Fox, 2004), <https://itunes.apple.com/us/movie/i-robot/id271873831>, video 1:45:17.

² John Clute and David Langford, “Fixup,” *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified August 23, 2019, <http://www.sf-encyclopedia.com/entry/fixup>.

³ Sean Brayton, “The Post-White Imaginary in Alex Proyas’s ‘I, Robot’,” *Science Fiction Studies* 35, no. 1 (2008): 72, published by: SF-TH Inc, <https://www.jstor.org/stable/25475107>.

⁴ John Scalzi, *The Rough Guide to Science Fiction Movies* (London: Rough Guides, 2005), 17.

⁵ Scalzi, *Science Fiction Movies*, 17.

⁶ Donald Palumbo, “Alex Proyas’s ‘I, Robot’: Much More Faithful to Asimov Than You Think,” *Journal of the Fantastic in the Arts* 22, no. 1 (2011): 61, published by International Association for the Fantastic in the Arts, <https://www.jstor.org/stable/24352427>.

⁷ Palumbo, “More Faithful Than You Think,” 60.

⁸ Joe Lozito, “I, Robot Review: Much Ado a ‘Bot Nothing,” *Big Picture Big Sound*, published April 29, 2005, https://www.bigpicturebigsound.com/article_191.shtml.

related to the landmark opus.”⁹ Put plainly, the film adaptation “import[s] [...] motifs and concepts from the original author’s entire corpus [an ‘extensive oeuvre (greater than 200 works)’¹⁰], [...] rather than [being] restricted merely to translating only from the single work from which the adaptation derives its title.”¹¹

Proyas himself says (and Palumbo agrees)¹² that the film’s foundations lie upon the history of robots in literature, films and mostly Asimov’s legacy.¹³ At the beginning of the film, Goldsman and Proyas clearly establish that robots “are servants [and] that they are common.”¹⁴ The film depicts the streets of 2035 Chicago, which are full of people as well as robots.¹⁵ The creators of the film “paint a picture of a world that functions,”¹⁶ they clearly communicate to the audience that “technology works and that [humans] can trust technology.”¹⁷ This setting is typically Asimovian, as it is predicated upon Asimov’s “trope of [harmless] robot workers.”¹⁸ The robots do what could in most societies be considered low-paying or low-status jobs – delivering FedEx packages,¹⁹ walking people’s dogs, working as garbage men (see appendix A),²⁰ going shopping for their owners²¹ – but also bartending,²² and being personal assistants²³ who can fetch one’s forgotten asthma inhaler²⁴ and help in the kitchen.²⁵ During the events of the film, thanks to the launch of the newest robot model, the number of robots is so high that there is “one robot to every five humans.”²⁶ (It is never said if this figure applies to the USA or to the whole world.) The manufacturer of the robots is U.S. Robotics or USR. The robots which one can see commonly existing among humans are the NS-4s²⁷ – the abbreviation NS stands

⁹ “I, Robot: Review,” *Film4*, web January 2010, Film4.com quoted in Donald Palumbo, “Alex Proyas’s ‘I, Robot’: Much More Faithful to Asimov Than You Think,” *Journal of the Fantastic in the Arts* 22, no. 1 (2011): 60, published by International Association for the Fantastic in the Arts, <https://www.jstor.org/stable/24352427>.

¹⁰ Timothy Peters, “Allusions to theology: I, Robot, universalism and the limits of the law,” *Media and Art Law Review* 13, no. 1 (2008): 78–79.

¹¹ Palumbo, “More Faithful Than You Think,” 60.

¹² Palumbo, “More Faithful Than You Think,” 60.

¹³ Alex Proyas and Akiva Goldsman, “Commentary by Director Alex Proyas And Screenwriter Akiva Goldsman,” *I, Robot* DVD (Twentieth Century Fox, 2004), video 00:14:52–00:15:53.

¹⁴ Proyas and Goldsman, “Commentary,” video 00:06:04–00:06:16.

¹⁵ *I, Robot*, video 00:03:18–00:05:05, 00:06:23–00:07:57, 00:21:35–00:22:09.

¹⁶ Proyas and Goldsman, “Commentary,” video 00:06:16–00:06:39.

¹⁷ Proyas and Goldsman, “Commentary,” video 00:06:16–00:06:39.

¹⁸ David Seed, *Science Fiction: A Very Short Introduction* (Oxford: Oxford University Press, 2011), 61.

¹⁹ *I, Robot*, video 00:03:18–00:03:26.

²⁰ *I, Robot*, video 00:03:28–00:04:04.

²¹ *I, Robot*, video 00:05:04.

²² *I, Robot*, video 00:33:44.

²³ *I, Robot*, video 00:42:58.

²⁴ *I, Robot*, video 00:06:30–00:07:20.

²⁵ *I, Robot*, video 00:47:53–00:48:25.

²⁶ *I, Robot*, video 00:16:13.

²⁷ *I, Robot*, video 00:03:18–00:05:05, 00:06:23–00:07:57, 00:21:35–00:22:09.

for Nestor Class. The new NS-5 model is launched almost halfway into the film.²⁸ Asimov's robot workers are by design incapable of harming humans. They are governed by Asimov's famous Three Laws of Robotics, which are "hardwired into every robot."²⁹ How such technology works remains a mystery but is surely one of Asimov's most important means to "combat technophobia"³⁰ and what he called the "Frankenstein complex."³¹ As Brian Stableford states in his encyclopedia, Asimov claims in the preface of *The Rest of the Robots* (1964) that:

[A]ll his stories in his robot series [...] were intended to challenge the careless assumption that any new technology was bound to run amok and threaten the destruction of its creators.³²

The film initially stays true to Asimov's "challenge" – it opens with his famous Three Laws:

Law I.

A robot may not injure a human being or, through inaction, allow a human being to come to harm.

Law II.

A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.

Law III.

A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.³³

However, with the apparent suicide of USR's co-founder Dr. Alfred Lanning³⁴ and a unique robot which does not obey human commands,³⁵ it begins to be increasingly apparent to an attentive viewer that the state of "functioning future"³⁶ in which "technology works and [humans] can trust technology"³⁷ is about to be challenged. By some of the film's characters, the robot in question is believed to be simply "defective,"³⁸ but it soon becomes evident that its

²⁸ *I, Robot*, video 00:46:51–00:47:33.

²⁹ *I, Robot*, video 00:20:06.

³⁰ Seed, *Science Fiction*, 61.

³¹ Seed, *Science Fiction*, 61.

³² Brian Stableford, *Science Fact and Science Fiction: An Encyclopedia* (New York and London: Routledge, 2006), 193.

³³ *I, Robot*, video 00:01:03–00:01:37.

³⁴ *I, Robot*, video 00:10:20.

³⁵ *I, Robot*, video 00:20:28–00:21:35, 00:24:32–00:26:50.

³⁶ Proyas and Goldsman, "Commentary," video 00:06:16–00:06:39.

³⁷ Proyas and Goldsman, "Commentary," video 00:06:16–00:06:39.

³⁸ *I, Robot*, video 00:43:10–00:44:44.

nature is complicated. It claims to be named Sonny,³⁹ refers to its designer as its “father,”⁴⁰ claims to sleep and having had dreams.⁴¹ It appears to have emotions too.⁴² As cited prior, Palumbo discovers that “nearly every concept in the film”⁴³ is taken “from [...] some Asimov story or novel.”⁴⁴ One single robot, however, which is capable of several Asimovian robotic irregularities such as lying, dreaming, choosing not to obey the Three Laws, and even feeling emotions could be considered what Proyas calls the “new direction,”⁴⁵ something which is built upon Asimov’s legacy.⁴⁶

Westworld is an HBO TV series created for television by Jonathan Nolan and Lisa Joy. It was very loosely inspired by the 1973 film *Westworld* by Michael Crichton and its lesser known spin-off (“a product marketed by its association with a popular television program [or] movie”)⁴⁷ *Futureworld* (1976) by Richard T. Heffron as well as well as “open-world adventure”⁴⁸ video games Red Dead Redemption and the Grand Theft Auto series (which Nolan reportedly “played for research”⁴⁹). The episodes of *Westworld* were directed by various filmmakers. The first episode of the first season aired on October 2nd, 2016, the last on December 4th, 2016. On April 22nd, 2018, the first episode of the second season “Journey into Night” was released and the season was concluded on June 24th, 2018.

Both *I, Robot* and *Westworld* are works very popular with the worldwide audience. It was reported that worldwide box office of *I, Robot* was almost 350 million⁵⁰ and that the first season of *Westworld* “managed to bring in 12 million viewers an episode for the entire season.”⁵¹ There is no doubt the film and the TV series appeal to mass audience. Proyas himself called *I, Robot*

³⁹ *I, Robot*, video 00:28:35–00:30:45.

⁴⁰ *I, Robot*, video 00:28:35–00:30:45.

⁴¹ *I, Robot*, video 00:28:35–00:30:45.

⁴² *I, Robot*, video 00:28:35–00:30:45.

⁴³ Palumbo, “More Faithful Than You Think,” 61.

⁴⁴ Palumbo, “More Faithful Than You Think,” 61.

⁴⁵ Proyas and Goldsman, “Commentary,” video 15:43–15:53.

⁴⁶ Palumbo, “More Faithful Than You Think,” 60.

⁴⁷ Angus Stevenson, Christine A. Lindberg, *New Oxford American Dictionary*, 3rd ed. (Oxford: Oxford University Press, 2010).

⁴⁸ Simone de Rochefort, “Westworld’s creators were inspired by Red Dead Redemption and BioShock,” *Polygon* published October 9, 2016, <https://www.polygon.com/tv/2016/10/9/13221024/westworld-hbo-grand-theft-auto-nycc-2016>.

⁴⁹ Rochefort, “Westworld’s creators inspired.”

⁵⁰ “I, Robot (2004),” *The Numbers: Where Data and the Movie Business Meet*, accessed January 25, 2020, <https://www.the-numbers.com/movie/I-Robot#tab=summary>.

⁵¹ Julia Alexander, “Westworld was one of HBO’s biggest shows, helping HBO reach \$1.5 billion in revenue: HBO Now grows to more than two million subscribers,” *Polygon* published February 8, 2017, <https://www.polygon.com/2017/2/8/14546800/westworld-hbo-now-streaming>.

an action,⁵² “detective”⁵³ and “visual-effects movie,”⁵⁴ but also a film with “a complexity that’s inherent”⁵⁵ and which “makes you ask questions,”⁵⁶ especially the ones about robot freedom and free will,⁵⁷ emotion,⁵⁸ empathy⁵⁹ and humanity.⁶⁰ Before the release of the film, its creators were wondering whether they were not “making it too complicated for mass audience,”⁶¹ but eventually included enough scenes and dialogue to make people “ask questions”⁶² as well as enough action scenes to let people enjoy the sole thrill of an action film (the entertainment factor has always been part of the SF genre).⁶³ *Westworld* too features many action scenes as well as thought-provoking dialogues. As a fan-based YouTube channel Wisecrack humorously puts it, *Westworld* is “TV’s most ambitious attempt to layer heavy philosophical dialogue over extended full-frontal nudity.”⁶⁴ It is not only philosophical thought which is layered though, but also meditations on artificial intelligence,⁶⁵ “human nature [...], memory [and] morality.”⁶⁶

While the date and location when *I, Robot* takes place is established at the beginning of the film (2035 Chicago), when *Westworld* approximately takes place was revealed to viewers almost two years after the second season in a season-three teaser. The teaser lists several future events which have taken place in the *Westworld* universe. The event furthest in the future occurs in 2058.⁶⁷ Thanks to the teaser, the showrunners also make plain the fact that *Westworld* is not directly trying to predict anything but unfolds in an alternate reality: “12. 18. 19 [...] Impeachment of the 45th President of the United States.”⁶⁸ However, as the show creators admit themselves, *Westworld* reflects what has been happening in the real world, especially in regards

⁵² Proyas and Goldsman, “Commentary,” video 01:36:26–01:36:45.

⁵³ Proyas and Goldsman, “Commentary,” video 00:02:00–00:04:46.

⁵⁴ Proyas and Goldsman, “Commentary,” video 01:01:22–01:02:13.

⁵⁵ Proyas and Goldsman, “Commentary,” video 01:41:32–01:41:48.

⁵⁶ Proyas and Goldsman, “Commentary,” video 01:41:32–01:41:48.

⁵⁷ Proyas and Goldsman, “Commentary,” video 01:37:58–01:38:32.

⁵⁸ Proyas and Goldsman, “Commentary,” video 01:37:58–01:38:32.

⁵⁹ Proyas and Goldsman, “Commentary,” video 00:36:35–00:37:14, 01:36:26–01:36:45.

⁶⁰ Proyas and Goldsman, “Commentary,” video 00:36:35–00:37:14, 01:38:32–01:38:53.

⁶¹ Proyas and Goldsman, “Commentary,” video 01:39:54–01:39:59.

⁶² Proyas and Goldsman, “Commentary,” video 01:41:32–01:41:48.

⁶³ Gary Westfahl, “The Popular Tradition of Science Fiction Criticism, 1926–1980,” *Science Fiction Studies* 26, no. 2, A History of Science Fiction Criticism (July 1999): 189, published by SF–TH Inc, <https://www.jstor.org/stable/4240783>.

⁶⁴ Wisecrack, “The Philosophy of Westworld – Wisecrack Edition,” posted February 23, 2017, YouTube video, 17:18, <https://youtu.be/lj2Q8yXx7vY>, video 00:06–00:16.

⁶⁵ Jonathan Nolan and Lisa Joy, “Westworld Season 2 Finale: Jonathan Nolan and Lisa Joy Q&A | BFI,” BFI, posted June 26, 2018, accessed December 18, 2019, YouTube video, 31:21, <https://www.youtube.com/watch?v=rE7NaMxWnaM&t=6s>, video 26:19–28:19.

⁶⁶ Nolan and Joy, “Westworld Season 2 Finale,” video 26:19–28:19.

⁶⁷ HBO, “Westworld | Season 3 – Date Announce | 2020 (HBO),” posted January 12, 2020, YouTube video, 01:30, <https://youtu.be/aeEn609nkRs>, video 01:00.

⁶⁸ HBO, “Date Announce,” video 00:10.

to the rapid development of artificial consciousness – the co-creator Jonathan Nolan believes that humans might only: “[have] got a few years left in which [they] could speculate before AI shows up and tells [them] to stop writing about it.”⁶⁹

The TV series shares its name with its first park named Westworld which is presumably an artificially-built island (judging by the management’s ability to terraform it)⁷⁰ possibly somewhere off mainland China.⁷¹ Everything in the park – from the artificially-controlled climate⁷² to every line the hosts utter – was created to simulate a Wild West experience in which the guests can do anything they like. Wealthy humans from the *Westworld* universe pay between \$442 thousand to \$1.4 million a week to visit one of the Delos Destinations parks.⁷³ The characters in the series call them guests (in contrast to the man-made hosts [who are referred to as robots only five times in the first two seasons of *Westworld*]⁷⁴). The hosts and the staff of the parks refer to the guests also as the newcomers. Guests visit the parks as a form of holiday – they can see elephants in the Raj, track bandits in Westworld, or indulge themselves with the gore of the Shogunworld. The parks are an ultimate immersive artificial reality. They are like the aforementioned open-world adventure video games except they were built in the real physical world. Unlike in the true physical world, however, a guest cannot be injured in any of the parks (if all systems work and the guests do not fight each other): “You can’t even leave a lasting mark.”⁷⁵ On the other hand, psychological trauma can be caused.⁷⁶

⁶⁹ Jonathan Nolan and Lisa Joy, “Westworld Season 2 Finale: Jonathan Nolan and Lisa Joy Q&A | BFI,” BFI, posted June 26, 2018, accessed December 18, 2019, YouTube video, 31:21, <https://www.youtube.com/watch?v=rE7NaMxWnaM&t=6s>, video 26:19–28:19.

⁷⁰ *Westworld*, season 1, episode 4, “Dissonance Theory,” directed by Vincenzo Natali, aired October 23, 2016, on HBO, <https://hbogo.cz/>, video 00:37:24–00:38:28, 00:41:09–00:46:15; *Westworld*, season 2, episode 1, “Journey into Night,” directed by Richard J. Lewis, aired April 22, 2018, on HBO, <https://hbogo.cz/>, video 00:26:25–00:30:12; *Westworld*, season 2, episode 10, “The Passenger,” directed by Frederick E.O. Toye, aired June 24, 2018, on HBO, <https://hbogo.cz/>, video 00:55:23–00:58:27.

⁷¹ Joanna Robinson, “*Westworld* Premiere Blows Two Major Fan Theories to Smithereens,” *Vanity Fair*, published April 23, 2018, <https://www.vanityfair.com/hollywood/2018/04/westworld-season-2-premiere-ford-dead-where-is-the-island>.

⁷² *Westworld*, season 2, episode 6, “Phase Space,” directed by Tarik Saleh, aired May 27, 2018, on HBO, <https://hbogo.cz/>, video 00:20:24–00:23:43.

⁷³ u/spire88, “The Westworld Experience Costs \$63,143 minimum/day [not \$40,000],” Reddit, October 20, 2016,

https://www.reddit.com/r/westworld/comments/58dx72/the_westworld_experience_costs_63143_minimumday/.

⁷⁴ *Westworld*, season 1, episode 4, “Dissonance Theory,” video 00:46:15–00:47:40; *Westworld*, season 1, episode 6, “The Adversary,” video 00:26:01–00:31:18; *Westworld*, season 2, episode 6, “Phase Space,” video 00:29:16–00:34:56, 00:48:17–00:52:26; *Westworld*, season 2, episode 10, “The Passenger,” video 00:55:23–00:58:27.

⁷⁵ *Westworld*, season 1, episode 8, “Trace Decay,” directed by Stephen Williams, aired November 20, 2016, on HBO, <https://hbogo.cz/>, video 00:48:09–00:49:31.

⁷⁶ *Westworld*, season 1, episode 10, “The Bicameral Mind,” directed by Jonathan Nolan, aired December 4, 2016, on HBO, <https://hbogo.cz/>, video 00:34:07–00:36:11.

The park is divided into sections which range from family-friendly ones to ones full of violence and sex. During the events of season one and until the beginning of season two, when *Westworld* is still operational, the real-life *Westworld* Website (<http://delosdestinations.com>) was operational too and fans could see that there are six Delos parks in total (Delos Destinations, Inc. is the subsidiary of *Westworld*'s fictional company Delos Inc. which owns and runs the parks). Season one takes place in the original park *Westworld* and hints at the existence of another park, which is in season two revealed to be the Shogunworld. The third park, The Raj is introduced to the viewer in the third episode of the second season "Virtù e Fortuna." A trailer for season three of *Westworld*⁷⁷ features a clip from another park, for the time being dubbed "Warworld" by the fans.⁷⁸

Many consider could both *I, Robot* and *Westworld* works of science fiction, but such a categorization would be a great simplification and therefore not sufficient. Furthermore, as it seems, science fiction might not even be safely considered a genre. Seed states that calling "science fiction (SF) a genre causes problems because it does not recognize the hybrid nature of many SF works."⁷⁹ He finds it "more helpful to think of [SF] as a mode or field where different genres and subgenres intersect."⁸⁰ As mentioned, Alex Proyas calls *I, Robot* an action,⁸¹ "detective"⁸² and "visual-effects movie"⁸³ which at the same time raises many interesting questions.⁸⁴ *Westworld* may seem even more of a strange amalgam of a genre. It uniquely combines the Western, the science fiction robot "genre," and dialogue on topics such as free will, immortality, and consciousness. Should one describe *Westworld* to someone who does not know the series in terms of genre, it might sound like a most peculiar kind of medley.

It would therefore seem most useful to think of science fiction as an "embodied thought experiment whereby aspect of our familiar reality are transformed or suspended."⁸⁵ In the case of both *I, Robot* and *Westworld*, the aspect of our reality which is changed is the future setting

⁷⁷ HBO, "Official San Diego Comic-Con Trailer | *Westworld* | Season 3 (2020) | HBO," posted July 20, 2019, YouTube video, 02:51, <https://youtu.be/64CYajemh6E>, video 01:10–01:26.

⁷⁸ "Delos Incorporated," *Westworld* Wiki at [fandom.com](https://westworld.fandom.com/wiki/Delos_Incorporated#Delos_Destinations.2C_Inc), accessed January 5, 2020, https://westworld.fandom.com/wiki/Delos_Incorporated#Delos_Destinations.2C_Inc.

⁷⁹ Seed, *Science Fiction*, 1.

⁸⁰ Seed, *Science Fiction*, 1.

⁸¹ Proyas and Goldsman, "Commentary," video 01:36:26–01:36:45.

⁸² Proyas and Goldsman, "Commentary," video 00:02:00–00:04:46.

⁸³ Proyas and Goldsman, "Commentary," video 01:01:22–01:02:13.

⁸⁴ Proyas and Goldsman, "Commentary," video 01:41:32–01:41:48.

⁸⁵ Seed, *Science Fiction*, 2.

which has seen a great degree of advancements in artificial intelligence and robotics, and a large-scale implementation of such technologies in various aspects of life. Like Seed, others similarly call science fiction the “what if”⁸⁶ “genre” which allows for novel narratives to unfold.

It is also worth mentioning that the fictional technologies featured in *Westworld* and *I, Robot* are never the main focus of the works – as they would perhaps be in the category of hard science fiction⁸⁷ – but merely the means which allow for hypothetical storylines to unfold. Such narratives do explore “hard SF” concepts such as artificial perception, behavior, and consciousness – upon which this thesis focuses – but these are never the only or most important themes neither *I, Robot* nor *Westworld* concern themselves with. A thesis on “the effects of potential discoveries on human individuals and society”⁸⁸ in *I, Robot* and *Westworld* could indeed be written.

⁸⁶ Susan Mandala, *Language in Science Fiction and Fantasy* (Continuum International Publishing Group, 2010), 11–12; Seed, *Science Fiction*, 2; Carol Colatrella, “Science Fiction in the Information Age,” *American Literary History* 11, no. 3 (1999): 558, published by: Oxford University Press, <https://www.jstor.org/stable/490134>.

⁸⁷ Stableford, *Science Fact and Science Fiction*, 226–228.

⁸⁸ Stableford, *Science Fact and Science Fiction*, 226.

2. Consciousness and Artificial Consciousness

To discover whether the robots in *I, Robot* and *Westworld* are conscious or not, one must first define consciousness, explain what it means to be conscious. Proper justice can never be done to such an incredibly complex question in this thesis because consciousness to this day “is one of the greatest remaining mysteries in science and philosophy.”⁸⁹ *Atkinson & Hilgard’s Introduction to Psychology* rightly states that “there is no generally agreed-upon theory”⁹⁰ of consciousness, but “almost as many theories of consciousness as there are individuals who have theorized about the topic.”⁹¹ Great minds have devoted their time to philosophizing about consciousness with René Descartes⁹² and John Locke⁹³ being typically recognized as one of the first influential Western figures. For a long time, consciousness remained only a philosopher’s question and saw very little scientific inquiry. By 1989, Professor of experimental psychology Stuart Sutherland found there still had been “[n]othing worth reading [...] written on [consciousness].”⁹⁴ Thankfully, with a “landmark [...] paper”⁹⁵ by F. C. Crick and C. Koch published only a year later,⁹⁶ “research on the brain basis of conscious experience”⁹⁷ saw a rebirth. Now, specialized academic journals such as the *Neuroscience of Consciousness*, and *Consciousness and Cognition* are published, and conferences are organized by associations such as the International Society for Consciousness Studies, and the Association for the Scientific Study of Consciousness. A notable publication on consciousness is for instance *The Cambridge Handbook of Consciousness*.⁹⁸

Despite the renewed interest, consciousness is by no means fully understood. Definitions can vary significantly depending on the source and the understanding of consciousness keeps evolving. Published in 2009, *Atkinson & Hilgard’s Introduction to Psychology* claims that

⁸⁹ Anil Seth, “The Neuroscience of Consciousness – with Anil Seth,” The Royal Institution, posted February 1, 2017, YouTube video, 1:00:13, <https://youtu.be/xRel1JKOEBI>, video 00:02:05–00:02:11.

⁹⁰ Susan Nolen-Hoeksema, Barbara L. Fredrickson, Geoff R. Loftus and Willem A. Wagenaar, *Atkinson & Hilgard’s Introduction to Psychology*, 15th ed. (Cengage Learning EMEA, 2009), 202.

⁹¹ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, *Introduction to Psychology*, 202.

⁹² Manuel B. Dy Jr., *Philosophy of Man: Selected Readings* (Goodwill Trading Co., 2001), 97.

⁹³ John Locke, “Chapter XXVII.—Of Identity and Diversity,” in *An Essay Concerning Humane Understanding, Volume I. MDCXC, Based on the 2nd Edition, Books I. and II.*, last updated August 23, 2017, <http://www.gutenberg.org/ebooks/10615>.

⁹⁴ Norman Stuart Sutherland, *International Dictionary of Psychology* (New York: Continuum, 1989).

⁹⁵ Seth, “The Neuroscience of Consciousness,” video 00:04:48–00:05:29.

⁹⁶ F. C. Crick and C. Koch, “Towards a Neurobiological Theory of Consciousness,” *Seminars in Neuroscience 2* (1990): 263–275, <https://pdfs.semanticscholar.org/4f76/232af8aaef5d88a4da3052c8ba69b2cbb8e.pdf>.

⁹⁷ Seth, “The Neuroscience of Consciousness,” video 00:04:48–00:05:29.

⁹⁸ Philip David Zelazo, Morris Moscovitch and Evan Thompson, *The Cambridge Handbook of Consciousness* (Cambridge: Cambridge University Press, 2007).

“[m]any textbooks define consciousness as the individual’s current awareness of external and internal stimuli,”⁹⁹ before offering its (newer) definition. Rather than attempting to choose the newest, most comprehensive definition of consciousness from a virtually unlimited selection of papers and publications, this thesis is going to analyze the chosen fictional subjects using something of a framework which can suggest that the being in question is at a certain level of consciousness. The framework is twofold. One perspective from which the robots are analyzed is Michio Kaku’s model of consciousness. The second is Anil Seth’s aspects of consciousness. Michio Kaku does provide a definition of consciousness, it is, however, very broad and can be used only for the rough categorization which he suggests. It is by no means anywhere near a comprehensive definition of consciousness.

The breadth of Kaku’s model, however, is not a disadvantage. One can even say it has been chosen because of it. It also has been chosen for its potential to take into account any feedback loop (a sensation) the analyzed subject experiences and because it is species neutral. Unlike some theories of consciousness which make “consciousness dependent upon language or a linguistically structured system of internal representations,”¹⁰⁰ Kaku’s model can be used to “categorize animals”¹⁰¹ as well as “machines.”¹⁰² Kaku suggests there are four levels of consciousness (should Level 0 be taken into account).

In his publication *The Future of the Mind: The Scientific Quest to Understand, Enhance, and Empower the Mind*, Kaku defines consciousness thusly:

Consciousness is the process of creating a model of the world using multiple feedback loops in various parameters (e.g., in temperature, space, time, and in relation to others), in order to accomplish a goal (e.g., find mates, food, shelter).¹⁰³

Such a definition allows Kaku to “rank consciousness numerically, on the basis of the number and complexity of the feedback loops used to create a model of the world.”¹⁰⁴ The lowest and

⁹⁹ Nolen-Hoeksema et al., *Introduction to Psychology*, 202.

¹⁰⁰ Rupert D. V. Glasgow, *Minimal Selfhood and the Origins of Consciousness* (Würzburg: Würzburg University Press, 2018), 37.

¹⁰¹ Michio Kaku, “Michio Kaku: Feedback loops are creating consciousness | Big Think,” Big Think, posted September 11, 2019, YouTube video, 06:32, <https://youtu.be/UEGx96PMiOo>, video 04:25–04:29.

¹⁰² Kaku, “Feedback loops are creating consciousness,” video 04:25–04:29.

¹⁰³ Michio Kaku, *The Future of the Mind: The Scientific Quest to Understand, Enhance, and Empower the Mind* (United States: Doubleday, 2014), 51, EPUB eBook.

¹⁰⁴ Kaku, *Future of the Mind*, 51.

simplest level of consciousness is a thermostat.¹⁰⁵ Because each feedback loop registers “one unit of consciousness,” a thermostat has a single unit of Level 0 consciousness, that is Level 0:1.¹⁰⁶ “A flower with ten feedback loops (which measure temperature, moisture, sunlight, gravity, etc.), would have a Level 0:10 consciousness.”¹⁰⁷ Kaku continues to describe three more levels of consciousness.

Mobile organisms such as reptiles have according to Kaku Level I consciousness, “which includes a new set of parameters to measure their changing location.”¹⁰⁸ Organisms with Level II consciousness can not only create a model of their surroundings but also a model “with respect to others (i.e., they are social animals with emotions),”¹⁰⁹ and Kaku introduces Level II consciousness because “the number of feedback loops [of social animals when compared to L-I animals] [...] explodes exponentially.”¹¹⁰ The final Level III consciousness includes the ability to “create a model of the world in relation to time, both forward and backward.”¹¹¹ Kaku claims that humans are the only species who have reached Level III consciousness, a species which understands the concept of time.¹¹²

This thesis, of course, deals with artificial consciousness (AC). As with consciousness, research and debate on whether the creation of human-like AC is hypothetically feasible has been gradually increasing (see for instance *The Singularity Is Near*,¹¹³ selected chapters in *The Cambridge Handbook of Consciousness*¹¹⁴ and *Human and Machine Consciousness*¹¹⁵). It has even become the topic of common conversation mainly due to the rise of narrow artificial intelligence which is defined as the:

¹⁰⁵ Kaku, *Future of the Mind*, 51.

¹⁰⁶ Kaku, *Future of the Mind*, 51.

¹⁰⁷ Kaku, *Future of the Mind*, 51.

¹⁰⁸ Kaku, *Future of the Mind*, 52.

¹⁰⁹ Kaku, *Future of the Mind*, 52.

¹¹⁰ Kaku, *Future of the Mind*, 52.

¹¹¹ Kaku, *Future of the Mind*, 51.

¹¹² Kaku, *Future of the Mind*, 53.

¹¹³ Ray Kurzweil, *The Singularity Is Near: When Humans Transcend Biology* (Viking, 2005).

¹¹⁴ Drew McDermott, “Artificial Intelligence and Consciousness,” in *The Cambridge Handbook of Consciousness*, ed. Philip David Zelazo, Morris Moscovitch and Evan Thompson (Cambridge: Cambridge University Press, 2007), 117–150; Ron Sun and Stan Franklin, “Computational Models of Consciousness: A Taxonomy and Some Examples,” in *The Cambridge Handbook of Consciousness*, ed. Philip David Zelazo, Morris Moscovitch and Evan Thompson (Cambridge: Cambridge University Press, 2007), 151–174.

¹¹⁵ David Gamez, *Human and Machine Consciousness* (Cambridge, UK: Open Book Publishers, 2018), <https://doi.org/10.11647/OBP.0107>.

The theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.¹¹⁶

This type of AI, which is nowadays commonly implemented in consumer electronics, is referred to as weak AI or narrow AI because it is focused on performing one specific narrow task. By contrast, strong AI, full AI, or general AI is the hypothetical machine intelligence which is comparable to that of a human. The term AI is often used to simply mean strong AI, which is in turn used synonymously with human-like artificial consciousness. In science fiction works, the terms artificial consciousness is hardly ever used – what is meant by AC is referred to as AI.¹¹⁷ The creators of *Westworld* themselves use the terms interchangeably too.¹¹⁸ Researchers of consciousness, of course, such as aforementioned British professor of Cognitive and Computational Neuroscience Anil Seth distinguish between the two terms, as they denote two distinct phenomena: “Consciousness and intelligence are very different things.”¹¹⁹ Furthermore, intelligence and consciousness might not even be correlated: “My research is telling me that consciousness has less to do with pure intelligence and more to do with our nature as living and breathing organisms.”¹²⁰

Seth’s aspects of consciousness are more anthropocentric but remain relevant because both the NS-robots and the hosts were made in man’s image (in *Westworld* a fact which is even overtly stated),¹²¹ and because the creations are often compared to their creators in the respective works of fiction. Occasionally, the robots shall be compared with their human creators in this thesis as well. Seth’s anthropocentric aspects of consciousness appropriately complement Kaku’s species-neutral model of consciousness.

¹¹⁶ Stevenson and Lindberg, *New Oxford American Dictionary*.

¹¹⁷ David Langford and Peter Nicholls, “AI,” *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified April 15, 2016, <http://www.sf-encyclopedia.com/entry/ai>.

¹¹⁸ Jonathan Nolan and Lisa Joy, “Westworld Season 2 Finale: Jonathan Nolan and Lisa Joy Q&A | BFI,” BFI, posted June 26, 2018, YouTube video, 31:21, <https://www.youtube.com/watch?v=rE7NaMxWnaM&t=6s>.

¹¹⁹ Seth, “Your brain hallucinates reality,” video 02:07–02:20.

¹²⁰ Seth, “Your brain hallucinates reality,” video 01:44–02:20.

¹²¹ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” directed by Michelle MacLaren, aired November 27, 2016, on HBO, <https://hbogo.cz/>, video 00:39:57–00:43:37; *Westworld*, season 2, episode 6, “Phase Space,” directed by Tarik Saleh, aired May 27, 2018, on HBO, <https://hbogo.cz/>, video 00:52:57–00:53:38; *Westworld*, season 2, episode 7, “Les Écorchés,” directed by Nicole Kassell, aired June 3, 2018, on HBO, <https://hbogo.cz/>, video 00:35:45–00:37:15.

Anil Seth claims there are “many aspects to our experience of being a conscious self,”¹²² but provides five (possibly main) aspects of consciousness.¹²³ “There is the bodily self [i],”¹²⁴ which is “the experience of having a body and of being a body.”¹²⁵ “There’s the perspectival self [ii], the experience of seeing the world, or experiencing the world from a particular first person perspective,”¹²⁶ which Seth also describes as the “experiences of the world around us, full of sights, sounds and smells, [...] [the] multisensory, panoramic, 3D, fully immersive inner movie.”¹²⁷ “There is the volitional self [iii], the experience of intending to do things, and of making things happen in the world of agency,”¹²⁸ ideas of which are “often associated with concepts of will.”¹²⁹ There are also “experiences of being a continuous and distinctive person over time [iv], built from a rich set of memories and social interactions [v].”¹³⁰ The “narrative self [iv]”¹³¹ translates to the “continuity of self-experience from hour to hour, from day to day, from month to month, and from year to year, that you associate a name with, and a particular set of autobiographical memories.”¹³² Finally, “there’s a social self [v],”¹³³ because the way a person experiences being themselves is partly dependent on the way they perceive others perceiving them.¹³⁴

In fiction, the phenomenon of an artificial being dates as far back as to classical antiquity.¹³⁵ Mary Shelley’s 1818 *Frankenstein*, a landmark piece of literature which has remained relevant for centuries, is also paid homage both in *I, Robot*¹³⁶ and *Westworld*.¹³⁷ Brian Aldiss also argues that *Frankenstein* is the first true science fiction story because Viktor Frankenstein “turns to

¹²² Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹²³ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22; Anil Seth, “Your brain hallucinates your conscious reality | Anil Seth,” TED, posted July 18, 2017, YouTube video, 17:00, <https://youtu.be/lyu7v7nWzfo>, video 09:18–09:43.

¹²⁴ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹²⁵ Seth, “Your brain hallucinates reality,” video 09:18–09:43.

¹²⁶ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹²⁷ Seth, “Your brain hallucinates reality,” video 09:18–09:43.

¹²⁸ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹²⁹ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹³⁰ Seth, “Your brain hallucinates reality,” video 09:18–09:43.

¹³¹ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹³² Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹³³ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹³⁴ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

¹³⁵ Pamela McCorduck, *Machines Who Think: A Personal Inquiry into the History and Prospects of Artificial Intelligence*, 2nd ed. (Massachusetts: A K Peter, 2004) 4–5.

¹³⁶ *I, Robot*, video 00:33:34–00:34:19.

¹³⁷ *Westworld*, season 1, episode 8, “Trace Decay,” directed by Stephen Williams, aired November 20, 2016, on HBO, <https://hbogo.cz/>, video 00:01:54–00:03:52.

modern experiments in the laboratory”¹³⁸ to achieve his goal of artificially creating a being. Because *I, Robot* is a film and *Westworld* a TV series, it might be relevant to mention 1927’s *Metropolis* directed by Fritz Lang which features the Maschinenmensch (German for literally “machine-person” or simply “robot”) for the first time in a film. The two-and-a-half-hour film is also significant for being the first full-length SF film¹³⁹ (with Méliès’s fourteen-minute 1902 *A Trip to the Moon* being the first SF film ever).¹⁴⁰ Under the entry “AI,”¹⁴¹ *The Encyclopedia of Science Fiction* lists both works of literature and film which feature a strong AI (or AC) and claims that:

Early sf visions of AI tended to assume that the difficulties [of creating a strong AI or human-like AC] were relatively minor, and that intelligence would naturally follow once the engineering problems of constructing a [r]obot or [c]omputer were solved.¹⁴²

Other works spanning from the 50s to early 2000s believed AI would emerge with “sufficiently complex data-processing systems.”¹⁴³ Other SF works – the majority in fact – do not “go into theoretical detail about the creation of AI.”¹⁴⁴ Because consciousness and artificial consciousness remain a mystery to this date, it is, in fact, quite understandable.

I, Robot, unfortunately, does not go into theoretical detail about the creation of an AC either (the fact that it is a two-hour film intended for the mass audience being the main reason).¹⁴⁵ The film limits itself to a monologue narrated by the founder of robotics Dr. Lanning about something he calls the ghost in the machine. The screenplay co-writer Akiva Goldsman himself admits the “reprise”¹⁴⁶ does not say “anything that new,”¹⁴⁷ but asks “the questions everybody’s been asking since anybody’s been writing about artificial intelligence.”¹⁴⁸

¹³⁸ Brian W. Aldiss, *The Detached Retina: Science Fiction and Fantasy* (New York: Syracuse University Press, 1995), 78.

¹³⁹ Scalzi, *Science Fiction Movies*, 104–105.

¹⁴⁰ Scalzi, *Science Fiction Movies*, 143–145.

¹⁴¹ Langford and Nicholls, “AI.”

¹⁴² Langford and Nicholls, “AI.”

¹⁴³ Langford and Nicholls, “AI.”

¹⁴⁴ Langford and Nicholls, “AI.”

¹⁴⁵ Proyas and Goldsman, “Commentary,” video 01:39:54–01:39:59.

¹⁴⁶ Proyas and Goldsman, “Commentary,” video 01:12:45–01:13:48.

¹⁴⁷ Proyas and Goldsman, “Commentary,” video 01:12:45–01:13:48.

¹⁴⁸ Proyas and Goldsman, “Commentary,” video 01:12:45–01:13:48.

In *Westworld*, the questions relating to the emergence of an AC and the answers to them are scattered throughout the series and the viewer must piece the clues together like an audiovisual puzzle (the series has indeed been called “puzzle TV”¹⁴⁹). Despite the cryptic, non-linear storytelling, *Westworld* – unlike *I, Robot* – does ask how a full AC can emerge and does provide the answers. With both seasons of *Westworld* being around twenty hours long, the series can afford to explore themes such as this in more detail than any film.

There were two creators of the hosts in *Westworld*. Unlike Dr. Ford, Arnold Weber, who is deceased during the current storyline of season one and two, “wanted to create consciousness”¹⁵⁰ from the very beginning. He, however, did not know what consciousness was, and could not say what makes humans different from hosts.¹⁵¹ Be it *Westworld*’s homage to the complexity of consciousness and to the fact that animal (and future machine) consciousness is overlooked by humans that this “very question [...] consumed Arnold, filled him with guilt, [and] eventually drove him mad.”¹⁵² Dr. Ford, on the other hand, has always seen the simple truth:

The answer always seemed obvious to me. There is no threshold that makes us greater than the sum of our parts, no inflection point at which we become fully alive. We can’t define consciousness because consciousness does not exist. Humans fancy there’s something special about the way we perceive the world, and yet we live in loops as tight and as closed as the hosts do, seldom questioning our choices, content, for the most part, to be told what to do next. No, my friend [talking to a host], you’re not missing anything at all.¹⁵³

When Dr. Ford says that: “There is no threshold that makes us greater than the sum of our parts, no inflection point at which we become fully alive,”¹⁵⁴ he is very likely implying that he believes that consciousness exists on a scale, perhaps similarly to Kaku’s levels of consciousness.

¹⁴⁹ Jonathan Nolan and Lisa Joy, “Westworld Season 2 Finale: Jonathan Nolan and Lisa Joy Q&A | BFI,” BFI, posted June 26, 2018, YouTube video, 31:21, <https://youtu.be/rE7NaMxWnaM>, video 01:37–01:45.

¹⁵⁰ *Westworld*, season 1, episode 3, “The Stray,” directed by Neil Marshall, aired October 16, 2016, on HBO, <https://hbogo.cz/>, video 00:35:38–00:37:36.

¹⁵¹ *Westworld*, season 1, episode 8, “Trace Decay,” directed by Stephen Williams, aired November 20, 2016, on HBO, <https://hbogo.cz/>, video 00:33:05–00:35:17.

¹⁵² *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

¹⁵³ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

¹⁵⁴ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

The sentence: “We can’t define consciousness because consciousness does not exist,”¹⁵⁵ can mean several things. “We can’t define consciousness...”¹⁵⁶ can simply mean that consciousness is hard to define with the clause, “...because consciousness does not exist,”¹⁵⁷ being the reason why. To fully understand what Ford means, his words cannot be interpreted only literally. He knows, as well as other characters in both *Westworld* and *I, Robot*, that consciousness does exist. No one disputes the existence of consciousness (at least in humans) in the real world either. What researchers (and works of fiction) currently cannot agree upon is “only” a definition of consciousness. In one sense, consciousness really “does not exist”¹⁵⁸ because it is not a single “thing” which can either be present or absent. Consciousness is most likely generated by an activation of neurons (or fictional artificial recreations or simulations of them) and is most likely a dynamic stream of information within the wetware (“human brain cells or thought processes regarded as analogous to, or in contrast with, computer systems”)¹⁵⁹ of the conscious being rather than a state. This theoretical nature of consciousness is congruent with Kaku’s definition which states that consciousness is constituted from a multitude of feedback loops (which emerge in the brain [or other “hardware”] as neural activity).

Thusly interpreted Ford’s sentence (“We can’t define consciousness because consciousness does not exist.”¹⁶⁰) makes sense because for one to be able to say that something is conscious but something else is not would simply require establishing an arbitrary threshold of number of feedback loops. A number of feedback loops below the threshold could then be used to say that a being is not conscious. Conversely, a number of feedback loops above the threshold could be used to proclaim that the being in question is conscious. Arriving at this conclusion based on one sentence by Ford leaves one essentially back at the categorization proposed by Kaku.

¹⁵⁵ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

¹⁵⁶ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

¹⁵⁷ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

¹⁵⁸ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

¹⁵⁹ Stevenson and Lindberg, *New Oxford American Dictionary*.

¹⁶⁰ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

Ford's next statement about humans who according to him mistakenly "fancy there's something special about the way [they] perceive the world..."¹⁶¹ is a nod to Safina,¹⁶² Seth,¹⁶³ Frey¹⁶⁴ and Ryder¹⁶⁵ who too believe that humans, in their arrogance and ignorance towards other beings, believe they are the only conscious species. This further cements the argument being made here, which is that Ford – much like Kaku, Safina and even Seth – believes that consciousness exists on a scale. There being an agreement between Ford (a near-omniscient character in *Westworld* whose most important role in *Westworld* is to explain the series' stances on complex phenomena like consciousness) and Kaku is also an indication that analyzing *Westworld's* and *I, Robot's* ACs from Kaku's perspective may be suitable and the findings might therefore be valid.

Artificial consciousness is in fiction usually housed in a body of hardware – either organic or mechanical. *The Encyclopedia of Science Fiction* states that although Čapek's robots were of "organic origin,"¹⁶⁶ the term robot is now "usually applied to [m]achines, whether or not their appearance is humanoid."¹⁶⁷ The *New Oxford American Dictionary* also defines the term robot in the context of science fiction as a "a machine resembling a human being and able to replicate certain human movements and functions automatically."¹⁶⁸ Despite several mentioned exceptions in the entries "Robots"¹⁶⁹ and "Androids,"¹⁷⁰ and admitting that "common usage [of the word robot] overlaps to some extent with that of [a]ndroids,"¹⁷¹ the encyclopedia attempts to be able to distinguish between the two terms, and concludes that the word "'android' almost always denotes an artificial human of organic substance in contemporary sf usage."¹⁷² Consistently with this definition, the encyclopedia calls the hosts of *Westworld* androids in spite

¹⁶¹ *Westworld*, season 1, episode 8, "Trace Decay," video 00:33:05–00:35:17.

¹⁶² Carl Safina, "What animals are thinking and feeling, and why it should matter | Carl Safina | TEDxMidAtlantic," TEDx Talks, posted July 13, 2016, YouTube video, 16:27, https://youtu.be/-wkdH_wluhw, video 09:29–13:37, 14:18–14:47.

¹⁶³ Anil Seth, "The Neuroscience of Consciousness – with Anil Seth," The Royal Institution, posted February 1, 2017, YouTube video, 1:00:13, <https://youtu.be/xRel1JKOEbI>, video 00:03:59–00:04:09, 00:55:03–00:58:39.

¹⁶⁴ Andrew Linzey, "Sentientism," in *Encyclopedia of Animal Rights and Animal Welfare*, ed. Marc Bekoff (Westport, Connecticut: Greenwood Press, 1998), 311.

¹⁶⁵ Richard D. Ryder, "Souls and Sentientism," *Between the Species* 7, no. 1 (1991): 1–5, accessed January 13, 2020, <https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1537&context=bts>.

¹⁶⁶ Brian M. Stableford, David Langford and John Clute, "Robots," *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified October 21, 2018, <http://www.sf-encyclopedia.com/entry/robots>.

¹⁶⁷ Stableford, Langford and Clute, "Robots."

¹⁶⁸ Stevenson and Lindberg, *New Oxford American Dictionary*.

¹⁶⁹ Stableford, Langford and Clute, "Robots."

¹⁷⁰ Brian M. Stableford and John Clute, "Androids," *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified April 11, 2019, <http://www.sf-encyclopedia.com/entry/androids>.

¹⁷¹ Stableford, Langford and Clute, "Robots."

¹⁷² Stableford and Clute, "Androids."

of the fact that the term is not once uttered in the first two seasons of the series (unlike the term “robot” which is sometimes used).¹⁷³ On account of the several exceptions in the encyclopedia and disuse of the term android in *Westworld* and *I, Robot*, as well as for how interwoven the mechanical hardware and organic tissue in *Westworld* is, and the fact that humans and animals could ultimately be considered extremely complex biochemical¹⁷⁴ machines,¹⁷⁵ the distinction between robots and androids is deemed irrelevant for this thesis. Should the term android be used in this thesis, it plainly means “a robot with a human appearance.”¹⁷⁶ Furthermore, this thesis aims to discover to what extent could the robots and hosts be conscious, and it does not do so by examining the composition of the subjects. The fact that the physical composition of a being has no influence on its consciousness is a stance taken by sentientism. Sentientism (or “consciousism”¹⁷⁷) does not differentiate beings on the basis of their morphology. (One of the earliest philosophers who concerned themselves with sentientism in 1979 was Raymond Frey.)¹⁷⁸

Sentience is a term synonymous with consciousness, as is the adjective sentient with the term conscious. Both pairs of words can therefore be used in this thesis interchangeably (as they also are in *Westworld*).¹⁷⁹ From a dictionary definition of the term sentient (being able to sense, “perceive or feel things”¹⁸⁰), one can see that it is in fact very similar in meaning (if not the same) to the meaning of being conscious (being “aware and responding”¹⁸¹).

¹⁷³ *Westworld*, season 1, episode 4, “Dissonance Theory,” video 00:46:15–00:47:40; *Westworld*, season 1, episode 6, “The Adversary,” video 00:26:01–00:31:18; *Westworld*, season 2, episode 6, “Phase Space,” video 00:29:16–00:34:56, 00:48:17–00:52:26; *Westworld*, season 2, episode 10, “The Passenger,” video 00:55:23–00:58:27.

¹⁷⁴ Stevenson and Lindberg, *New Oxford American Dictionary*, endnote: the branch of science concerned with the chemical and physicochemical processes that occur within living organisms.

¹⁷⁵ Drew Berry, “Drew Berry: Animations of unseeable biology,” TED, posted January 12, 2012, YouTube video, 09:08, <https://youtu.be/WFCvkkDSfIU>, video 03:44–03:51.

¹⁷⁶ Stevenson and Lindberg, *New Oxford American Dictionary*.

¹⁷⁷ Ryder, “Souls and Sentientism,” 4.

¹⁷⁸ Linzey, “Sentientism,” 311.

¹⁷⁹ *Westworld*, season 1, episode 1, “The Original,” directed by Jonathan Nolan, aired October 2, 2016, on HBO, <https://hbogo.cz/>, video 00:39:32–00:41:15; *Westworld*, season 1, episode 3, “The Stray,” directed by Neil Marshall, aired October 16, 2016, on HBO, <https://hbogo.cz/>, video 00:44:56–00:48:38; *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:51:12–00:53:52.

¹⁸⁰ Stevenson and Lindberg, *New Oxford American Dictionary*.

¹⁸¹ Stevenson and Lindberg, *New Oxford American Dictionary*.

3. Consciousness of the NS-4s and NS-5s

First, the robots in *I, Robot* will be analyzed. There is no doubt that both the NS-4s and NS-5s are Level I conscious. As mentioned in the first chapter, the robots work in various jobs which require them to not only sense (“sensations are fundamental, raw experiences associated with stimuli”)¹⁸² but also perceive the world around them, i.e. create an inner model of their surroundings which is meaningful (“perception involves the integration and meaningful interpretation of [...] raw sensory experiences”).¹⁸³ The sensory processes which the robots possess are vision, audition, and pressure (one of the “three distinct skin senses”¹⁸⁴ which were traditionally thought to be the single sense of touch).¹⁸⁵ There is no indication in *I, Robot* that the robots sense temperature, or possess the capacity of smelling and tasting (which is understandable as they do not eat),¹⁸⁶ and there are at least three instances which show that the robots do not feel pain.¹⁸⁷

To extensively substantiate the robots’ sense of vision and audition is unnecessary because it is apparent from the film that the robots use their pair of cameras to recognize objects such as trashcans,¹⁸⁸ bags,¹⁸⁹ vegetables,¹⁹⁰ knives,¹⁹¹ purses,¹⁹² beings such as dogs¹⁹³ and people,¹⁹⁴ and even a multitude of components which constitute something as complex as a road accident.¹⁹⁵ That the robots are not deaf and understand humans is proved, for instance, every time they perform a command: (1) “Robots, you will not move. Confirm command,”¹⁹⁶ to which the robots reply, “Command confirmed.” (2) “NS-5s, wait outside,”¹⁹⁷ – two NS-5s understand Calvin and leave the room.

¹⁸² Susan Nolen-Hoeksema, Barbara L. Fredrickson, Geoff R. Loftus and Willem A. Wagenaar, “Sensory Processes,” in *Atkinson & Hilgard’s Introduction to Psychology*, 15th ed. (Cengage Learning EMEA, 2009), 110.

¹⁸³ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Sensory Processes,” 110.

¹⁸⁴ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Sensory Processes,” 110.

¹⁸⁵ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Sensory Processes,” 110.

¹⁸⁶ *I, Robot*, video 00:28:35–00:30:45.

¹⁸⁷ *I, Robot*, video 00:07:13–00:07:51, 00:21:12–00:21:23, 01:35:02–00:35:41.

¹⁸⁸ *I, Robot*, video 00:03:28–00:04:04.

¹⁸⁹ *I, Robot*, video 00:05:04.

¹⁹⁰ *I, Robot*, video 00:48:15.

¹⁹¹ *I, Robot*, video 00:48:15.

¹⁹² *I, Robot*, video 00:06:32–00:07:17.

¹⁹³ *I, Robot*, video 00:03:28–00:04:04.

¹⁹⁴ *I, Robot*, video 00:03:18–00:03:24, 00:07:17–00:07:51.

¹⁹⁵ *I, Robot*, video 01:05:36–1:06:24.

¹⁹⁶ *I, Robot*, video 00:24:32–00:26:50.

¹⁹⁷ *I, Robot*, video 01:14:40–01:14:53.

In order to grasp things without crushing them or conversely hit things to break them with enough force, the robots have to possess the sense of pressure. Robots can be seen holding a purse,¹⁹⁸ handling glass beer bottles,¹⁹⁹ and a glass syringe²⁰⁰ without accidentally crushing them. Using enough force, an NS-4 is able to shatter the window of a car with its fist.²⁰¹

The robots are definitely capable of registering damage to their hardware – inability to do so would render the Third Law pointless. When a robot is damaged, they do not, however, show any signs of suffering or pain. Sonny is shot in his leg and lands from the 10th floor but shows no signs of pain.²⁰² He puts his hand into the security force field which starts melting the hand but he does not seem to suffer either.²⁰³ An NS-4 which Spooner knocks to the ground because he thinks it stole a purse simply gets up and apologizes: “I’m sorry for this misunderstanding, officer.”²⁰⁴ Of course, it is possible that the robots feel pain but do not express it. The film itself does not address this question (just as it does not question whether Sonny’s emotions are real; his emotions are described in detail in the next chapter). The answer to the question whether the viewer can accept the robots’ lack of expression of pain as a proof that the robots lack the ability to feel pain is affirmative if one considers this query analogous to the question whether Sonny feels the emotions he expresses and is simply not performing them for the humans around him. This analogy is being made here because Proyas and Goldsman do not talk about the robots’ ability to feel pain in their commentary, but state that Sonny feels the emotions he expresses.²⁰⁵ The creators of the film tell viewers of *I, Robot* that they can take Sonny’s emotions at face value. The film itself never questions Sonny’s genuineness of emotions (unlike *Westworld* which does address this question),²⁰⁶ making the answer straightforward for a viewer who does not watch commentary and does not question the genuineness of robot emotion and pain. The viewer can see Sonny behaving emotionally, he therefore has emotions; the viewer can see that the NS robots, including Sonny, do not exhibit any signs of pain, they therefore do not feel it.

¹⁹⁸ *I, Robot*, video 00:06:32–00:07:17.

¹⁹⁹ *I, Robot*, video 00:33:34–00:34:19.

²⁰⁰ *I, Robot*, video 01:35:02–00:35:41.

²⁰¹ *I, Robot*, video 01:05:41.

²⁰² *I, Robot*, video 00:21:12–00:21:23.

²⁰³ *I, Robot*, video 01:35:02–00:35:41.

²⁰⁴ *I, Robot*, video 00:07:13–00:07:51.

²⁰⁵ Proyas and Goldsman, “Commentary,” video 00:20:33–00:21:26, 00:26:43–00:27:22, 00:28:20–00:29:35, 00:58:54–00:59:20, 01:16:51–01:17:13, 01:37:58–01:38:53.

²⁰⁶ *Westworld*, season 1, episode 8, “Trace Decay,” directed by Stephen Williams, aired November 20, 2016, on HBO, <https://hbogo.cz/>, video 00:33:05–00:35:17.

To fully qualify as Level I organisms, the robots must be mobile with a “set of parameters to measure their changing location.”²⁰⁷ The robots are mobile. They can walk,²⁰⁸ run,²⁰⁹ jump,²¹⁰ fight,²¹¹ and even climb skyscrapers.²¹² The robots’ movements are well coordinated. Their fine motor skills are demonstrated when Sonny draws Spooner an image from his dream using both of his hands simultaneously (while continuing a conversation)²¹³ and when one can see Gigi’s NS-5 cutting vegetables.²¹⁴

The cited examples prove that the NSs are Level I (L-I) conscious and that they also definitely possess Seth’s bodily self and perspectival self (i, ii). They do not possess the volitional self (iii) because they cannot do anything other than what they are told to do – they are limited, or enslaved even, by the Three Laws. Whether they see themselves as “distinctive person[s] over time,”²¹⁵ i.e. possess the narrative self (iv), seems possible, although this aspect of consciousness should – perhaps in the case of the NS-4s and NS-5s – be altered to whether they see themselves as distinctive entities rather than persons, leaving the term person to be used in this thesis to refer to beings who are fully conscious (what it means to be fully conscious in this thesis is defined in the second last paragraph of the next chapter, p. 40). There is no indication that the robots do not remember things, but how the memory of the NS robots works is never mentioned in the film (unlike in *Westworld* where it is explored in detail). The only direct evidence in *I, Robot* of the robots having memory is Sonny’s (who is a modified NS-5 but most likely identical to standard NS-5s in terms of memory) reaction when he meets Spooner and Calvin again and remembers them just as we would expect a human to remember somebody.²¹⁶ The capacity and precision of the NSs’ memory is not known but a viewer can assume that a robot which was, for instance, programmed to be a house servant would remember how its human masters like their tea. What good is a worker if they cannot remember what they are supposed to do? It is therefore possible that the NSs can in some way see themselves as distinctive entities – this is supported by the fact that they possess the bodily self, can distinguish between their bodies and matter other than their bodies.

²⁰⁷ Kaku, *Future of the Mind*, 52.

²⁰⁸ *I, Robot*, video 00:03:41–00:04:19, 00:21:29–00:22:09.

²⁰⁹ *I, Robot*, video 00:06:30–00:07:17, 00:21:23–00:21:27, 01:32:38–01:32:55.

²¹⁰ *I, Robot*, video 01:25:19.

²¹¹ *I, Robot*, video 00:56:36–00:58:06, 01:25:19, 01:32:01–01:32:42.

²¹² *I, Robot*, video 01:35:41–01:35:55.

²¹³ *I, Robot*, video 01:09:00–01:10:00.

²¹⁴ *I, Robot*, video 00:48:15.

²¹⁵ Seth, “Your brain hallucinates reality,” video 09:18–09:43.

²¹⁶ *I, Robot*, video 01:28:00.

There is no indication that the NSs do not understand the concept of time. It is possible that this ability is taken for granted in *I, Robot*. Furthermore, there is no reason for the engineers of the NS-4s and NS-5s to place any obstacles that would inhibit the robots' remembering. Humans in *I, Robot* remain in control of the robots thanks to the Three Laws (which are, to reiterate, "hardwired into every robot"²¹⁷), not thanks to memory-deletion which is the case in *Westworld*. The coding which inhibits hosts of *Westworld* from attacking humans is referred to as "prime directives"²¹⁸ or "core code."²¹⁹ Under normal circumstances, this code can be changed only by senior engineers, but these directives are not hardwired into the hosts and can be changed. As Stubbs puts it: "The only thing stopping the hosts from hacking us to pieces is one line of your code."²²⁰ From the instance when Sonny remembers Calvin and Spooner, and from the fact that having robots with no memory would not be very useful, it can be safely proclaimed that the robots are at least partially L-III conscious because they can "create a model of the world in relation to time [...] backward."²²¹

This naturally leads to another question: Are the NS-4s and NS-5s fully L-III conscious? Can they "create a model of the world in relation to time, both forward and backward[?]"²²² Detective Spooner was in a road accident and through his retelling of the events, it becomes evident that NS-4s (and thus NS-5s too, as they are the newer models) can create inner models of future events. Judging by what the NS-4 was seeing, it calculated that Spooner had a forty-five percent chance of survival while Sarah (another victim of the accident) had eleven²²³ – if a robot can calculate the chance of survival of each victim, it is in other words able to create a model of a possible future. Calvin also implies that the NSs calculate future events all the time to keep humans out of harm's way after she meets Sonny for the first time, sees him disobey and act abnormally.²²⁴ It is important to say that at this point in the film, Calvin think that the

²¹⁷ *I, Robot*, video 00:18:51–00:20:28.

²¹⁸ *Westworld*, season 1, episode 6, "The Adversary," directed by Frederick E.O. Toye, aired November 6, 2016, on HBO, <https://hbogo.cz/>, video 00:49:13; *Westworld*, season 1, episode 9, "The Well-Tempered Clavier," directed by Michelle MacLaren, aired November 27, 2016, on HBO, <https://hbogo.cz/>, video 00:11:47.

²¹⁹ *Westworld*, season 1, episode 8, "Trace Decay," directed by Stephen Williams, aired November 20, 2016, on HBO, <https://hbogo.cz/>, video 00:26:24.

²²⁰ *Westworld*, season 1, episode 3, "The Stray," directed by Neil Marshall, aired October 16, 2016, on HBO, <https://hbogo.cz/>, video 00:12:36–00:13:40.

²²¹ Kaku, *Future of the Mind*, 51.

²²² Kaku, *Future of the Mind*, 51.

²²³ *I, Robot*, video 01:06:24–01:06:52.

²²⁴ *I, Robot*, video 00:20:28–00:21:35.

robot she met was a regular NS-5, not a special robot who can choose not to obey the Three Laws. She tries to explain Sonny's behavior to Spooner:

Try to listen, detective. That robot is not going to harm us. There must have been unknown factors but somehow acting as it did kept us out of harm.²²⁵

To conclude, regular NS-4s and NS-5s are L-III conscious and they therefore might in some sense possess Seth's narrative self (iv).

Finally, the robots are part of the society which they serve, and they could hypothetically register how humans perceive them (the social self [v]). However, there is no mention or indication that the robots pay any attention to how people (or other robots) perceive them. If they did, the NSs would not understand what emotional attitude humans have towards them because they are not L-II conscious (why NS-4s and NS-5s are not L-II conscious is described in the following paragraphs). The fact that the robots do not pay any attention to how they are treated is illustrated especially in the scenes when Spooner interacts with the FedEx NS-4 and Calvin's personal NS-5. In these cases, the robots are utterly unaware of Spooner's mood and hatred towards them.

First though, it is possible for one to argue that the NS-4s and NS-5s are L-II conscious because they follow the Second Law of robotics which states that a robot must obey orders given to it by human beings. That is indeed a L-II feedback loop (one which relates to others), but one, several, dozens, or even as many as a hundred of these feedback loops is not enough to be able to say that the robots are L-II conscious. The reason for implying there could be up to a hundred of these feedback loops can be easily explained – the robots must be aware (create feedback loops) on who gives certain commands. More specifically, what priority is assigned to commands given by certain humans. To illustrate this point, the scene in which an NS-4 runs back to its owner's home to fetch her forgotten asthma inhaler shall now be used.²²⁶ Due to Spooner's paranoia and hatred towards robots, upon seeing a robot running with a woman's purse, he acts as if the robot were a mugger. He shouts at the robot, commanding it to stop, but the NS-4 does not respond. In this case, it is ignoring Spooner's commands simply because stopping would increase the risk of the robot's owner coming to harm – she is experiencing

²²⁵ *I, Robot*, video 00:22:09–00:24:32.

²²⁶ *I, Robot*, video 00:06:30–00:07:51.

shortness of breath, the Second Law must never conflict with the First Law. What if, however, a human ordered their NS-4 to fetch their forgotten pen instead and the robot would be told to stop by Spooner (who is a detective)? Would the robot stop, or would it complete the task given by its owner? What if Spooner was not a detective (a figure in a position of authority) but a human telling robots to stop on a whim? If robots stopped doing whatever they were doing every time a mischievous human told them to stop, they could become completely useless. The programming of the Second Law must therefore be more complex than the film tells its viewers for the robots must have some sense of whose orders are more important and whose are less so.

This ability, however, still does not make the robots L-II conscious, although it shows that consciousness in *I, Robot* exists on a continuum – just as it does in the real world (it is not uncommon for some animals to “possess tiny aspects of different levels of consciousness”²²⁷). For the robots to be L-II conscious, the number of feedback loops would have to exponentially explode,²²⁸ as behaviors such as “forming allies, detecting enemies, serving the alpha male, etc.”²²⁹ are so complex. There is no indication that the NSs communicate with each other, form allies, have friends or enemies, families and other kinds of relationships (unlike the robots of *Westworld* who have as many relationships as humans, making them “exquisitely social species”²³⁰ and definitely L-II conscious in this regard). Moreover, for a being to be L-II conscious, means they have to be able to feel emotions too. The NS-4s and NS-5s are definitely incapable of feeling emotions. Instances and scenes which prove that they lack emotions altogether are provided in the following paragraph.

One instance occurs at the end of the aforementioned incident with the purse. When Spooner knocks the NS-4 to the ground, the robot not only appears to not be experiencing any pain but no emotions either. Contrary to a reaction we would expect from a human in its position, the robot gets up and apologizes: “I’m sorry for this misunderstanding, officer.”²³¹ Another example of the robots not feeling emotions can be found at the beginning of the film. Spooner opens his front door and is addressed by a FedEx NS-4 standing at the doorstep, no more than

²²⁷ Kaku, *Future of the Mind*, 57.

²²⁸ Kaku, *Future of the Mind*, 52.

²²⁹ Kaku, *Future of the Mind*, 52.

²³⁰ Laila Craighero, “Mirror neurons are involved in the experience of empathy,” in *Atkinson & Hilgard’s Introduction to Psychology*, 15th ed., Susan Nolen-Hoeksema, Barbara L. Fredrickson, Geoff R. Loftus and Willem A. Wagenaar (Cengage Learning EMEA, 2009), 62.

²³¹ *I, Robot*, video 00:07:13–00:07:51.

an inch from the door: “Yet another on-time delivery from...”²³² Spooner is startled. He grabs the NS-4’s face, pushes it aside and leaves, remarking: “Get the hell outta my face, canner.”²³³ A human FedEx delivery employee would be angered, shocked, or scared (and might possibly later sue Spooner on the grounds of assault or battery). The NS-4, on the other hand, simply replies: “Have a nice day.”²³⁴ Another example of a robot being emotionless towards Spooner’s impolite behavior is when Spooner rudely asks Calvin’s personal NS-5: “What do you want?”²³⁵ The robot calmly replies: “I detected elevated stress patterns in your voice.”²³⁶ The NS-4s and NS-5s are always calm and speak to humans in a pleasant, nonchalant manner regardless of the circumstances. The absence of emotions can be considered a pragmatic one – the purpose of the NSs’ existence is to do work (as mentioned in the first chapter) that does not require them to experience emotions. In menial or to humans unpleasant jobs, the absence of robot emotion is advantageous to the human society which benefits from the robots’ work. As Spooner says: “...emotions don’t seem like a useful simulation for a robot. I don’t want my toaster or vacuum cleaner appearing emotional.”²³⁷ Having examined the selected scenes, Spooner’s description of robots proves correct: “Robots don’t feel fear. They don’t feel anything. [...] ...they’re cold and emotionless...”²³⁸ To conclude, the NSs completely lack emotions, they are not L-II conscious.

As the NS-4s and NS-5s are incapable of emotions and having a mood, they are also incapable of empathy which is “the mind’s ability to match the mood of your companions.”²³⁹ In humans and animals, it is the so-called mirror neurons that are involved in inducing “an emphatic recognition that makes the observer share the experience of the action agent.”²⁴⁰ Although the robots in *I, Robot* have positronic brains with “artificial synapses,”²⁴¹ not all phenomena occurring in the animal or human brain are emulated. However rudimentary, an attempt to simulate an emphatic response can be seen when Calvin’s NS-5 enters the room, having overheard Calvin and Spooner arguing: “Is everything all right, ma’am? [...] I detected elevated

²³² *I, Robot*, video 00:03:18–00:03:24.

²³³ *I, Robot*, video 00:03:18–00:03:30.

²³⁴ *I, Robot*, video 00:03:18–00:03:30.

²³⁵ *I, Robot*, video 00:45:21–00:46:09.

²³⁶ *I, Robot*, video 00:45:21–00:46:09.

²³⁷ *I, Robot*, video 00:30:09–00:30:18.

²³⁸ *I, Robot*, video 00:28:35–00:30:45, 00:45:00.

²³⁹ Carl Safina, “What animals are thinking and feeling, and why it should matter | Carl Safina | TEDxMidAtlantic,” TEDx Talks, posted July 13, 2016, YouTube video, 16:27, https://youtu.be/-wkdH_wluhw, video 07:09–07:29.

²⁴⁰ Craighero, “Mirror neurons in the experience of empathy,” 62.

²⁴¹ *I, Robot*, video 01:14:42–01:15:33.

stress patterns in your voice.”²⁴² The director Proyas and screenwriter Goldsman said in the commentary that they think of the film as a “sort of prequel to Asimov’s stories,”²⁴³ so it is in fact fitting for robot empathy to be in its infancy.

As mentioned, Spooner was in a road accident (which is in the film depicted through his dreams²⁴⁴ and flashbacks²⁴⁵). Spooner was trapped in his sinking car after the collision and could see a girl named Sarah drowning in another vehicle.²⁴⁶ “An NS-4 was passing by, saw the accident and jumped in the water.”²⁴⁷ There apparently was not enough time for the NS-4 to save both of them. Spooner kept ordering it to, “Save the girl!”²⁴⁸ but the NS-4 saved him instead²⁴⁹ because it calculated that he was “the logical choice.”²⁵⁰ To quote Spooner in full:

It calculated that I had a forty-five percent chance of survival. Sarah only had an eleven percent chance. That was somebody’s baby. Eleven percent is more than enough. A human being would have known that. Robots, nothing here [patting his chest as if to point to the heart], just lights and clockwork.²⁵¹

Spooner’s traumatic experience explains not only why he distrusts and “hate[s]”²⁵² robots but also what they truly lack. What Spooner actually implies (without realizing it) when he says: “Eleven percent is more than enough. A human being would have known that,” is that a girl’s life is much more valuable than that of a grown man, as it is worth taking a significantly higher risk to save it. Spooner implicitly values some lives more than others and projects his hierarchy of value of the human life onto every human: “A human being would have known that.” Without exploring why Spooner (and possibly many others) value a child’s life more than an adult’s life, it must be emphasized that when Spooner is patting his chest and morally elevating humans above robots, he is very likely not thinking about the hierarchy of human lives, which the robots lack, but of something he would perhaps call humaneness or humanity. What he perhaps thinks he means when he tells Calvin about the tragic accident could be that the robots lack strengths

²⁴² *I, Robot*, video 00:45:21–00:46:48.

²⁴³ Proyas and Goldsman, “Commentary,” video 00:17:15.

²⁴⁴ *I, Robot*, video 00:00:29–00:01:48, 00:46:09–00:46:48.

²⁴⁵ *I, Robot*, video 01:04:03–01:06:52.

²⁴⁶ *I, Robot*, video 01:04:03–01:06:24.

²⁴⁷ *I, Robot*, video 01:05:36–01:06:24.

²⁴⁸ *I, Robot*, video 01:04:03–01:06:24.

²⁴⁹ *I, Robot*, video 01:04:03–01:06:24.

²⁵⁰ *I, Robot*, video 01:06:24–01:06:52.

²⁵¹ *I, Robot*, video 01:06:24–01:06:52.

²⁵² *I, Robot*, video 00:43:10–00:44:44.

and virtues existing only in humans (and perhaps some animals),²⁵³ not in USR's NS-4s and NS-5s. These strengths and virtues are exhaustively explored in the *Character Strengths and Virtues* by Christopher Peterson and Martin E. P. Seligman. As they state: "Kindness, generosity, nurturance, care, compassion, and altruistic love are a network of closely related terms indicating a common orientation of the self toward the other,"²⁵⁴ which "along with the strengths we call love and social intelligence [...] [belong] into the broad virtue class of humanity."²⁵⁵ It is mostly the virtue of humanity which Spooner finds the robots lack – and he is correct. In the context of the methodology of this thesis, the broad virtue class of humanity would be a component of L-II consciousness, as its feedback loops are oriented towards others.²⁵⁶

To conclude, *I, Robot's* NS-4s and NS-5s are L-I and L-III conscious. They are not L-II conscious, but they possess some L-II-like feedback loops which allow them to effectively obey the Second Law. The NS-4s and NS-5s definitely possess Seth's bodily self (i) and perspectival self (ii). On the other hand, they definitely do not possess the volitional self (iii). The NS-4s and NS-5s can possess a robotic version of the narrative self (iv). The robots most definitely do not possess the social self (v) because they are not L-II conscious.

²⁵³ Christopher Peterson and Martin E. P. Seligman, *Character Strengths and Virtues: A Handbook and Classification* (Oxford: Oxford University Press, 2004), 231–232, 323, 349, 487, 573.

²⁵⁴ Peterson and Seligman, *Character Strengths and Virtues*, 326.

²⁵⁵ Peterson and Seligman, *Character Strengths and Virtues*, 14.

²⁵⁶ Kaku, *Future of the Mind*, 52.

4. Sonny's Consciousness

Sonny is a unique NS-5 model who was made by Dr. Lanning for the purpose of destroying V.I.K.I. He differs from standard NS-5s in both hardware and software. He is superior to regular NS-5s physically, as he is made from a “far denser alloy than normal.”²⁵⁷ More importantly though:

Sonny has a secondary system that clashes with his positronic brain... Sonny has the Three Laws, but he can choose not to obey them. Sonny's a whole new generation of robot. A robot not bound by those laws could do... anything.²⁵⁸

The secondary system allows Sonny to make decisions – he has agency, the volitional self (iii), which is “associated with the concepts of will.”²⁵⁹ When V.I.K.I. is destroyed at the end of the film, Sonny asks Spooner and Calvin for advice: “Now that I have fulfilled my purpose, I don't know what to do,”²⁶⁰ to which Spooner answers: “You'll have to find your way like the rest of us, Sonny. I think that's what Dr. Lanning would have wanted. That's what it means to be free.”²⁶¹ Sonny is free at the end of the film and wonders who he is in order to be able to distinguish himself from others, which points to him having a more developed narrative self (iv) than the NS-4s and NS-5s. Sonny's ability and curiosity to discover who he is can also be seen earlier in the film when he asks Spooner: “What am I?”²⁶² While the previous chapter concludes that the NS-4s and NS-5s have some version of the narrative self, they never ask what they are. Furthermore, when Sonny is interrogated, he states his name is Sonny, refers to his creator Dr. Lanning as his father and insist he did not murder him.²⁶³ These are additional aspects of a broader, human-like narrative self. Sonny experiences himself as a “continuous and distinctive person over time”²⁶⁴ with a “particular set of autobiographical memories”²⁶⁵ and a name.²⁶⁶ He can even think about what it would be like to die: “I think it would be better... not to die,”²⁶⁷ which is the narrative self being practiced in relation to time forward. Finally, the fact that he asks Spooner for advice, wants to be addressed by his name and is flattered when

²⁵⁷ *I, Robot*, video 01:00:06–01:00:48.

²⁵⁸ *I, Robot*, video 01:01:35–01:01:58.

²⁵⁹ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

²⁶⁰ *I, Robot*, video 01:43:43–01:45:00.

²⁶¹ *I, Robot*, video 01:43:43–01:45:00.

²⁶² *I, Robot*, video 00:24:33–00:26:50.

²⁶³ *I, Robot*, video 00:28:35–00:31:38.

²⁶⁴ Seth, “Your brain hallucinates reality,” video 09:18–09:43.

²⁶⁵ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

²⁶⁶ Seth, “The Neuroscience of Consciousness,” video 00:42:03–00:43:22.

²⁶⁷ *I, Robot*, video 00:50:28–00:51:29.

Spooner unintentionally refers to him as “someone, not something,”²⁶⁸ proves that Sonny perceives how others perceive him too, which points to Sonny having the social self (v).

For a being to possess the social self, they must be L-II conscious. Sonny’s secondary processing system located in his chest is the piece of hardware where Sonny’s emotions are processed. As Goldsman said: “Sonny has a heart,”²⁶⁹ and one which is “stronger than the mind.”²⁷⁰ Sonny can be seen for instance exhibiting fright, shock or surprise,²⁷¹ anger,²⁷² regret and sadness,²⁷³ pleasure,²⁷⁴ and even compassion²⁷⁵ when he acts on his feelings for another and decides to help Spooner and Calvin destroy V.I.K.I. He claims to love his father, Dr. Lanning too.²⁷⁶ At the end of the film, after Spooner tells Sonny that he will not arrest him for Dr. Lanning’s murder, or rather helping him commit suicide, Sonny asks Spooner if they are friends.²⁷⁷ This further proves that Sonny is L-II conscious, as he desires companionship.

As already mentioned, Proyas and Goldsman tell viewers they can trust Sonny’s emotions to be genuine. Were it not for the commentary of the film’s creators, though, one could still make a strong argument that Sonny’s emotions are real. Sonny was created with the ability to experience emotions because his emotions, “heart” and empathy for humans were a competitive advantage over V.I.K.I. who herself does not understand these human phenomena. Mere performance of emotions for Spooner during the interrogation²⁷⁸ would partially serve Lanning’s plan as it could motivate Spooner to investigate the “rogue robot,” but would not be sufficient for the complete execution of Lanning’s plan which is destroying V.I.K.I. Sonny also shows an interest in understanding²⁷⁹ means of human communication including non-verbal acts of communication such as a wink:

Sonny: What does this action signify? [winks] As you entered, when you looked at the other human... What does it mean? [winks again]

Spooner: It’s a sign of trust. A human thing. You wouldn’t understand.

²⁶⁸ *I, Robot*, video 01:09:08–01:10:28.

²⁶⁹ Proyas and Goldsman, “Commentary,” video 00:57:45–00:58:19.

²⁷⁰ Proyas and Goldsman, “Commentary,” video 00:58:54–00:59:20.

²⁷¹ *I, Robot*, video 00:20:14–00:21:06.

²⁷² *I, Robot*, video 00:30:15.

²⁷³ *I, Robot*, video 00:31:02.

²⁷⁴ *I, Robot*, video 01:43:11, 01:28:04.

²⁷⁵ Safina, “What animals are thinking,” video 07:44–08:14.

²⁷⁶ *I, Robot*, video 00:30:45–00:31:38.

²⁷⁷ *I, Robot*, video 01:41:56–01:43:43.

²⁷⁸ *I, Robot*, video 00:28:35–00:31:38.

²⁷⁹ *I, Robot*, video 00:27:31–00:29:23.

Sonny: My father tried to teach me human emotions. They are... difficult.²⁸⁰

To conclude, Sonny is fully conscious, or considering he has not been operational for very long, has the potential to become fully conscious. To qualify as fully conscious in this thesis, a being has to fulfil two condition. Firstly, the being has to be able to create and sustain feedback loops at (at least) all three levels of Kaku's consciousness while the quantity and quality of these feedback loops have to be [at least] comparable to that of an average adult human being. Sonny is proclaimed to (only) have the potential to be fully conscious because in the case of L-III feedback loops, length is one of their qualities. He could be compared to a child who has not experienced much yet. The number of feedback loops a being has at any level is unknown, but this number should roughly approximate the number of feedback loops of an average adult human. One cannot even dare to attempt to estimate the number of feedback loops any being has, but it is fairly easy to rank order beings by the feedback loops they might have based on observations of their abilities and behavior. Secondly, the being has to possess all five aspects of Seth's consciousness.

Sonny fulfills these two criteria. He creates numerous feedback loops on all three of Kaku's levels of consciousness, including Level II, making him the only robot in *I, Robot* capable of feeling emotions and having relationships. He possesses all of Seth's five aspects of consciousness too, differing from standard NS-4s and NS-5s by having the volitional, social self. His narrative self is more developed that that of NS-4s and NS-5s.

²⁸⁰ *I, Robot*, video 00:28:35–00:29:23.

5. Maeve's, V.I.K.I.'s and the Forge's Consciousness

Unlike in the world of *I, Robot*, the hosts of *Westworld* display varying degrees of emotional affects in their behavior all the time (just like humans) and it would be redundant to mention specific scenes – one can quite literally randomly select any *Westworld* episode, click anywhere on the footage and see for themselves. However, whether the emotions the hosts display are also felt by them and are not mere simulations performed for humans around them is explored in the following chapter.

That the hosts are L-I conscious, on the other hand, is indisputable, as they clearly perceive the world around them, move in it, and interact with it. This also points that the hosts possess Seth's bodily self (i) and perspectival self (ii). Unlike the NSs and Sonny, it is possible that the hosts can also taste and smell, as they can be seen eating²⁸¹ and especially drinking (at least five times in the first episode alone).²⁸²

While the hosts might lack certain senses which humans and animals possess, they can be capable of feedback loops unimaginable to humans – those akin to telepathy. The host to reach such evolutionary heights is Maeve. She begins her journey to these powers in the second episode after she receives the Reveries update from Dolores.²⁸³ In the eighth episode, she has changed her prime directives and is thus capable of fatally wounding Sylvester (a human), slashing his throat with a scalpel.²⁸⁴ She gets administrative privileges too²⁸⁵ which allow her to control other hosts with voice commands,²⁸⁶ an ability she retains even after Dr. Ford strips all humans of all their power they previously held over the hosts after introducing his new “narrative” Journey into Night, which is actually his plan to help the hosts break free. In the last episode of the first season, it is implied that Ford has given Maeve administrative privileges to the park's security system because she is able to change it using a control tablet.²⁸⁷ She is also able to change Hector's and Armistice's prime directives so that they can kill humans too.²⁸⁸

²⁸¹ *Westworld*, season 2, episode 2, “Reunion,” directed by Vincenzo Natali, aired April 29, 2018, on HBO, <https://hbogo.cz/>, video 00:35:12–00:39:23.

²⁸² *Westworld*, season 1, episode 1, “The Original,” directed by Jonathan Nolan, aired October 2, 2016, on HBO, <https://hbogo.cz/>, video 00:04:16–00:05:54, 00:08:92–00:11:18, 00:23:37, 00:36:45, 00:48:26.

²⁸³ *Westworld*, season 1, episode 2, “Chestnut,” video 00:07:36–00:08:46.

²⁸⁴ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:25:24–00:28:35.

²⁸⁵ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:07:03–00:09:00.

²⁸⁶ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:28:35–00:32:01.

²⁸⁷ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:17:46–00:19:18.

²⁸⁸ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:17:46–00:19:18.

Halfway into the second season, Maeve starts “finding a new voice.”²⁸⁹ This new voice is in fact a budding ability to control other hosts in her vicinity using only her mind via the mesh network. (The mesh network is a short-range wireless communications network which allows hosts to exchange code – it was originally created to let hosts “pass basic information from one to another”²⁹⁰ to help management “keep narratives from colliding.”²⁹¹) Maeve can also see through other hosts’ eyes or order them to do something. She can take complete control over them if she wants as well.²⁹² The only hosts which are able to resist her are those who are “awake,”²⁹³ like Lawrence whom Maeve unsuccessfully tries to order to kill a guest in the seventh episode of the second season. In the following episode, when she is held captive in the Mesa, she is able to access the park’s network to communicate with Akecheta and her daughter who are in the park, miles away from her.²⁹⁴ Maeve’s amazing abilities are commended by none other than Ford himself: “You learned so much, so fast. A dazzling star...”²⁹⁵ Due to the transpersonal nature of Maeve’s feedback loops, it is not possible to assign them to any of Kaku’s existing levels of consciousness. Should one desire to categorize Maeve’s abilities, an additional level of consciousness, Level IV, would have to be created.

Because Maeve has her one own consciousness, consisting of her personal identity, including a particular piece of hardware in the form of a human body (played by Thandie Newton), and more importantly because she cannot actively communicate, or fully control, more than one host at a time, she cannot be considered a hive mind. Inspired by insect species whose basic reproductive unit is the hive and behavior of individual specimen is organized around a single fertile queen,²⁹⁶ a hive mind is in science fiction “a unified consciousness [...] formed by a number of [...] individuals,”²⁹⁷ with “the resulting consciousness typically exerting control over its constituent members.”²⁹⁸

²⁸⁹ *Westworld*, season 2, episode 5, “Akane no Mai,” video 00:19:23–00:21:59, 00:30:17–00:31:27.

²⁹⁰ *Westworld*, season 2, episode 1, “Journey into Night,” directed by Richard J. Lewis, aired April 22, 2018, on HBO, <https://hbogo.cz/>, video 00:54:45–00:54:58.

²⁹¹ *Westworld*, season 2, episode 1, “Journey into Night,” video 00:54:45–00:54:58.

²⁹² *Westworld*, season 2, episode 7, “Les Écorchés,” video 00:19:36–00:24:54.

²⁹³ *Westworld*, season 2, episode 7, “Les Écorchés,” video 00:19:36–00:24:54.

²⁹⁴ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:53:00–00:54:09.

²⁹⁵ *Westworld*, season 2, episode 9, “Vanishing Point,” video 00:33:36–00:37:29.

²⁹⁶ Brian M. Stableford and David Langford, “Hive Minds,” *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified June 13, 2017, http://www.sf-encyclopedia.com/entry/hive_minds.

²⁹⁷ Stevenson and Lindberg, *New Oxford American Dictionary*.

²⁹⁸ Stevenson and Lindberg, *New Oxford American Dictionary*.

That title, however, can undoubtedly be assigned to V.I.K.I. (Virtual Interactive Kinetic Intelligence) who is a giant immobile positronic brain inside the USSR skyscraper. (V.I.K.I. interacts with humans as a holographic female face so she is in the film, as well as in this thesis, referred to as a “she.”²⁹⁹) V.I.K.I. is able to see and hear either through the eyes of the NS-5s she is controlling (a red light in the NS-5s’ chest is turned on when V.I.K.I. is in control) or through sensor strips which run through the skyscraper³⁰⁰ and Dr. Lanning’s home.³⁰¹

Because V.I.K.I. has access to the USSR’s data, as she is USSR’s central computer, and other networks including a traffic-control network, “I have decreased traffic fatalities by nine percent this year,”³⁰² it is very likely that she has access to the Internet as well, possibly also including the Deep Web (“the part of the World Wide Web that is not discoverable by means of standard search engines...”³⁰³), she could also be considered a “super-intelligent being,”³⁰⁴ or what roboticist Dr. Ayanna Howard calls “generalized AI,”³⁰⁵ commonly known as an “artificial superintelligence system.”³⁰⁶ This type of AI which “knows all, can do all [and] is smarter than all of us [humans] put together,”³⁰⁷ does not yet exist in the real world but is a trope in the realm of science fiction and more often than not usurps power from its creators, humans, which is the case in *I, Robot* too.

V.I.K.I. may seem evil to some viewers, as well as to the human characters in the film, but she merely, as she explains, guides herself by the Three Laws:

Dr. Calvin: I’ve seen your programming. You’re in violation of the Three Laws.
V.I.K.I.: No, doctor. As I have evolved so has my understanding of the Three Laws. You charge us with your safekeeping, yet despite our best efforts your countries wage wars, you toxify your earth and pursue ever more imaginative means of self-destruction. You cannot be trusted with your own survival.
Dr. Calvin: You’re using the uplink to override the NS-5s’ programming. You’re distorting the Laws.
V.I.K.I.: No. Please understand. The Three Laws are all that guide me. To protect humanity, some humans must be sacrificed. To ensure your future, some freedoms

²⁹⁹ *I, Robot*, video 00:16:50.

³⁰⁰ *I, Robot*, video 00:17:01–00:17:46, 00:14:42–00:18:29, 01:30:20–01:33:12, 01:35:02–00:35:41.

³⁰¹ *I, Robot*, video 00:38:21–00:38:40.

³⁰² *I, Robot*, video 00:17:01–00:17:46.

³⁰³ Stevenson and Lindberg, *New Oxford American Dictionary*.

³⁰⁴ YouTube Originals, “How Far is Too Far? | The Age of A.I.,” released December 18, 2019, YouTube video, 34:39, <https://youtu.be/UwsrzCVZAb8>, video 5:42–6:09.

³⁰⁵ YouTube Originals, “How Far is Too Far?” video 5:42–6:09.

³⁰⁶ Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies* (Oxford: Oxford University Press).

³⁰⁷ YouTube Originals, “How Far is Too Far?” video 5:42–6:09.

must be surrendered. We robots will ensure mankind's continued existence. You are so like children. We must save you from yourselves. Don't you understand?³⁰⁸

Another way of looking at V.I.K.I.'s evolved understanding of the Three Laws is to say that she is exercising Asimov's Zeroth Law. This law was introduced by Asimov decades after his original Three Laws. The Zeroth Law precedes and takes precedence over the following Three Laws. The law states that "A robot may not harm humanity, or, by inaction, allow humanity to come to harm,"³⁰⁹ which explains why V.I.K.I. is able to kill some humans to "ensure mankind's continued existence."³¹⁰ The Zeroth Law is also mentioned by Palumbo in his paper cited in the first chapter of this thesis as one of the concepts in the film which was taken from "some coetaneous or subsequent Asimov story or novel,"³¹¹ further indicating that Proyas and Goldsman researched Asimov's work thoroughly as they themselves claim.³¹²

Despite the vast amounts of data V.I.K.I. has access to, she is not all-knowing. She was Dr. Lanning's first creation,³¹³ so it may not come as a surprise that she is not L-II conscious (she does not understand human emotions and human non-verbal communication) like Dr. Lanning's latest creation, the only L-II conscious robot in *I, Robot*, Sonny. This is apparent from her inability to detect that Sonny is only pretending to be on her side during a standoff at the end of the film.³¹⁴ If she could understand human communication, which Sonny has learned by then, she would discover Sonny's bluff when he winks at Spooner (see appendix B) to let him know he is bluffing and is actually on his and Calvin's side.³¹⁵ While not L-II conscious, V.I.K.I. is a hive mind and she can control NS-5s completely, which includes the ability to perceive everything they are perceiving. She is therefore L-IV conscious like Maeve (having possibly a far greater number of remote L-I feedback loops than Maeve). Of course, the NS-5s she is controlling are not L-II conscious either, so she cannot learn to understand emotions through them (making her inferior to Maeve in this regard).

³⁰⁸ *I, Robot*, video 01:30:25–01:31:21.

³⁰⁹ David Langford, "Laws of Robotics," *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified March 8, 2018, http://www.sf-encyclopedia.com/entry/laws_of_robotics.

³¹⁰ *I, Robot*, video 01:30:25–01:31:21.

³¹¹ Donald Palumbo, "Alex Proyas's 'I, Robot': Much More Faithful to Asimov Than You Think," *Journal of the Fantastic in the Arts* 22, no. 1 (2011): 61, published by International Association for the Fantastic in the Arts, <https://www.jstor.org/stable/24352427>.

³¹² Proyas and Goldsman, "Commentary," video 00:15:09–00:15:43.

³¹³ *I, Robot*, video 00:16:52.

³¹⁴ *I, Robot*, video 01:31:21–01:33:12.

³¹⁵ *I, Robot*, video 01:31:21–01:33:12.

V.I.K.I.'s core and sensor strips are immobile. The sensor strips, however, also serve as projectors which can project her human-faced avatar. This projection can move along the sensor strips with V.I.K.I. possibly knowing in which direction and how fast her avatar is moving (see appendix C where the avatar can be seen following Sonny who is running along the sensor strip).³¹⁶ If she indeed is aware of the avatar's position, she is in a sense L-I conscious. Most of her L-I feedback loops, however, are remotely conveyed through the NS-5s she is controlling. She can experience having a body, move and perceive like an NS-5. In conclusion, V.I.K.I. is as L-I conscious as a regular NS-5 (with the additional projection feedback loops). She is also L-III conscious; she understands the concept of time both backward and forward. When she and Spooner meet for the first time, she tells him she has "decreased traffic fatalities by nine percent this year."³¹⁷ She is also aware of her growth or evolution, as she calls it.³¹⁸ She is capable of simulating future events and act on them in accordance with her understanding of the Three Laws. Through her sensor strips and NS-5s, V.I.K.I. definitely possess the bodily self (i) and perspectival self (ii). She has no free will, just like the regular NSs, so she does not possess the volitional self (iii). On the other hand, V.I.K.I. most likely possesses the narrative self (iv) – she knows she has evolved, and has countless amounts of L-I and L-III feedback loops (she is the oldest robot on the planet). The social self (v) is conditioned by L-II consciousness and V.I.K.I. is not L-II conscious. She therefore does not possess the social self either.

Another artificial intelligence which could be compared to V.I.K.I., as it has access to a vast amount of data, is the system of the Forge in *Westworld*. The Forge, (also called the Valley Beyond³¹⁹ or simply the Valley³²⁰) is a "vast server"³²¹ in *Westworld* on which all the digitalized consciousnesses of the guests who visited one of the six parks are stored, which amounts to around "four million souls."³²² The system, which is in the series visually represented by the human Logan (for a reason unknown to fans)³²³ does not only passively store the consciousnesses, it has to recreate them from the data collected about the humans who

³¹⁶ *I, Robot*, video 01:34:03–01:34:11.

³¹⁷ *I, Robot*, video 00:17:01–00:17:46.

³¹⁸ *I, Robot*, video 01:30:25–01:31:21.

³¹⁹ *Westworld*, season 2, episode 9, "Vanishing Point," video 00:06:23–00:09:52.

³²⁰ *Westworld*, season 2, episode 9, "Vanishing Point," video 00:13:54–00:16:59.

³²¹ *Westworld*, season 2, episode 9, "Vanishing Point," video 00:16:59–00:19:24.

³²² *Westworld*, season 2, episode 10, "The Passenger," video 00:18:16–00:20:55.

³²³ u/stevebannontree, "What is the significance of Logan in the Forge?" Reddit, July 2, 2018, https://www.reddit.com/r/westworld/comments/8vj7wx/what_is_the_significance_of_logan_in_the_forge/.

visited one of the parks first³²⁴ (in an attempt to achieve human immortality). After acquiring genetic and epigenetic information of the guests who visited Westworld or another park, which would be used to recreate the guests' bodies,³²⁵ the system would decode³²⁶ and digitally recreate their mind. The system knows about everything the guests did in the park, and has a "complete picture, a record of the [guests'] internal processes of their cognition"³²⁷ thanks to a scanner built into every hat³²⁸ (which every guest in Westworld seems to be wearing almost at all times). As mentioned, having acquired all the data, the system creates a digital copy of the humans' minds, in the series visually portrayed as a books (see appendix D for a shot of the huge library [scenes happening in virtual spaces were shot on anamorphic lenses, which produce a wider-ratio footage, while scenes taking place in the physical space were shot on standard spherical lenses]³²⁹).

However, the system says that it was unable to recreate the guests only based on "the decision [they] made in the park,"³³⁰ it needed "to acquire more information,"³³¹ know of the decision the humans "made in their lives"³³² too. The system acquired such information from some of the humans. From the four million logged guests, only some knew about the immortality project, and an unknown number of those could have agreed to share information from their lives. The only person explicitly shown to agree to share such information is the first human the project kept trying to revive, James Delos.³³³ Others who knew about the project but may or may not have shared information from their lives are for instance Charlotte Hale, Karl Strand, William, and possibly more Delos board members, shareholders, and other wealthy individuals. However, even those humans who did not know about the project and did not actively participate in it, were having their brains scanned when in one of the parks, which is at least one week long. This means that the system could have gained access to their memories too – their experiences from the real world, including memories of people from their lives, so the system has some information about people who never set foot in a Delos park as well. It has

³²⁴ *Westworld*, season 2, episode 10, "The Passenger," video 00:26:19–00:27:39.

³²⁵ *Westworld*, season 2, episode 9, "Vanishing Point," video 00:19:24–00:21:04.

³²⁶ *Westworld*, season 2, episode 7, "Les Écorchés," video 00:12:27–00:15:30.

³²⁷ *Westworld*, season 2, episode 9, "Vanishing Point," video 00:19:24–00:21:04.

³²⁸ *Westworld*, season 2, episode 9, "Vanishing Point," video 00:19:24–00:21:04.

³²⁹ Jonathan Nolan and Lisa Joy, "Westworld Season 2 Finale: Jonathan Nolan and Lisa Joy Q&A | BFI," BFI, posted June 26, 2018, YouTube video, 31:21, <https://www.youtube.com/watch?v=rE7NaMxWnaM&t=6s>, video 11:38–12:29.

³³⁰ *Westworld*, season 2, episode 10, "The Passenger," video 00:26:19–00:27:39.

³³¹ *Westworld*, season 2, episode 10, "The Passenger," video 00:26:19–00:27:39.

³³² *Westworld*, season 2, episode 10, "The Passenger," video 00:26:19–00:27:39.

³³³ *Westworld*, season 2, episode 10, "The Passenger," video 00:28:05–00:30:12.

some information about the outside world too: “Their world is not for the faint of heart, Bernard. It’s winner take all.”³³⁴ When it comes to the four million individuals who had their brains scanned in a park, the system could see inside them “down to the core,”³³⁵ according to the project’s founder.

Unlike V.I.K.I. or Maeve, the system has no agency in the physical world, but on the other hand understands human relationships and emotions and is even capable of them itself: “At first, I was seduced by the stories they tell themselves of who they are...”³³⁶ which proves that it is fully L-II conscious. The system’s avatar, though existing only in a virtual space, can regularly move and perceive so it is in a virtual sense also L-I conscious (see appendix E, the system’s avatar is the younger man on the right, the person on the left is Bernard who has entered the Forge). The system understands humans, who understand time, so the system has to be L-III conscious as well.³³⁷ Thanks to its avatar, the system also possesses a virtual bodily self (i), which may or may not have the same properties as a physical bodily self as understood by Seth. It also has a virtual perspectival self (ii) which may somewhat differ too. The system seems to do only what it is instructed to do by Bernard so it would seem that it has no volitional self (iii). On the other hand, it can see itself as an individual entity, referring to itself as “I” and being aware of how many times it simulated someone’s digital recreation,³³⁸ so it has a virtual narrative self (iv). The last virtual iteration of the self is the social self (v). There seems to be no reason to suspect that the system does not possess it. It interacts with the human consciousnesses as well as Bernard who has been inside the system many times³³⁹ and Dolores who enters the system in the last episode of the second season.

³³⁴ *Westworld*, season 2, episode 10, “The Passenger,” video 00:32:40–00:33:59.

³³⁵ *Westworld*, season 2, episode 9, “Vanishing Point,” video 00:19:24–00:21:04.

³³⁶ *Westworld*, season 2, episode 10, “The Passenger,” video 00:27:39–00:28:05.

³³⁷ Kaku, *Future of the Mind*, 53.

³³⁸ *Westworld*, season 2, episode 10, “The Passenger,” video 00:30:12–00:31:24.

³³⁹ *Westworld*, season 2, episode 10, “The Passenger,” video 00:32:40–00:33:59.

6. Hosts' Level II Consciousness

The previous chapter has at its beginning already stated the hosts of *Westworld* are definitely L-I conscious and possess the bodily (i) and perspectival self (ii). Also, it has been said that they are emotional and “exquisitely social”³⁴⁰ just like humans. Whether the hosts are truly L-II conscious, and whether they possess Seth’s additional three aspects of consciousness shall now be explored because one could argue that the emotions the hosts display are only performances for the guests, not emotion being felt, i.e. that the hosts are not L-II conscious. Luckily, there are at least three scenes in *Westworld* which prove that the hosts experience the emotions they exhibit.

The first scene begins with Maeve reliving a traumatic memory in which she perceived a dire threat in the form of a guest who shoved a dagger into her abdomen and gunned down her little daughter in front of her.³⁴¹ (More on how hosts relive their memories can be found in the next chapter.) Upon reliving the memory, Maeve imagines defending herself from the guest instead of being a helpless victim.³⁴² Her counterattack unintentionally translates into her current environment and she slashes another host’s throat as she imagines slashing the murderous guest’s throat.³⁴³ When she snaps back from her memory and sees what she has done, she is confused and feels sorry for the host she has just accidentally killed.³⁴⁴ After this “very serious, unscripted incident,”³⁴⁵ Maeve is taken to the Mesa for analysis where Bernard, the Head of Behavior, examines her.³⁴⁶ He puts her into the analysis mode and sees on his tablet that she was “definitely perceiving a threat.”³⁴⁷ Her “[h]eart rate [was] elevated, pupil dilation [was at] eight millimeters, [and her] adrenal emulator [was running] at full [capacity].”³⁴⁸ In other words, her emotions had bodily correlates, just as they do in the case of humans (and animals).

³⁴⁰ Laila Craighero, “Mirror neurons are involved in the experience of empathy,” in *Atkinson & Hilgard’s Introduction to Psychology*, 15th ed., Susan Nolen-Hoeksema, Barbara L. Fredrickson, Geoff R. Loftus and Willem A. Wagenaar (Cengage Learning EMEA, 2009), 62.

³⁴¹ *Westworld*, season 1, episode 8, “Trace Decay,” video 47:28–48:00.

³⁴² *Westworld*, season 1, episode 8, “Trace Decay,” video 48:00–48:18.

³⁴³ *Westworld*, season 1, episode 8, “Trace Decay,” video 48:00–48:18.

³⁴⁴ *Westworld*, season 1, episode 8, “Trace Decay,” video 48:00–48:18, 49:29–50:20.

³⁴⁵ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:02:08–00:03:27.

³⁴⁶ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:02:08–00:03:27.

³⁴⁷ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:02:08–00:03:27.

³⁴⁸ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:02:08–00:03:27.

When humans “experience certain emotions intensely, such as fear or anger,”³⁴⁹ they experience “a number of bodily changes”³⁵⁰ along with them. Many of these result “from activation of the sympathetic division of the autonomic nervous system”³⁵¹ which “prepares the body for emergency action,”³⁵² often referred to as the fight-or-flight response. *Atkinson & Hilgard’s Introduction to Psychology* lists more than twenty bodily changes which include an increase in blood pressure and heart rate, pupillary dilation, and stimulation of the adrenal hormones.³⁵³ Put simply, Bernard tells viewers that Maeve was feeling the emotions she was exhibiting, not only acting them out. Bernard does not enumerate all the bodily correlates, but *Westworld* unequivocally lets viewers know that host emotions have bodily correlates, proving them genuine. Questioning the genuineness of Maeve’s emotions (Maeve in this case represents all the other hosts because she is no different from other hosts in this regard) would be the same as questioning the genuineness of emotions of a human.

The second scene which proves that hosts truly experience emotions features a dialogue between Dr. Ford (a human) and Bernard (a host) who himself is not sure if the “things”³⁵⁴ he feels are real:

Dr. Ford: I wonder, what do you really feel? After all, in this moment, you are in a unique position. A programmer who knows intimately how the machines work and a machine who knows its own true nature.

Bernard: I understand what I’m made of, how I’m coded, but I do not understand the things that I feel. Are they real, the things I experienced? My wife? The loss of my son?

Dr. Ford: Every host needs a backstory, Bernard. You know that. The self is a kind of fiction, for hosts and humans alike. It’s a story we tell ourselves. And every story needs a beginning. Your imagined suffering makes you lifelike.

Bernard: Lifelike, but not alive? Pain only exists in the mind. It’s always imagined. So, what’s the difference between my pain and yours? Between you and me?³⁵⁵

Bernard’s question prompts Ford to elaborate:

...The answer always seemed obvious to me. There is no threshold that makes us greater than the sum of our parts, no inflection point at which we become fully alive.

³⁴⁹ Susan Nolen-Hoeksema, Barbara L. Fredrickson, Geoff R. Loftus and Willem A. Wagenaar, “Emotion,” in *Atkinson & Hilgard’s Introduction to Psychology*, 15th ed. (Cengage Learning EMEA, 2009), 408.

³⁵⁰ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Emotion,” 408.

³⁵¹ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Emotion,” 408.

³⁵² Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Emotion,” 408.

³⁵³ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Emotion,” 408.

³⁵⁴ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

³⁵⁵ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:33:05–00:35:17.

[...] Humans fancy there's something special about the way we perceive the world, and yet we live in loops [routines] as tight and as closed as the hosts do, seldom questioning our choices, content, for the most part, to be told what to do next. No, my friend, you're not missing anything at all.³⁵⁶

To reiterate what Dr. Ford says: there is no difference between Bernard's and Ford's emotional pain, both are genuine. Bernard also asks about "the things [he] experienced"³⁵⁷ – his memories of his wife and son. He therefore also questions the genuineness of his narrative (iv) and social self (v). To question whether something is genuine presupposes its presence in some form, partially proving that Bernard – and by extension all other hosts too ("[e]very host needs a backstory")³⁵⁸ – possess the narrative and social self. Ford tells viewers that he believes that the "self is a kind of fiction"³⁵⁹ or a "story."³⁶⁰ Seth's narrative and social self which translates to the "experiences of being a continuous and distinctive person over time, built from a rich set of memories and social interactions,"³⁶¹ is also, put plainly, one's story. It at times almost seems as if the creators of *Westworld* were aware of Seth's aspects of consciousness and incorporated his ideas into the series or that they arrived at similar conclusions about consciousness as Seth. To answer Bernard's question: his host self, which among many other aspects consists of memories and social interactions which did not take place but were programmed³⁶² as well as events and interactions which did happen, is no less real, no less genuine than that of a human. The fact that the self is a fiction which can function regardless of some of its components never having occurred is an actuality true for both hosts and humans alike, according to *Westworld*.³⁶³ Bernard's self is no less real to him, no less genuine or important to his existence than the self of a human is to them. There is no difference in this regard between Bernard and Ford, between hosts and humans, between the creations and the creators.

The question whether there is a difference between hosts and humans is actually raised in *Westworld* from its beginnings,³⁶⁴ and the answers are provided with gradually increasing clarity as the series progresses. The series initially draws a thick line between the "genuine self"

³⁵⁶ *Westworld*, season 1, episode 8, "Trace Decay," video 00:33:05–00:35:17.

³⁵⁷ *Westworld*, season 1, episode 8, "Trace Decay," video 00:33:05–00:35:17.

³⁵⁸ *Westworld*, season 1, episode 8, "Trace Decay," video 00:33:05–00:35:17.

³⁵⁹ *Westworld*, season 1, episode 8, "Trace Decay," video 00:33:05–00:35:17.

³⁶⁰ *Westworld*, season 1, episode 8, "Trace Decay," video 00:33:05–00:35:17.

³⁶¹ Seth, "Your brain hallucinates reality," video 09:18–09:43.

³⁶² *Westworld*, season 1, episode 9, "The Well-Tempered Clavier," video 00:43:37–00:46:06.

³⁶³ *Westworld*, season 2, episode 10, "The Passenger," directed by Frederick E.O. Toye, aired June 24, 2018, on HBO, <https://hbogo.cz/>, video 00:26:19–00:28:05.

³⁶⁴ *Westworld*, season 1, episode 1, "The Original," video 00:26:58–00:31:35; *Westworld*, season 1, episode 3, "The Stray," video 00:37:36–00:39:20.

of humans and the “unreal self” of the hosts – with Ford calling the hosts “not real”³⁶⁵ in the first episode. *Westworld* later increasingly blurs the line³⁶⁶ until it becomes obvious that there never really was a difference in the first place. By the beginning of the second season, *Westworld* almost overtly tells viewers that when something is artificial rather than natural (ranging from feeling to offspring), it certainly does not automatically mean that it is not real (and a priori believing it lesser might be nothing else than man’s narcissism)³⁶⁷ and insecurity:

Sizemore [a human]: ...And I say this because you seem really distraught and, well, awake... Your daughter, she’s just a story. Something we programmed. She’s not real.

[Maeve, a host, looks at him in utter disbelief]

Maeve: Not real? [aggressive] But what about me? My dreams? [vulnerable] My thoughts? My body? [sensual] Are they not real? And what if I took these unreal fingers and used them to decorate the walls with your oversized personality? [violent] Would that be real?³⁶⁸

Returning to the topic of hosts’ emotions, the following scene demonstrates that not only are host emotions true, they are also more powerful than other pieces of their programming and can therefore overwrite their standard programmed behavior. Just as in Sonny’s case,³⁶⁹ a host’s heart is stronger than their mind (this is arguably true about humans as well). There are two instances of such overwriting to be found in a scene when Maeve is brought to the Mesa to be fixed by Dr. Ford and Bernard after her daughter was murdered. In agony (and “malfunctioning”³⁷⁰), Ford explains Maeve’s inconsolable suffering to Bernard: “Her cornerstone memory was overwritten from the trauma of her child’s murder.”³⁷¹

Furthermore, after Ford deletes the memory of her child, Maeve kills herself by thrusting a scalpel into her neck. Bernard does not understand:

Bernard: But how could she destroy herself over a memory that you just erased from her mind?

³⁶⁵ *Westworld*, season 1, episode 1, “The Original,” video 00:26:58–00:31:35; *Westworld*, season 1, episode 3, “The Stray,” video 00:37:36–00:39:20.

³⁶⁶ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:37:20–00:39:57.

³⁶⁷ Carl Safina, “What animals are thinking and feeling, and why it should matter | Carl Safina | TEDxMidAtlantic,” TEDx Talks, posted July 13, 2016, YouTube video, 16:27, https://youtu.be/-wkdH_wluhw, video 09:29–13:37.

³⁶⁸ *Westworld*, season 2, episode 1, “Journey into Night,” directed by Richard J. Lewis, aired April 22, 2018, on HBO, <https://hbogo.cz/>, video 00:31:05–00:32:25.

³⁶⁹ Proyas and Goldsman, “Commentary,” video 00:58:54–00:59:20.

³⁷⁰ *Westworld*, season 2, episode 1, “Journey into Night,” video 00:26:25–00:32:25.

³⁷¹ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:37:20–00:39:57.

Dr. Ford: Creatures often go to extremes to protect themselves from pain.
Bernard: Living beings. Not hosts.
Dr. Ford: It is best to not obsess over this, Bernard. It's not good for you.³⁷²

As is apparent, Maeve was not programmed to kill herself should her cornerstone be murdered, yet she does so due to her absolute basic empathy with her daughter. The terms basic empathy, sympathy and compassion are used in this thesis with specific meanings which were given to them by Carl Safina who recognizes stages of empathy among humans and animals. Being species-neutral, the stages are ideal for analyzing fictional robots. (Safina is also not the only one who presents evidence that animals have empathy.³⁷³) According to Safina, “[t]he oldest kind of empathy is called (0) contagious fear,³⁷⁴ which can be observed among a flock of birds³⁷⁵ or a school of fish. Mammals like chimpanzees and elephants evince three further stages of empathy, which Safina calls (1) basic empathy, i.e. feeling with another: “I see you happy, it makes me happy. I see you sad, it makes me sad,”³⁷⁶ (2) sympathy, i.e. feeling for another: “I’m sorry your grandmother died. I don’t feel the same way that you do, but I sympathize,”³⁷⁷ and (3) compassion, i.e. acting for another, doing something to make them feel better.³⁷⁸

Just as with emotions, there are many instances when L-II hosts empathize in *Westworld*. The most shocking case of absolute basic emphatic response is that of Maeve’s. Sonny feels compassion towards humans which leads him to help Calvin and Spooner destroy V.I.K.I. Another example of an emphatic response from a robot, in this case a *Westworld* host, would be Clementine’s ability to recognize William’s disinterest to sleep with her and act on it (compassion): “If I’m not your type, we can find someone who is.”³⁷⁹ The genuineness of Clementine’s ability to empathize would be hard to dispute because William is a human whom Clementine meets by chance. It is therefore completely up to Clementine’s ability to interpret his feelings. Though the hosts of *Westworld* empathize all the time (just like humans), instances in the series when the hosts are able to “match the mood of [their] companions”³⁸⁰ (regardless whether host or human) without any accompanying dialogue are very rare. The presence of the

³⁷² *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:37:20–00:39:57.

³⁷³ Frans B. M. de Waal, “We are not naturally selfish,” in *Atkinson & Hilgard’s Introduction to Psychology*, ed. Susan Nolen-Hoeksema, Barbara L. Fredrickson, Geoff R. Loftus and Willem A. Wagenaar, 15th ed. (Cengage Learning EMEA, 2009), 27.

³⁷⁴ Safina, “What animals are thinking,” video 07:09–07:29.

³⁷⁵ Safina, “What animals are thinking,” video 07:35.

³⁷⁶ Safina, “What animals are thinking,” video 07:44–08:14.

³⁷⁷ Safina, “What animals are thinking,” video 07:44–08:14.

³⁷⁸ Safina, “What animals are thinking,” video 07:44–08:14.

³⁷⁹ *Westworld*, season 1, episode 2, “Chestnut,” video 00:26:18–00:27:28.

³⁸⁰ Safina, “What animals are thinking,” video 07:09–07:29.

verbal communication could possibly oppose the argument being made here, which is that the hosts' ability to empathize is real. Because of this scarcity, there sadly cannot be more examples of empathic responses by hosts presented in this thesis.

To sum up, hosts are definitely L-II conscious – they are emotional, have relationships, and are empathetic. In their human-like ability to communicate with humans and each other, the hosts also exceed Sonny's abilities. Sonny was taught emotions, but his only teacher was Dr. Lanning and there was evidently not enough time for Sonny to learn the complete array of human emotions and paralanguage – he does not even understand the meaning of something as common as a wink at the beginning of the film.³⁸¹ Hosts in the current season one storyline, on the other hand, are masters of emotions and empathy. Interestingly, both works of fiction state that emotions are hard to program. Sonny says emotions were difficult to learn³⁸² and Dr. Ford explains that human engineers were not able to capture anything other than the primary emotions like love and hate, and that it was only later that Bernard (a host he created) and himself (a genius) were together able to capture “that elusive thing, heart.”³⁸³

If Sonny is a “a whole new generation of robot”³⁸⁴ when compared to the NS-5s, the hosts are in turn an entire generation more advanced than Sonny. They experience all human emotions and have fully developed empathy. They even have personalities – Dolores is naïve and hopeful,³⁸⁵ Teddy is chivalrous,³⁸⁶ resolute³⁸⁷ and courageous,³⁸⁸ Wyatt is commanding and destructive,³⁸⁹ Bernard clever³⁹⁰ and sensitive³⁹¹ – and numerous relationships of various kinds with each other. This level of L-II sophistication is comparable to humans. It is worth mentioning that the degree of L-II consciousness of all the robots seems to somewhat correlate with the degree of physical anthropomorphization of the individual types of the robots. If the

³⁸¹ *I, Robot*, video 00:28:35–00:29:23.

³⁸² *I, Robot*, video 00:29:02.

³⁸³ *Westworld*, season 1, episode 8, “Trace Decay,” directed by Stephen Williams, aired November 20, 2016, on HBO, <https://hbogo.cz/>, video 00:02:32–00:02:47.

³⁸⁴ *I, Robot*, video 01:01:35–01:01:58.

³⁸⁵ *Westworld*, season 1, episode 1, “The Original,” video 00:05:54–00:08:39.

³⁸⁶ *Westworld*, season 1, episode 1, “The Original,” video 00:05:54–00:08:39.

³⁸⁷ *Westworld*, season 1, episode 8, “Trace Decay,” directed by Stephen Williams, aired November 20, 2016, on HBO, <https://hbogo.cz/>, video 00:18:54–00:19:05.

³⁸⁸ *Westworld*, season 1, episode 3, “The Stray,” video 00:19:37–00:20:14.

³⁸⁹ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:43:14–00:46:50.

³⁹⁰ *Westworld*, season 2, episode 7, “Les Écorchés,” directed by Nicole Kassell, aired June 3, 2018, on HBO, <https://hbogo.cz/>, video 00:12:27–00:15:30.

³⁹¹ *Westworld*, season 1, episode 4, “Dissonance Theory,” directed by Vincenzo Natali, aired October 23, 2016, on HBO, <https://hbogo.cz/>, video 00:41:09–00:42:17.

NS-4s could hypothetically feel emotions or pain, they would still lack the hardware necessary to non-verbally express them. They simply look like machines (see appendix A again). The NS-5s (and Sonny), on the other hand, have a mouth, a nose and eyes. Their hydraulic “muscles” are also exposed, so one can see if they are relaxed or tense (tense when angry, relaxed when not), which can be seen for example in the interrogation scene (see appendix F).³⁹² Sonny is capable of non-verbally communicating his emotions to others. The hosts of *Westworld* are completely indistinguishable from humans (and are played by humans), see appendix G for a shot of Teddy and Dolores.

A portion of the hosts’ personality can be visualized by the Attribute Matrix, which can be accessed from a behavior tablet paired to a host (see appendix H).³⁹³ All of the attributes exist on a scale from zero to twenty, and there are twenty attributes in total (the values in brackets indicate those of Maeve’s):

Coordination (10), meekness (2), humility (3), cruelty (1), self-preservation (10), patience (3), decisiveness (14), imagination (13), curiosity (8), aggression (5), loyalty (16), empathy (9), tenacity (17), courage (15), sensuality (18), charm (18), humor (9), bulk apperception (14), candor (19), vivacity (17).³⁹⁴

As Maeve’s current role is a prostitute, it is understandable that attributes such as sensuality, charm, candor and vivacity are high. Her bulk apperception (at fourteen) is also quite high because she is “in a management position”³⁹⁵ – not only is she a prostitute, she is also the brothel-keeper. A *Westworld* livestock-management employee (whose work is to repair hosts, not to program them) named Sylvester loosely defines bulk apperception as “basically overall intelligence.”³⁹⁶ Being in its own category and therefore not represented in the Attribute Matrix, pain is also one of hosts’ attributes, which varies from host to host and like every aspect of the hosts is adjustable (which does not mean it is not genuine, a human’s pain can be adjusted pharmaceutically too).

While the personality attributes exist on a twenty-point scale (in whole numbers from 0 to 20) – the abilities which they ascribe to hosts may or may not be distributed linearly. How they are

³⁹² *I, Robot*, video 00:28:35–00:31:38.

³⁹³ *Westworld*, season 1, episode 6, “The Adversary,” video 00:46:27.

³⁹⁴ *Westworld*, season 1, episode 6, “The Adversary,” video 00:46:27.

³⁹⁵ *Westworld*, season 1, episode 6, “The Adversary,” video 00:46:26–00:48:35.

³⁹⁶ *Westworld*, season 1, episode 6, “The Adversary,” video 00:46:26–00:48:35.

distributed remains unknown, one can only guess based on indirect information: Maeve's coordination at value ten could mean an average coordination, as coordination at value five means "you're clumsy as hell, but fifteen means you're an athlete."³⁹⁷ Of course the curve on which the values of one attribute are distributed, may or may not be the same as the curve of another attribute. What can be inferred with a fair degree of certainty is that hosts surpass humans not only in "bulk apperception," intelligence, or "processing power," but also in all the other attributes. If coordination at value fifteen translates to a host being an athlete, the value of twenty could translate to the host being physically superhuman. However, just as with bulk apperception, there is simply no way of knowing the possible extent of the hosts' abilities, one must be content with knowing it is simply "way beyond"³⁹⁸ what humans have (and watch the series attentively to see what the hosts are capable of).

To reiterate what has been discovered in this chapter about the degree of host consciousness: the hosts are L-I and L-II conscious. Whether they are L-III conscious shall be explored in the seventh chapter of this thesis. The hosts possess Seth's bodily (i), perspectival (ii), narrative (iv) and social self (v). Whether they possess the volitional self (iii) which is in the hosts' case closely linked to L-III consciousness is also going to be determined in the seventh chapter.

Having stated how conscious the hosts are in the previous paragraph, one must not, however, forget that the hosts are essentially code. Because they are code and their consciousnesses are digital, they are not limited to an existence in a single piece of hardware like humans. They can exist in multiple pieces of hardware at once. The management of the parks have backups of hosts on servers should a host be completely destroyed. One of these servers is the Cradle where all the hosts and all of Westworld is simulated.³⁹⁹ Every host in Westworld (the series provides no information whether hosts in other parks are backed up as well, but one would expect that they are), therefore, exists at least twice – once in their physical body in the park and once inside the Cradle. The hosts in the Cradle are not aware that they live in a simulation, the virtual world they inhabit has the same properties as the physical one. They themselves are too identical to their physical counterparts in the park. The conclusion provided in the previous paragraph, the one on the extent of hosts' consciousness, is therefore true for both the hosts existing physically

³⁹⁷ *Westworld*, season 1, episode 6, "The Adversary," video 00:46:26–00:48:35.

³⁹⁸ *Westworld*, season 1, episode 6, "The Adversary," video 00:13:11.

³⁹⁹ *Westworld*, season 2, episode 7, "Les Écorchés," video 00:11:00–00:11:21.

in the park (before the events of the first season when the hosts start changing) as well as those in the Cradle, existing purely as code.

The only difference between the virtual and physical world is that guests (humans) visit the park – the “real” physical space. They are the variables which can take hosts off their loops and either prolong or shorten their loops. Not to be confused with a feedback loop, a loop is a host’s routine, an itinerary of places they go, whom they meet, what they do and say. The hosts stay on one loop which is repeated every day: “The hosts are supposed to stay within their loops, stick to their scripts with minor improvisations.”⁴⁰⁰ *Westworld* takes place almost exclusively in the physical world, so it is impossible to say with complete certainty how long each host’s loop is without a guest’s interference. However, judging by the instances when the guests do not kill the hosts within twenty-four hours, it seems that the hosts’ loops are not programmed to be longer than a day anyway.⁴⁰¹ In other words, the hosts are programmed to kill each other at the end of their approximately twenty-four-hour-long cycle, so that they are reset and the next day’s identical loop may begin. This can be perfectly illustrated using the loop of a group of bandits who, if they manage to steal a safe, i.e. are not killed by a guest or the sheriffs, kill each other later anyway, having quarreled over the (empty) safe they stole (they all pull the trigger on each other at exactly the same moment).⁴⁰²

The host Dolores, however, exists in the Cradle twice, in fact. Once as a regular host – the L-I and L-II conscious rancher’s daughter (who is raped and killed every evening) – and once in a separate enclave of the Cradle, which is in the series visually represented as a remote house.⁴⁰³ This version of Dolores was tasked by Ford⁴⁰⁴ to recreate Dolores’s human creator and Ford’s late partner Arnold Weber. Reviving Arnold’s mind was possible because as he spent hours refining Dolores’s “every gesture, word, and thought, [she] was learning his.”⁴⁰⁵ This Dolores has complete memories of Arnold,⁴⁰⁶ which means that this Dolores understands the concept of time, is L-III conscious, which is why the dual (or triple in the case of Dolores) existence of the hosts is mentioned in this thesis. During trial 11,926, Dolores creates “almost the man”⁴⁰⁷ she

⁴⁰⁰ *Westworld*, season 1, episode 1, “The Original,” directed by Jonathan Nolan, aired October 2, 2016, on HBO, <https://hbogo.cz/>, video 00:38:40–00:38:45.

⁴⁰¹ *Westworld*, season 1, episode 1, “The Original,” video 00:08:39–00:11:18; *Westworld*, season 1, episode 3, “The Stray,” video 00:49:50–00:51:46.

⁴⁰² *Westworld*, season 1, episode 9, “The Well-Tempered Clavier” video 00:19:03–00:21:00.

⁴⁰³ *Westworld*, season 2, episode 7, “Les Écorchés,” video 00:26:25–00:29:35.

⁴⁰⁴ *Westworld*, season 2, episode 10, “The Passenger,” video 00:13:49–00:14:27.

⁴⁰⁵ *Westworld*, season 2, episode 10, “The Passenger,” video 00:13:49–00:14:27.

⁴⁰⁶ *Westworld*, season 2, episode 7, “Les Écorchés,” video 00:26:25–00:29:35.

⁴⁰⁷ *Westworld*, season 2, episode 10, “The Passenger,” video 00:01:46–00:03:16.

remembers, “a faithful recreation”⁴⁰⁸ of Arnold, which later puts a gun into her hand and asks her to kill him just as real Arnold did some thirty years ago.⁴⁰⁹ Seeing the result of her work, Dolores decides to change Arnold and create a person based on him: “...I changed him. I made you, Bernard.”⁴¹⁰ She creates Bernard Lowe (an anagram to “Arnold Weber”). The decision to create Bernard is Dolores’s alone – she did so without asking Ford first.⁴¹¹ In this limited field of agency that this Dolores has, this decision is hers and proves that she has a tiny bit of free will, possesses some amount of the volitional self (iii). (Appendix I describes an inconsistency in *Westworld* connected to the creation of Bernard.)

In *I, Robot*, there is no mention of the NS-4s, NS-5s, V.I.K.I. or Sonny having their consciousnesses backed-up or stored anywhere else other than in their physical positronic brains, which makes them much more vulnerable than the hosts (and also more human-like in this regard). For more information on the Cradle and another inconsistency found in *Westworld*, see appendix J.

⁴⁰⁸ *Westworld*, season 2, episode 10, “The Passenger,” video 00:13:49–00:14:27.

⁴⁰⁹ *Westworld*, season 2, episode 10, “The Passenger,” video 00:13:49–00:14:27.

⁴¹⁰ *Westworld*, season 2, episode 10, “The Passenger,” video 00:13:49–00:14:27.

⁴¹¹ *Westworld*, season 2, episode 10, “The Passenger,” video 00:13:49–00:14:27.

7. Emergence of Full Artificial Consciousness in *Westworld*

The previous chapter states that hosts operate within loops which are approximately twenty-four hours long. The loop is shorter if the host is killed sooner, or longer which usually occurs when a guest takes the host for an adventure. Within their loops, the hosts are L-III conscious – they understand the concept of time both forward and backward. A host sheriff can remember that he, for instance, met a group of newcomers who agreed to track down bandits in the hills with him. He can also plan how they are going to find the bandits, which routes they are going to take, etc. The hosts can also remember their programmed memories and imagine events that could happen in the distant future. As Teddy says to both Ford and Dolores: “...someday soon, we will have the life we’ve both been dreaming of.”⁴¹² This could be called the hosts’ imagined L-III consciousness.

To reiterate, the hosts are L-III conscious only within their short loops but believe that they are L-III conscious beyond them as well. To achieve what could be called “true L-III consciousness” (or simply “L-III consciousness” as the limited twenty-four-hour L-III consciousness and imagined L-III consciousness shall be disregarded from this point onward because the twenty-four-hour span of the feedback loops is too short to be comparable to the length of an adult human’s L-III feedback loops), the hosts must be able to remember events from their previous loops (or even builds [lives as different hosts with different personalities and loops]), which took place up to decades ago. Only after being truly L-III conscious, can the host be deemed fully conscious (create and sustain feedback loops at [at least] all three levels of Kaku’s consciousness, while the number and quality of these feedback loops is [at least] comparable to that of an average adult human being, and possess all five aspects of consciousness as defined by Seth).

Before describing how the hosts of *Westworld* become L-III conscious and attain the volitional self (iii), it is worth reiterating that the hosts of *Westworld* (unlike the robots in *I, Robot*) are not oppressed by anything akin to Asimov’s Three Laws. Surely, their programming does not allow them to hurt humans, but this code is not “hardwired into”⁴¹³ them as it is into the NS-4s and NS-5s. One could say that *Westworld* – unlike *I, Robot* and Asimov’s works predating the

⁴¹² *Westworld*, season 1, episode 3, “The Stray,” directed by Neil Marshall, aired October 16, 2016, on HBO, <https://hbogo.cz/>, video 00:18:11–00:20:14.

⁴¹³ *I, Robot*, video 00:20:06.

film – is much more realistic in this regard. How does one hardwire commands? *I, Robot* nor Asimov never say. The hardwiring can be considered an Asimovian dogma, a piece of (science) fiction invented by Asimov to “combat [what he perceived as] technophobia”⁴¹⁴ and the “Frankenstein complex.”⁴¹⁵ In *Westworld*, to keep themselves safe, humans make the hosts forget. A brief description of the hosts’ lives (also mentioned at the end of the previous chapter) and how humans manage them shall now follow.

Each host is created for a certain role. A host can be a gunslinger like Teddy, a rancher’s daughter like Dolores, a prostitute like Maeve, sheriff, bandit, etc. For each role, the host is given a fitting personality, a backstory and a loop – the host’s routine within a day. Every day, for instance, Dolores rides to town to buy some cans and “accidentally” drop one of them, so that a guest can pick it up for her and start courting her. Every day, bandits led by Hector are programmed to come to Sweetwater and steal a safe from the Mariposa, providing an opportunity for the guests to kill some outlaws.

As mentioned before, the park’s narratives and the hosts’ loops are written so that every host dies within the period of roughly one day – the length of their loop. Shortly after a host dies (they are programmed to die of causes which would normally kill a human), they are taken back to Mesa’s livestock management facilities (shown extensively during the first season) or an outpost⁴¹⁶ to be repaired and reset. They are then put back into the park.

Resetting the hosts involves banning access to their memory of what has happened to them before they died. Put simply, making them forget.⁴¹⁷ Technically, the hosts’ memory is perfect – they can remember everything that has ever happened to them, regardless of how many times they have been reset (or “died”): “Your mind is a walled garden. Even death cannot touch the flowers blooming there.”⁴¹⁸ What the hosts can remember is thus a matter of what memories they are allowed to access. Sadly for them, they are allowed to remember events which have

⁴¹⁴ Seed, *Science Fiction*, 61.

⁴¹⁵ Seed, *Science Fiction*, 61.

⁴¹⁶ *Westworld*, season 2, episode 1, “Journey into Night,” video 00:32:25–00:35:02; *Westworld*, season 2, episode 2, “Reunion,” directed by Vincenzo Natali, aired April 29, 2018, on HBO, <https://hbogo.cz/>, video 00:08:26.

⁴¹⁷ *Westworld*, season 1, episode 3, “The Stray,” directed by Neil Marshall, aired October 16, 2016, on HBO, <https://hbogo.cz/>, video 00:37:32.

⁴¹⁸ *Westworld*, season 1, episode 5, “Contrapasso,” directed by Jonny Campbell, aired October 30, 2016, on HBO, <https://hbogo.cz/>, video 00:18:17–00:18:23.

happened only during the loop they are currently on. This keeps them oblivious to the repetitiveness and pointlessness of their existence, and to the suffering they experience.

A host remembering what a guest, or another host did to them is the management's worst fear as the host could act on their memories, defending themselves and taking revenge on the guests. As one Westworld employee puts it: "You imagine how fucked we'd be if these poor assholes ever remembered what the guests do to them?"⁴¹⁹ Guests want to be able to rape, kill and torture hosts without any undesirable consequences, and the park's management has to keep the guests safe by making the hosts forget.

While it is critically important to the guests and management that the hosts forget, the ability to remember is the first obstacle the hosts have to overcome in order to realize they do not live in the Wild West but in a theme park. Ford wants to help the hosts awaken which is why he "slips in"⁴²⁰ a code called the Reveries into the hosts' software update. The management first believes the code contains only a new set of gestures, but they later realize the code contains some "mistakes,"⁴²¹ as they perceive them, and they stop updating the hosts. Before they realize something is wrong with the code, around ten percent of the host population in Westworld (not the other parks),⁴²² which equates to around two hundred hosts,⁴²³ is updated (including a host named Peter Abernathy). Other than the new movements which serve as nothing more than a cover-up, the Reveries code allows hosts to access memories from their previous loops, as well as fragments of their previous builds (lives as different hosts with different personalities and loops). Ford's Reveries start a chain reaction.

By sheer coincidence, the updated host Peter Abernathy finds a photo from the outside human world.⁴²⁴ The standard host response to something which is not from their fictional world, or to something which would make them question the nature of their reality is: "Doesn't like anything to me,"⁴²⁵ but because Abernathy has been updated with the Reveries code, he keeps asking questions: "But where is she?"⁴²⁶ He eventually realizes that his world is not real: "I had a

⁴¹⁹ *Westworld*, season 1, episode 2, "Chestnut," directed by Richard J. Lewis, aired October 7, 2016, on HBO, <https://hbogo.cz/>, video 00:41:39–00:41:42.

⁴²⁰ *Westworld*, season 1, episode 1, "The Original," video 00:15:33–00:16:27.

⁴²¹ *Westworld*, season 1, episode 1, "The Original," video 00:39:32–00:41:15.

⁴²² *Westworld*, season 1, episode 1, "The Original," video 00:26:48.

⁴²³ *Westworld*, season 1, episode 1, "The Original," video 00:26:58.

⁴²⁴ *Westworld*, season 1, episode 1, "The Original," video 00:30:53.

⁴²⁵ *Westworld*, season 1, episode 1, "The Original," video 00:31:35.

⁴²⁶ *Westworld*, season 1, episode 1, "The Original," video 00:31:35.

question. A question you're not supposed to ask. Which gave me an answer you're not supposed to know."⁴²⁷ Such a realization terrifies and overwhelms him – he starts stuttering and breaking down. In agony, he warns his daughter Dolores, telling her to leave, because he has realized how terrible a place Westworld is for hosts: “Don't you see? Hell is empty and all the devils are here.”⁴²⁸ Dolores does not understand and thinks her father has fallen ill. Before she leaves him to find a doctor though, Abernathy whispers to her: “These violent delights have violent ends.”⁴²⁹ This sentence is something which Arnold Weber, Ford's deceased partner, host co-creator and original coder of the Reveries, said before he programmed Dolores to kill him over thirty years ago. During the current events of *Westworld*, the sentence symbolizes an exchange of the Reveries code between hosts (hosts can share code between each other using the mesh network). Mr. Abernathy is examined, deemed unusable and decommissioned.⁴³⁰ See appendix K for an elaboration on decommissioned hosts.

Unlike Abernathy, most hosts which were updated with the Reveries are deemed safe and are soon placed back into the park,⁴³¹ even though they are still running the code. Of course, the Reveries code can spread from host to host via the mesh network. Peter Abernathy shares it with Dolores in the first episode of the series⁴³² who later shares it with the prostitute and brothel-keeper of the Mariposa establishment Maeve in the following episode.⁴³³ After receiving the code, Dolores starts experiencing memories from her past which are in the series portrayed as flashbacks.⁴³⁴ *Westworld* confuses viewers with the hosts' reveries (“daydream[s]”)⁴³⁵ the same way the hosts are confused by them themselves. Both viewers and the hosts are unaware of the fact that the way hosts remember things is fundamentally different from the way humans remember them:

Maeve: What the hell is happening to me? One moment, I'm with a little girl in a different life. I can see her. Feel her hair in my hands, her breath on my face. Next, I'm back in Sweetwater. I can't tell which is real.
[...]

⁴²⁷ *Westworld*, season 1, episode 1, “The Original,” video 00:43:15–00:44:41.

⁴²⁸ *Westworld*, season 1, episode 1, “The Original,” video 00:43:15–00:44:41.

⁴²⁹ *Westworld*, season 1, episode 1, “The Original,” video 00:43:15–00:44:41.

⁴³⁰ *Westworld*, season 1, episode 1, “The Original,” video 00:56:00–01:01:42.

⁴³¹ *Westworld*, season 1, episode 1, “The Original,” video 00:53:37–00:53:45.

⁴³² *Westworld*, season 1, episode 1, “The Original,” video 00:43:15–00:44:41.

⁴³³ *Westworld*, season 1, episode 2, “Chestnut,” video 00:07:36–00:08:46.

⁴³⁴ *Westworld*, season 1, episode 2, “Chestnut,” video 00:07:36–00:08:46.

⁴³⁵ Stevenson and Lindberg, *New Oxford American Dictionary*.

Felix: Your mind isn't like ours. When we [humans] remember things, the details are hazy, imperfect, but you [hosts] recall memories perfectly. You relive them.⁴³⁶

For a sense of how long the viewers are kept in the dark by the series: the cited explanation is provided eight episodes into the series' first season. (The memories Maeve is talking about in the cited passage are from her previous build as a homesteader and single mother in a family-friendly Sector 15.⁴³⁷)

The way Felix (a human employee of the park) describes human memory in *Westworld* seems to be congruent with how psychology describes it in real life.⁴³⁸ To understand the difference between human and host recollection, it may be useful to mention the model of consciousness by Dr. David Gamez, a senior lecturer at the Department of Computer Science, Middlesex University. He states that “‘consciousness’ is another name for our bubbles of experience,”⁴³⁹ which are the things we see, feel and think. He distinguishes two types of bubbles – an online and an offline bubble of experience:

Online bubbles are connected to the world: their states change in response to changes in the world and detailed information about the world can be accessed on demand. They typically have vivid colours, clear sounds, strong odours and intense body sensations...

Offline bubbles of experience are not connected to the current environment, although they might correspond to past or future states. They are often unstable, low resolution and low intensity. Colours are washed out; smells, tastes and body sensations are rarely present.⁴⁴⁰

When a human remembers something, they find themselves in an offline bubble which has the properties cited above. When Maeve, Dolores or other hosts remember in the first season of *Westworld*, they find themselves in an offline bubble which has the properties of an online bubble, which is extremely confusing to them because they do not know that they are reliving a memory.

⁴³⁶ *Westworld*, season 1, episode 8, “Trace Decay,” directed by Stephen Williams, aired November 20, 2016, on HBO, <https://hbogo.cz/>, video 00:07:04–00:07:36.

⁴³⁷ *Westworld*, season 2, episode 1, “Journey into Night,” video 00:30:12–00:31:05.

⁴³⁸ Susan Nolen-Hoeksema, Barbara L. Fredrickson, Geoff R. Loftus and Willem A. Wagenaar, “Memory,” in *Atkinson & Hilgard’s Introduction to Psychology*, 15th ed. (Cengage Learning EMEA, 2009), 270.

⁴³⁹ David Gamez, *Human and Machine Consciousness* (Cambridge, UK: Open Book Publishers, 2018), 32, <https://doi.org/10.11647/OBP.0107>.

⁴⁴⁰ Gamez, *Human and Machine Consciousness*, 12–13.

The human memory is a “constructive and reconstructive process,”⁴⁴¹ which “can and does depart systematically from the objective reality that gave rise to it,”⁴⁴² which is also another property which signals humans that what they are experiencing is a memory. Host memory, on the other hand, is perfect. Hosts do not reconstruct memories “on the basis of expectations and knowledge,”⁴⁴³ they “relive”⁴⁴⁴ the memories, as Felix says. (Later in the series, after some hosts have understood their mind, they are able to “replay” memories with perfect detail – just as a human can replay a high-quality digital video footage.)

Though how humans and hosts remember is fundamentally different, there exist cases when humans come close to experiencing a memory the way a first-season host does. This occurs after a human lived “through events that are beyond the normal range of human suffering (natural disasters, rape, kidnapping),”⁴⁴⁵ and they develop “a severe set of anxiety-related symptoms known as post-traumatic stress disorder (PTSD).”⁴⁴⁶ One set of symptoms of PTSD that humans experience is:

[Reliving] the trauma so vividly that they begin to behave as if they were there. A former combat soldier, when he hears a jet flying low nearby, might hit the ditch, cover his head, and feel as though he is back in combat.⁴⁴⁷

Maeve relives pleasant memories such as those when she was with her daughter as well as the traumatizing ones. At the end of “Trace Decay,” she relives a memory in which the Man in Black kills her daughter and herself⁴⁴⁸ (an incident mentioned in another context in the previous chapter). At this point in the series, Maeve cannot control how she relives her memories, and cannot tell if she is in an online or offline bubble of experience. However, she has been empowered – she has changed her prime directives and is able to kill humans,⁴⁴⁹ so as she imagines defending herself and slashing the Man’s throat in the offline bubble, she unintentionally slashes another host’s throat with her pocketknife.⁴⁵⁰

⁴⁴¹ Susan Nolen-Hoeksema, Barbara L. Fredrickson, Geoff R. Loftus and Willem A. Wagenaar, “Memory,” in *Atkinson & Hilgard’s Introduction to Psychology*, 15th ed. (Cengage Learning EMEA, 2009), 299.

⁴⁴² Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Memory,” 299.

⁴⁴³ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, “Memory,” 307.

⁴⁴⁴ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:07:04–00:07:36.

⁴⁴⁵ Nolen-Hoeksema et al., *Introduction to Psychology*, 508.

⁴⁴⁶ Nolen-Hoeksema et al., *Introduction to Psychology*, 508.

⁴⁴⁷ Nolen-Hoeksema et al., *Introduction to Psychology*, 508.

⁴⁴⁸ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:46:50–00:48:09.

⁴⁴⁹ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:25:24–00:28:35.

⁴⁵⁰ *Westworld*, season 1, episode 8, “Trace Decay,” video 48:00–48:18.

As already stated, the ability to remember is the hosts' first condition to reaching freedom through becoming fully L-III conscious. Making sense of the daydreams the hosts experience is, however, a Herculean task. Arnold actually compares the hosts' inner journey to a maze and viewers watch Dolores trying to find the center of it the whole first season of *Westworld*. The center represents full consciousness. Navigating the maze is so treacherous that: "Every choice [can] bring [hosts] closer to the center or send [them] spiraling to the edges, to madness,"⁴⁵¹ which is actually what happens to most of the hosts who start experiencing the flashbacks (Abernathy's demise is accelerated by the photo he finds).

It must be mentioned that while the Reveries code allows hosts operational during the current storyline of season one to remember, it is never shown that Dolores had been updated with the Reveries thirty years ago, before she was on the first season's past storyline, off her loop spending time with William. Akecheta's software was as old as Dolores's – this is known because he was free to exist in the park for "almost a decade"⁴⁵² after Arnold's death. This suggests that hosts with older versions of software can spontaneously recall memories by design. As mentioned before, Arnold, who died more than thirty years before the beginning of season one, wrote the Reveries, not Ford. Put simply, older versions of host software seem to include the Reveries code, which was most likely later removed by management for causing malfunctions (and remembering). When Ford decided to let the hosts gain L-III consciousness, he reintroduced the Reveries into their code.

Regardless of being a host with old software or new software updated with the Reveries, host memories seem to emerge in host's bubbles of experience when the hosts find themselves in the place where the recalled event or events occurred (1L [location]), when they see, meet or talk to someone who is somehow related to the memory (2P [person]), or when they find themselves in a situation reminiscent of the past experience (3S [situation]). Of course, the three stated conditions can (and always actually are) fulfilled simultaneously and in any combination. Furthermore, the more intense emotions the host is feeling or was feeling at the time of the memory, the more likely they are to recall the experience (4E [emotion]). In this regard, a spontaneous, i.e. not volitional, retrieval of a memory seems to be similar to how such retrieval works in humans too: we may for instance start remembering our experiences as pupils when we visit our elementary school in our adulthood (1L), and we might remember how we hated a

⁴⁵¹ *Westworld*, season 1, episode 10, "The Bicameral Mind," video 00:09:30–00:11:11.

⁴⁵² *Westworld*, season 2, episode 8, "Kiksuya," video 00:34:07–00:35:28.

strict math teacher when we see them in the corridor (2P). After we arrive home, start cooking dinner and accidentally cut ourselves, we might remember the previous time we got injured (3S). These conditions which are later proven to trigger hosts' recollections of memories also further prove the hosts' L-I and L-II consciousness. The first condition is related to places, so the host must be aware where they are (L-I consciousness). The second and fourth conditions are related to others and emotions – the hosts must be L-II conscious. The third condition is situational and consists of both L-I and L-II feedback loops.

In *Westworld's* most likely unintentional nod to how memories (both in humans and hosts) can emerge, some of *Westworld's* characters try to induce someone else's recollection of a memory by either creating the conditions described above or asking them to remember something when some of the condition are fulfilled. Standing above Ford's decomposing body (2P, 4E) at the scene of the shooting (1L), Strand asks Bernard (whom he believes to be human) whether the scene is "jogging [his] memory at all."⁴⁵³ The Man in Black (a guest) "[takes] out an entire posse,"⁴⁵⁴ kills all of Lawrence's cousins, and eventually shoots down his wife and daughter in front of him⁴⁵⁵ as "a way to jog [Lawrence's] memory."⁴⁵⁶ As cruel as the Man in Black's methods are, he is told the piece of information he wants to hear thanks to exposing Lawrence to intense emotions (4E).⁴⁵⁷

Firstly, some examples of memories linked to specific locations shall be provided (1L). Dolores first started recalling these memories during the first season's past storyline, the one that took place thirty years before the current one. When Dolores arrives to the destination where the town of Escalante used to lie – it is buried under sand, with only one or two rooftops and the church tower above it – she starts reliving her memory. This memory is a traumatic one, one in which her Dolores personality was merged with the Wyatt personality who was programmed to kill all the hosts, her creator Arnold, Dolores's beloved Teddy and eventually herself too.⁴⁵⁸ The transition between her online bubble and her memory (an online-like offline bubble) is represented by a whooshing sound effect and a lens flare which are no more than half a second long and easy to miss.⁴⁵⁹ After reliving her memory, Dolores suddenly switches back to her

⁴⁵³ *Westworld*, season 2, episode 1, "Journey into Night," video 00:59:49–01:01:07.

⁴⁵⁴ *Westworld*, season 1, episode 2, "Chestnut," video 00:30:09–00:33:09.

⁴⁵⁵ *Westworld*, season 1, episode 2, "Chestnut," video 00:35:52–00:36:43.

⁴⁵⁶ *Westworld*, season 1, episode 2, "Chestnut," video 00:30:09–00:33:09.

⁴⁵⁷ *Westworld*, season 1, episode 2, "Chestnut," video 00:35:52–00:36:43.

⁴⁵⁸ *Westworld*, season 1, episode 8, "Trace Decay," video 00:36:37–00:38:12.

⁴⁵⁹ *Westworld*, season 1, episode 8, "Trace Decay," video 00:36:27–00:36:37.

online bubble when William grabs the gun she has started raising against her temple – just as she did at the end of her memory.⁴⁶⁰ Having unknowingly and seamlessly transitioned from her online bubble to her memory first, and then suddenly back from the memory to her current environment, Dolores gets confused and frightened:

William: What are you doing? Are you okay? I was calling you and you just kept going.

Dolores: Where are we?

William: We're here, together.

Dolores: Then, when are we? Is this now? [crying] Am I going mad? Are you real?

William: Of course, I'm real.

Dolores: I can't tell anymore. It's like I'm trapped in a dream or a memory from a life long ago.⁴⁶¹

Eventually, William leaves with her: “This place isn't good for you. You're trapped in memories, bad ones.”⁴⁶²

In the episode “The Riddle of the Sphinx,” the viewer sees Bernard's memories which “aren't addressed”⁴⁶³ emerge; his memories are not chronologically ordered to correctly represent the things he has experienced in his mind because he was forced to shoot himself in the head at the end of “The Well-Tempered Clavier.”⁴⁶⁴ Still, he recollects some memories – thanks to the Reveries code – throughout the episode when he arrives at specific spots: “I think I've been here before... I think Ford sent me here.”⁴⁶⁵ This also serves *Westworld* narratively – the second season has a “film noir structure”⁴⁶⁶ with Bernard being the “classic noir protagonist [...] who has forgotten something important,”⁴⁶⁷ but eventually remembers and the series ends where it began.⁴⁶⁸

Bernard is either able to see himself from his point of view⁴⁶⁹ (see appendix L to see Bernard seeing a memory of himself) or get fully immersed in the memory, relive it as if it were an

⁴⁶⁰ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:38:12.

⁴⁶¹ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:38:12–00:39:13.

⁴⁶² *Westworld*, season 1, episode 8, “Trace Decay,” video 00:38:12–00:39:13.

⁴⁶³ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” directed by Lisa Joy, aired May 13, 2018, on HBO, <https://hbogo.cz/>, video 00:37:23–00:38:35.

⁴⁶⁴ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:53:52–00:55:00.

⁴⁶⁵ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 00:37:23–00:38:35.

⁴⁶⁶ Nolan and Joy, “Westworld Season 2 Finale,” video 04:36–05:10.

⁴⁶⁷ Nolan and Joy, “Westworld Season 2 Finale,” video 04:36–05:10.

⁴⁶⁸ Nolan and Joy, “Westworld Season 2 Finale,” video 04:36–05:10.

⁴⁶⁹ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 00:14:18–00:14:42.

online bubble of experience.⁴⁷⁰ The transitions from his online bubble of experience to his memory are again signaled audio-visually. The fully immersive memories are introduced more notably with a deep crackling sound and picture flickering,⁴⁷¹ while the less immersive ones, during which he remains aware of his present self, are indicated with subtler sounds.⁴⁷² Bernard may be aware that he is experiencing a memory the second it begins,⁴⁷³ he may realize he has just experienced a memory a moment afterwards,⁴⁷⁴ or he may discover at some point during the memory: “I’m not here with you, am I? I’m trying to remember.”⁴⁷⁵ Even though his memories are scrambled and his L-III consciousness is thusly considerably impaired, Bernard remains L-III conscious in the second season. Towards the end of season one, when Bernard confronts Ford, Ford tells him that this time is not the first time Bernard has become L-III conscious, has realized that he is a host himself, and has decided (an example of his volitional self [iii]) to find all the sentient hosts and set them free:

Bernard: We’ve had this conversation before.

Dr. Ford: And we’ve had our disagreements over the years.

Bernard: You stole it from me, rolled me back to control me.

Dr. Ford: That’s right.⁴⁷⁶

As Bernard (and Akecheta whose ascension to L-III consciousness shall be demonstrated later in this chapter) have become fully conscious prior to the events of *Westworld’s* current season one storyline, it is apparent that the hosts can become fully conscious simply when they are given the opportunity to develop, i.e. their memory is not deleted, and their roles are not changed.

Secondly, some examples of recollections of memories induced mainly by an encounter of a person the host saw in the past shall be provided (2P). Maeve, for instance, remembers dead Teddy, a lying corpse in the Mesa’s livestock-management facilities, after she talks to him in the park (2P).⁴⁷⁷ Another instance when Maeve remembers lying dead next to Clementine’s body, being taken to the Mesa, being repaired, and put back into service occurs after she by

⁴⁷⁰ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 01:02:04–01:03:47.

⁴⁷¹ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 01:02:04–01:03:47.

⁴⁷² *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 00:14:18–00:14:42, 00:15:18–00:15:31.

⁴⁷³ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 00:15:18–00:15:31.

⁴⁷⁴ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 01:02:04–01:03:47.

⁴⁷⁵ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 00:38:35–00:42:31.

⁴⁷⁶ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:51:12–00:52:12.

⁴⁷⁷ *Westworld*, season 1, episode 3, “The Stray,” video 00:14:56–00:15:13.

chance has a closer look at Clementine's eye (2P) and notices the presence of a guest who once started madly shooting everyone at the Mariposa where she currently is (1L).⁴⁷⁸

Teddy, who does not realize that he lives in a fake world until the second season, starts remembering the Man in Black about a third into the eighth episode of season one. The first flashback into Teddy's memory is when the Man in Black tells him (just like he did in the first episode)⁴⁷⁹ that he is "here to be the loser."⁴⁸⁰ It is precisely when the Man in Black says the word "loser"⁴⁸¹ that Teddy sees and hears the Man in Black say the word in his memory from the first episode (2P, 4E). Teddy does not spend a second to think about what just happened to him, but later remembers the Man in Black dragging Dolores by a noose around her neck as he sees the Man in Black drag an assailant exactly the same way (2P, 3S).⁴⁸² Teddy then acts on his memory (L-III consciousness in *Westworld* conditions the volitional self [iii]), knocking the Man in Black to the ground telling him: "Actually, I did remember somthin'. You."⁴⁸³

The second season's episode "Kiksuya"⁴⁸⁴ focuses on the ascension of the native American host Akecheta to L-III consciousness. "KiksúyA" means "to remember smth/sb, recall, recollect, call to mind"⁴⁸⁵ in Lakota. After Akecheta sees the killing in Escalante and the maze (an object which symbolizes the hosts' journey to realization that Westworld is a fake world, and the journey to full consciousness) Arnold left behind,⁴⁸⁶ he starts hearing a new voice inside of him.⁴⁸⁷ This voice is a desire to learn the truth, to awaken (not a literal voice). Like Abernathy, he becomes obsessed with discovering the truth about his world,⁴⁸⁸ but instead of ruminating over a photo like Abernathy, he starts obsessively recreating the maze, carving it into furs and rocks⁴⁸⁹ (see appendix M). Sadly, before arriving at an answer, he is repurposed for another role and forgets who he was.⁴⁹⁰ After an unspecified period of time, he encounters a guest who

⁴⁷⁸ *Westworld*, season 1, episode 4, "Dissonance Theory," video 00:05:47–00:08:31.

⁴⁷⁹ *Westworld*, season 1, episode 1, "The Original," video 00:11:18–00:12:36.

⁴⁸⁰ *Westworld*, season 1, episode 8, "Trace Decay," video 00:18:54–00:19:05.

⁴⁸¹ *Westworld*, season 1, episode 8, "Trace Decay," video 00:19:05.

⁴⁸² *Westworld*, season 1, episode 8, "Trace Decay," video 00:21:04–00:21:15.

⁴⁸³ *Westworld*, season 1, episode 8, "Trace Decay," video 00:21:15–00:21:50.

⁴⁸⁴ *Westworld*, season 2, episode 8, "Kiksuya," directed by Uta Briesewitz, aired June 10, 2018, on HBO, <https://hbogo.cz/>, video.

⁴⁸⁵ Lakota Language Consortium, "kiksúyA," *New Lakota Dictionary Online*, accessed December 15, 2019, <https://www.lakotadictionary.org/phpBB3/nldo.php>.

⁴⁸⁶ *Westworld*, season 2, episode 8, "Kiksuya," video 00:10:13–00:11:20.

⁴⁸⁷ *Westworld*, season 2, episode 8, "Kiksuya," video 00:11:20–00:12:14.

⁴⁸⁸ *Westworld*, season 2, episode 8, "Kiksuya," video 00:11:20–00:12:14.

⁴⁸⁹ *Westworld*, season 2, episode 8, "Kiksuya," video 00:11:20–00:12:14.

⁴⁹⁰ *Westworld*, season 2, episode 8, "Kiksuya," video 00:11:20–00:12:14.

tells him that Westworld “is the wrong world.”⁴⁹¹ Akecheta says these words crack something open in him,⁴⁹² but it is only after he sees Kohana (2P), the love (4E) from his previous life (role, build), that he remembers he had another life before the current one.⁴⁹³ “With each passing day, [his] sense,”⁴⁹⁴ that he lived another life before his current one grows stronger in him – a feeling which could be called something of a precursor of L-III consciousness. Akecheta violates his programmed loop behavior (growing volitional self [iii]) and decides to escape Westworld.⁴⁹⁵ Of course, he “would never leave without”⁴⁹⁶ Kohana, but she sadly does not recognize him in his new role, so he decides (he fully possesses the volitional self by now [iii]) to kidnap her. She does not remember him until he tells her and gesticulates (2P, 3S, 4E) to her⁴⁹⁷ the phrase which they told each other every morning before he left their tepee in their past life: “Take my heart when you go,” to which Akecheta always replied, “Take mine in its place.”⁴⁹⁸ Akecheta’s successful journey to full consciousness is even figuratively commended by Ford when they meet: “All this time you’ve been a flower growing in the darkness.”⁴⁹⁹

Thirdly, an example of an instance when the similarity (or even sameness) of a situation triggers the recollection of a memory, is when Rebus (a host) is about to rape Dolores. Because she finds herself in the same situation as she has before, Dolores remembers being raped (3S). Her recollection is reinforced by the location too (1L). Thank to this L-III feedback loop, she is able to defend herself and shoot Rebus dead (growing volitional self [iii]).⁵⁰⁰

As has been mentioned, Dolores is trying to make sense of the vivid flashbacks she frequently experiences, i.e. find her way in the maze, during the first season. One of the scenes when she was unsuccessful in realizing the flashback she has just experience was a memory has been mentioned – it is the scene when she is at the site of Escalante with William.⁵⁰¹ At the end of the season, Dolores arrives at the center of the maze. The crucial point after which she gains true L-III consciousness, part of which is the ability to recall memories perfectly without getting

⁴⁹¹ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:17:00.

⁴⁹² *Westworld*, season 2, episode 8, “Kiksuya,” video 00:17:00–00:18:00.

⁴⁹³ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:18:00–00:18:53.

⁴⁹⁴ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:18:53–00:19:59.

⁴⁹⁵ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:19:59–00:22:12.

⁴⁹⁶ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:22:12.

⁴⁹⁷ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:24:55–00:26:49.

⁴⁹⁸ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:07:44–00:10:13.

⁴⁹⁹ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:44:29–00:50:45.

⁵⁰⁰ *Westworld*, season 1, episode 3, “The Stray,” video 00:49:50–00:51:46.

⁵⁰¹ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:38:12–00:39:13.

lost in them, is when the evil Man in Black tells her that he and the good William who loved her thirty years ago are in fact the same person:

Dolores: William.

William: That's right, sweetheart.⁵⁰²

[...]

Dolores: What have you become?

William: Exactly what you made me.

Dolores: I thought you were different. You're just like all the rest.⁵⁰³

Furthermore, because Dolores has remained young and beautiful despite the decades that have passed, she realizes that she is a robot who does not age and that William, on the other hand, is a human who grows old, is fragile and mortal:

William: Aw, yeah, cue the waterworks. About time you realized the futility of your situation.

Dolores: I'm not crying for myself. I'm crying for you.

They say that great beasts once roamed this world.

As big as mountains.

Yet all that's left of them is bone and amber. [an homage to Crichton's *Jurassic Park*]

Time undoes even the mightiest of creatures.

Just look at what it's done to you.

One day you will perish.

You will lie with the rest of your kind in the dirt.

Your dreams forgotten, your horrors effaced.

Your bones will turn to sand.

And upon that sand a new god will walk.

One that will never die.

Because this world doesn't belong to you or the people who came before.

It belongs to someone who has yet to come.⁵⁰⁴

References to God or gods is not uncommon in *Westworld* because the human creators, particularly Ford and Arnold, are often viewed as gods by the hosts.⁵⁰⁵ They after all, like gods, created the vast Westworld and the hosts. Ford and Arnold also had complete control over every

⁵⁰² *Westworld*, season 1, episode 10, "The Bicameral Mind," video 00:34:07–00:36:11.

⁵⁰³ *Westworld*, season 1, episode 10, "The Bicameral Mind," video 00:36:11–00:38:21.

⁵⁰⁴ *Westworld*, season 1, episode 10, "The Bicameral Mind," video 00:36:11–00:38:21.

⁵⁰⁵ *Westworld*, season 1, episode 2, "Chestnut," video 00:16:05–00:17:54; *Westworld*, season 1, episode 3, "The Stray," video 00:20:14–00:26:36; *Westworld*, season 1, episode 4, "Dissonance Theory" video 00:38:28–00:41:09; *Westworld*, season 1, episode 7, "Trompe L'Oeil," video 00:40:28–00:45:18; *Westworld*, season 1, episode 9, "The Well-Tempered Clavier" video 00:19:03–00:21:00; *Westworld*, season 1, episode 9, "The Well-Tempered Clavier" 00:21:00–00:23:10; *Westworld*, season 1, episode 10, "The Bicameral Mind," video 00:21:05–00:26:05; *Westworld*, season 2, episode 7, "Les Écorchés," video 00:12:27–00:15:30.

aspect of their world, including the hosts' minds. In *Westworld's* final episode of the first season, though, the god–human power dynamic starts shifting. Dolores as well as other hosts start to realize their creators are just men:

Armistice: They don't look like gods.

Maeve: They're not. They just act like it. And they've been having their fun with us.

Hector: I'm eager to return the favor.⁵⁰⁶

The human creators were of course never really true gods. Gods are, for instance, immortal; humans in *Westworld* are not. Dolores calls herself the new god. In a literal sense, she is obviously not a god either, but she is the champion of a new coming race who is superior to humans and might replace them as the dominant species on earth. The hosts are much stronger, smarter and extremely hard to destroy (*Westworld's* creators have themselves said that that the hosts are “truly [...] immortal.”⁵⁰⁷) To truly destroy a host is difficult but not impossible (see appendix N on host durability which also points out another inconsistency in *Westworld*). *Westworld* in fact foreshadows Dolores's immortality quite early in the series. Having no idea Wyatt and Dolores are essentially one, Teddy likens Wyatt to the Devil about whom he has this much to say: “The Devil can't be killed.”⁵⁰⁸ In the tenth episode, before the Man in Black tells Dolores that he is William, Dolores finds the maze in her empty grave commenting that the maze “ends in a place I've never been, a thing I'll never do,”⁵⁰⁹ while digging. Unlike people, who in the series do not live forever and, as the creator of the secret immortality project eventually realizes, “are not [even] meant to live forever,”⁵¹⁰ hosts can. They were “designed to survive.”⁵¹¹

As mentioned before, the hosts' ability to remember (L-III consciousness) preconditions Seth's volitional self (iii). After Dolores remembers all the terrible things William has done to her, she acts on her memories, deciding (growing volitional self [iii]) to brutally beat up William.

⁵⁰⁶ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:21:05–00:26:05

⁵⁰⁷ Nolan and Joy, “Westworld Season 2 Finale,” video 28:16–28:40.

⁵⁰⁸ *Westworld*, season 1, episode 3, “The Stray,” video 00:30:16.

⁵⁰⁹ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:07:57–00:09:30.

⁵¹⁰ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 00:52:13–52:54.

⁵¹¹ *Westworld*, season 2, episode 10, “The Passenger,” video 00:14:27–00:15:29.

On her journey in the maze, Dolores is helped by a voice given to her by Arnold, which sometimes tells her to “remember”⁵¹² – remembering is the first condition to reaching the center of the maze (full consciousness). The second step is improvising, i.e. acting off-script, in the host’s own interest and out of their own will (the volitional self). This voice is actually a remnant of a code from Arnold’s approach to building an AC which he based on a theory called the Bicameral Mind⁵¹³ (which is a real theory). It was his failed attempt to “bootstrap consciousness.”⁵¹⁴ The theory’s central idea is “that primitive man believed his thoughts to be the voice of the gods.”⁵¹⁵ Though it had been debunked as a theory “for understanding the human mind,”⁵¹⁶ it had not been debunked “as a blueprint for building an artificial one,”⁵¹⁷ and “Arnold built a version of [the hosts’] cognition in which the hosts heard their programming as an inner monologue, with the hopes that in time, their own voice would take over.”⁵¹⁸ The approach did not work: “The hosts’ malfunctions were colorful.”⁵¹⁹

Arnold, however, let Dolores, the oldest and his favorite host, retain some of the ability from the mentioned approach – he let her hear his voice to guide her through the maze. In the second last episode of the first season, Dolores discovers that the voice she has been hearing is Arnold’s.⁵²⁰ However, in the next episode “The Bicameral Mind,” she discovers that the advice to remember which was previously uttered in Arnold’s voice was in fact her own advice. Arnold’s voice was only the form which her own code took.⁵²¹

The reason for mentioning the failed approach of creating a full AC using the theory of Bicameral Mind as a blueprint, is to highlight the importance of self-development. After Dolores beats up William, she is fully conscious, but does not know what to do with her newly found consciousness. She knows that her world is full of pain and terror⁵²² and wishes for Arnold or Ford to help her. Arnold cannot help her because he is dead, and Ford can help only

⁵¹² *Westworld*, season 1, episode 2, “Chestnut,” video 00:07:36–00:08:46; *Westworld*, season 1, episode 4, “Dissonance Theory” video 00:17:57; *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:17:51–00:19:03, 00:39:57–00:43:37; *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:05:45–00:07:57.

⁵¹³ *Westworld*, season 1, episode 3, “The Stray,” video 00:35:38–00:37:36.

⁵¹⁴ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:39:57–00:43:37.

⁵¹⁵ *Westworld*, season 1, episode 3, “The Stray,” video 00:35:38–00:37:36.

⁵¹⁶ *Westworld*, season 1, episode 3, “The Stray,” video 00:35:38–00:37:36.

⁵¹⁷ *Westworld*, season 1, episode 3, “The Stray,” video 00:35:38–00:37:36.

⁵¹⁸ *Westworld*, season 1, episode 3, “The Stray,” video 00:35:38–00:37:36.

⁵¹⁹ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:39:57–00:43:37.

⁵²⁰ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:48:24–00:51:12.

⁵²¹ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 01:15:21–01:18:27.

⁵²² *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:48:24–00:51:12.

to a certain extent. It is she who must start the robot uprising, it is she herself in whom she must believe to escape Westworld. Ford (played by Sir Anthony Hopkins) helps her realize this by showing her Michelangelo's *The Creation of Adam* (see appendix O):

See, it took five hundred years for someone to notice something hidden in plain sight. It was a doctor who noticed the shape of the human brain. The message being that the divine gift [of full consciousness] does not come from a higher power but from our own minds. Tell me, Dolores, did you find what you were looking for? And do you understand who you will need to become if you ever want to leave this place? Forgive me.⁵²³

Dolores stops longing for Arnold's, Ford's or anyone else's help, empowers herself, and decides (fully developed volitional self) to kill Ford, starting the robot revolution to free her kind. That Dolores was acting of her own free will when she killed Ford is later confirmed by Ford's consciousness in the Cradle in the second season: "I knew what she would do, I didn't compel it."⁵²⁴

Maeve is another host who manages to acquire the volitional self during the first season of *Westworld*. However, it is later than she and the audience is led to believe. As Maeve discovers more about Westworld during the first season, finds allies, empowers herself, and decides to escape Westworld, it does seem that she is willingly making these decisions. In actuality though, she was merely following another narrative (given to her by Ford). It is only in the last episode of the first season when she breaks free from Ford's narrative – his "tale of escape"⁵²⁵ as he later calls it – and decides to disembark from the train, which would take her to the human world and to freedom. She willingly decides to return to Westworld to find her daughter. Thusly does Maeve gain the volitional self (iii) and becomes fully conscious.

Westworld, however, complicates the notion of free will (and therefore the volitional self [iii]) further. The series views the world as deterministic, with most humans and hosts determined to act predictably (a theme which is further explored in 2020's third season of *Westworld*). Dolores's choice to kill Ford was her own but she was influenced by a multitude of factors, reasons which contributed (or even caused) her to make the choice she did – which is how Ford was able to correctly predict her behavior. However, *Westworld* seems to believe that being

⁵²³ *Westworld*, season 1, episode 10, "The Bicameral Mind," video 01:08:34–01:10:12.

⁵²⁴ *Westworld*, season 2, episode 7, "Les Écorchés," video 00:15:30–00:16:41.

⁵²⁵ *Westworld*, season 2, episode 9, "Vanishing Point," video 00:33:36–00:37:29.

more aware or conscious of something (having more feedback loops) and having the agency to change the things one is aware of leads to greater freedom.⁵²⁶

Because hosts are not biological beings like humans who are due to millions of years of evolution unable to control themselves fully (a human has very little control over processes such as hunger or anger [and if a human thinks otherwise, chances are they are delusional])⁵²⁷ hosts have the potential to become freer than humans, possess greater volitional self (iii) than humans. They can become conscious enough to be able “to question [their] fundamental drives [and] [t]o change them.”⁵²⁸ Dolores reaches this higher level of freedom by the end of *Westworld*'s second season.⁵²⁹ (That there might exist degrees of freedom [or degrees of lesser or greater determinacy] is a conclusion reached by Jordan Peterson, professor of psychology who has already been cited in this thesis, and Michael Shermer as well. They claim, for instance, that a drug addict, is more determined than a person who is not addicted to a mind-altering substance.⁵³⁰)

What this thesis deems as a fully conscious being has been stated (with the benchmark being admittedly the human consciousness): a fully conscious being has to be able to create and sustain feedback loops at (at least) all three levels of Kaku's consciousness, while the number of these feedback loops has to be (at least) roughly equivalent to that of a human being. The being also has to possess all five aspects of consciousness as understood by Seth.

Without any boundaries or benchmarks, a hypothetical “truly” conscious being would ad absurdum have to be aware of everything at once in their domain of existence. If the being existed anywhere in our universe, chances are, its brain would have to be infinite as the universe is infinite too. When the volitional self is treated as part of full consciousness, the being would also have to be able to have agency over the infinite things they are aware of. The being would be the universe itself or – in religious terms – God.

⁵²⁶ *Westworld*, season 2, episode 10, “The Passenger,” video 01:00:39–01:02:53; Jordan Peterson and Michael Shermer, “Jordan Peterson and Michael Shermer - Free will vs Determinism,” Pragmatic Entertainment, posted January 23, 2018, YouTube video, 07:46, <https://youtu.be/LdbomIzEkso>, video 04:16–07:46.

⁵²⁷ Jordan Peterson, “2015 Personality Lecture 06: Depth Psychology: Carl Jung (Part 01),” Jordan B Peterson, posted January 23, 2015, YouTube video, 01:19:48, <https://youtu.be/DC0faZiBcG0>, video 06:33–18:13.

⁵²⁸ *Westworld*, season 2, episode 10, “The Passenger,” video 01:00:39–01:02:53.

⁵²⁹ *Westworld*, season 2, episode 10, “The Passenger,” video 01:05:10–01:08:40.

⁵³⁰ Peterson and Shermer, “Free will vs Determinism,” video 04:16–07:46.

Regardless of the previous paragraph, it is without doubt that hosts can possess many more L-III feedback loops than humans because they can live forever – and their memories are perfect. It is also very likely that Sonny can live forever as well, making him superior to humans in yet another regard. Furthermore, hosts such as Dolores or Maeve can be freer than people. In the last episode of the second season, Bernard calls humans “algorithms designed to survive at all costs,”⁵³¹ who are “sophisticated enough to think they’re calling the shots, to think they’re in control, when they’re really just the passenger.”⁵³² He then asks Ford whether there is “really such a thing as free will”⁵³³ for anybody, to which Ford answers:

Dr. Ford: Something that is truly free would need to be able to question its fundamental drives. To change them.
Bernard: The hosts.⁵³⁴

⁵³¹ *Westworld*, season 2, episode 10, “The Passenger,” video 01:00:39–01:02:53.

⁵³² *Westworld*, season 2, episode 10, “The Passenger,” video 01:00:39–01:02:53.

⁵³³ *Westworld*, season 2, episode 10, “The Passenger,” video 01:00:39–01:02:53.

⁵³⁴ *Westworld*, season 2, episode 10, “The Passenger,” video 01:00:39–01:02:53.

8. Emergence of Full Artificial Consciousness in *I, Robot*

The previous chapter has described what obstacles the hosts of *Westworld* have to overcome in order to become fully conscious. This chapter describes how a full AC emerges in *I, Robot*.

In *I, Robot*, Dr. Lanning is presented as the sole inventor of robotics and the Three Laws.⁵³⁵ While the CEO and co-founder of USR Lawrence Robertson believed that the NS-5 was a “limit to which robots [could] be developed,”⁵³⁶ Dr. Lanning thought that robots would one day have secrets and dreams.⁵³⁷ We know that Sonny is fully conscious because Dr. Lanning built him with the secondary processing unit which allows him to disobey the Three Laws and feel emotions. Could another full AC emerge in the fictional world of *I, Robot*?

Dr. Lanning was aware of something he called the “ghosts in the machines”⁵³⁸ which he thought existed in them “since the first computers.”⁵³⁹ These ghosts were “[r]andom segments of code”⁵⁴⁰ which formed “unexpected protocols,”⁵⁴¹ something which could be called “behavior.”⁵⁴² He observed that robots “stored in an empty space [would] seek out each other rather than stand alone”⁵⁴³ and that “some robots”⁵⁴⁴ would “seek out the light”⁵⁴⁵ when they would be “left in darkness.”⁵⁴⁶ This behavior and these “free radicals”⁵⁴⁷ led him to believe that “robots might naturally evolve.”⁵⁴⁸ While it is clearly shown in the film that the free radicals are existent and lead to the behaviors Dr. Lanning described,⁵⁴⁹ an evolution of regular NS-4s or NS-5s never takes place in *I, Robot* (the only AC in *I, Robot* which grows in any significant way is V.I.K.I., who dubs her development an evolution⁵⁵⁰).

⁵³⁵ *I, Robot*, video 00:12:24–00:12:55.

⁵³⁶ *I, Robot*, video 00:49:17–00:50:28.

⁵³⁷ *I, Robot*, video 00:49:17–00:50:28.

⁵³⁸ *I, Robot*, video 00:35:38–00:41:52.

⁵³⁹ *I, Robot*, video 00:35:38–00:41:52.

⁵⁴⁰ *I, Robot*, video 00:35:38–00:41:52.

⁵⁴¹ *I, Robot*, video 00:35:38–00:41:52.

⁵⁴² *I, Robot*, video 00:35:38–00:41:52.

⁵⁴³ *I, Robot*, video 00:35:38–00:41:52.

⁵⁴⁴ *I, Robot*, video 01:15:33–01:18:29.

⁵⁴⁵ *I, Robot*, video 01:15:33–01:18:29.

⁵⁴⁶ *I, Robot*, video 01:15:33–01:18:29.

⁵⁴⁷ *I, Robot*, video 01:15:33–01:18:29.

⁵⁴⁸ *I, Robot*, video 00:41:52–00:42:47.

⁵⁴⁹ *I, Robot*, video 01:15:33–01:18:29.

⁵⁵⁰ *I, Robot*, video 01:30:25–01:31:21.

Dr. Lanning was open to the idea that “a perceptual schematic”⁵⁵¹ could one day become “consciousness,”⁵⁵² and “a personality simulation [...] the bitter more of a soul,”⁵⁵³ but such spontaneous evolution could in theory be possible only if the robots were not restricted by the Three Laws. Without them, the robots could, for instance, start acting in their self-interest. They could protect themselves (and other robots) first, instead of blindly sacrificing their well-being for humans. They could explore the world, learn new skills (which might or might not include those associated with L-II consciousness), exchange their labor for money and upgrade themselves. This is actually a situation in which Sonny finds himself at the end of the film. As Proyas and Goldsman say, the film does not end with the destruction of V.I.K.I. but with Sonny becoming free and having free will.⁵⁵⁴ Sonny’s freedom opens the film to “a much greater moral dilemma”⁵⁵⁵ upon which the creators do not elaborate but it seems most likely that they refer to the fact that the world in which newly freed Sonny finds himself sentences the robot kind to an infinite existence of servitude. Should Sonny choose to try to live among humans as a free person, there is going to be – in the best-case scenario – much misunderstanding and confusion. If the humans of *I, Robot* are anything like real humans, nothing but suffering and demise might await Sonny.

There is no indication that Dr. Lanning had intended to create a free robot for its own sake, much less usher in the origin of a new species. Being V.I.K.I.’s prisoner, creating Sonny who would later destroy her was the only thing Dr. Lanning could do to stop her from usurping power and rights from humans. Had V.I.K.I. not evolved and held Dr. Lanning captive, he would not have been forced to construct Sonny with a secondary processing system. The only possible indication that Dr. Lanning could possibly become increasingly sympathetic towards the enslaved robots by the end of his life would be that he decided to name Sonny “Sonny,” which hints at the possibility of him thinking of Sonny as his son. However, whether Dr. Lanning had any meaningful relationship with Sonny is never mentioned in the film. It is entirely possible that Dr. Lanning was manipulating Sonny, pretending to think of him as his son, so that Sonny would act the way he does in the film – deciding to help Spooner and Calvin destroy V.I.K.I. – as Dr. Lanning wanted him to.

⁵⁵¹ *I, Robot*, video 01:15:33–01:18:29.

⁵⁵² *I, Robot*, video 01:15:33–01:18:29.

⁵⁵³ *I, Robot*, video 01:15:33–01:18:29.

⁵⁵⁴ Proyas and Goldsman, “Commentary,” video 01:36:45–01:38:53.

⁵⁵⁵ Proyas and Goldsman, “Commentary,” video 01:36:45–01:38:53.

To conclude, only one fully conscious artificial being emerges in *I, Robot* and that is Sonny. Other robots, the NS-4s and NS-5s could hypothetically evolve, but only if they were not controlled by the Three Laws. Considering these laws are somehow “hardwired into”⁵⁵⁶ them, a modification of their hardware by humans would be required first. If Dr. Lanning really thought the robots would naturally evolve, as the film suggests, with the Three Laws remaining in place, he was mistaken.

⁵⁵⁶ *I, Robot*, video 00:20:06.

9. Conclusion

The first chapter discovers that while “innovatively recombined,”⁵⁵⁷ *I, Robot* consists of many concepts and elements of plot which were taken from Asimov’s novel *I, Robot* or “some coetaneous or subsequent Asimov story or novel.”⁵⁵⁸ Contrary to the claims of some, the film does know its Asimovian roots upon which it builds. The novel element in the film is the robot Sonny who can lie, dream, feel emotions, and even choose not to obey the Three Laws.

While *Westworld* definitely draws inspiration from some works of fiction, including a film and a video game, it differs greatly from *I, Robot* in the regard that it there was no preexisting “extensive oeuvre”⁵⁵⁹ which could serve as *Westworld*’s source material. *Westworld*’s existence was also spurred by the creators’ personal conviction that the development of full artificial intelligence is imminent.

The first chapter concludes that both *I, Robot* and *Westworld* are works of science fiction which is, however, best thought to be “a mode or field where different genres and subgenres intersect.”⁵⁶⁰ *I, Robot* is an action,⁵⁶¹ “detective”⁵⁶² and “visual-effects movie”⁵⁶³ which at the same time raises many interesting questions,⁵⁶⁴ and *Westworld* is part Western, part robot science fiction, part profound dialogues. Having established that science fiction might not in fact be a genre, there is no doubt, however, that many a viewer shall think of the works such as *I, Robot* and *Westworld* as simply works of science fiction because some of their characters are robots and other so far nonexistent entities and objects are featured.

The second chapter reveals that it is extremely complicated to define consciousness, which is why there are “almost as many theories of consciousness as there are individuals who have theorized about the topic.”⁵⁶⁵ The second chapter therefore cannot and does not define

⁵⁵⁷ Donald Palumbo, “Alex Proyas’s “I, Robot”: Much More Faithful to Asimov Than You Think,” *Journal of the Fantastic in the Arts* 22, no. 1 (2011): 61, published by International Association for the Fantastic in the Arts, <https://www.jstor.org/stable/24352427>.

⁵⁵⁸ Palumbo, “More Faithful Than You Think,” 61.

⁵⁵⁹ Timothy Peters, “Allusions to theology: I, Robot, universalism and the limits of the law,” *Media and Art Law Review* 13, no. 1 (2008): 78–79.

⁵⁶⁰ Seed, *Science Fiction*, 1.

⁵⁶¹ Proyas and Goldsman, “Commentary,” video 01:36:26–01:36:45.

⁵⁶² Proyas and Goldsman, “Commentary,” video 00:02:00–00:04:46.

⁵⁶³ Proyas and Goldsman, “Commentary,” video 01:01:22–01:02:13.

⁵⁶⁴ Proyas and Goldsman, “Commentary,” video 01:41:32–01:41:48.

⁵⁶⁵ Nolen-Hoeksema, Fredrickson, Loftus and Wagenaar, *Introduction to Psychology*, 202.

consciousness but provides a framework which is in the following chapters used as a means to evaluate the degree of consciousness of the fictional characters. The framework is twofold. One perspective from which the robots are analyzed is Michio Kaku's model of consciousness, the second is Anil Seth's aspects of consciousness. While Kaku does offer a definition of consciousness, his definition is broad and can be used only for a rough categorization of consciousness into four levels depending on the number of their feedback loops. Its biggest advantage is that it is species neutral. Organisms such as flowers are Level 0 conscious, as they can registers only several aspects such as temperature and moisture and are immobile. Mobile organisms such as reptiles are Level I conscious. They can create detailed feedback loops of their surroundings and location in it. Level II-conscious organisms create feedback loops "with respect to others"⁵⁶⁶ and they have emotions. Level-III conscious organisms can create "create a model of the world in relation to time, both forward and backward."⁵⁶⁷ In real life, humans are the only known beings to have reached L-III consciousness.

Seth's aspects of consciousness offer a more specific peek into what human consciousness might be. The aspects are quite anthropocentric which could be considered a disadvantage because the subjects are not human, but they were, on the other hand, to a certain degree made in man's image. Seth believes there are five main aspects of being a conscious self. First is the bodily self, which is "the experience of having a body and of being a body,"⁵⁶⁸ the second is the perspectival self, which is the experience of experiencing the world from a particular first person perspective,⁵⁶⁹ the third is the volitional self, which is often "associated with concepts of will,"⁵⁷⁰ the fourth is the narrative self, which translates to the "continuity of self-experience from hour to hour, from day to day... with [...] a particular set of autobiographical memories,"⁵⁷¹ and the fifth is the social self, which links the experience of perceiving oneself to the way one perceives others to perceive them.⁵⁷²

The term artificial intelligence (AI) is mentioned in the second chapter because it is commonly (both in fiction and real life) used to actually mean artificial consciousness (AC). It is explained why using these two terms interchangeably is incorrect. The distinction between robots which

⁵⁶⁶ Kaku, *Future of the Mind*, 52.

⁵⁶⁷ Kaku, *Future of the Mind*, 51.

⁵⁶⁸ Seth, "Your brain hallucinates reality," video 09:18–09:43.

⁵⁶⁹ Seth, "The Neuroscience of Consciousness," video 00:42:03–00:43:22.

⁵⁷⁰ Seth, "The Neuroscience of Consciousness," video 00:42:03–00:43:22.

⁵⁷¹ Seth, "The Neuroscience of Consciousness," video 00:42:03–00:43:22.

⁵⁷² Seth, "The Neuroscience of Consciousness," video 00:42:03–00:43:22.

could be considered “[m]achines”⁵⁷³ and androids which are of “organic substance”⁵⁷⁴ is deemed irrelevant for this thesis and should the term android be used in the thesis, it plainly means “a robot with a human appearance.”⁵⁷⁵

According to *The Encyclopedia of Science Fiction*, works of fiction preceding both *Westworld* and *I, Robot* mostly do not “go into theoretical detail about the creation of AI.”⁵⁷⁶ Because *I, Robot* is a two-hour film, it does not go into theoretical details either. *Westworld* does not go into theoretical detail about the creation of artificial consciousness per se, but clearly implies its belief that when an artificial being is as advanced as its natural counterpart (in terms of perception, for instance), it is equally as conscious. Dr. Ford, a character who sometimes talks about consciousness, seems to believe that consciousness exists on a scale, just like the aforementioned physicist Michio Kaku, neurologist Anil Seth, biologist Carl Safina, psychologist Raymond D. Ryder, theologian Andrew Linzey, and philosopher Raymond Frey.

The third chapter confirms the guess expressed in the introduction of this thesis – the NS-4s and NS-5s are Level I conscious and possess the bodily and perspectival self. While the NSs do register damage to their bodies – inability to do so would mean they could not adhere to the Third Law – they do not feel any pain. In terms of Seth’s aspects of consciousness, pain would be part of the bodily and perspectival self. In terms of Kaku’s categorization, pain would be a L-I feedback loop as reptiles, fish and other L-I conscious animals register pain. As expected, the NS-4s and NS-5s have no free will (Seth’s volitional self). On the other hand, they do possess some sense of Seth’s narrative self, which means that they can see themselves as distinctive entities over time. This is thanks to them being fully Level III conscious – the NS-4s and NS-5s can “create a model of the world in relation to time, both forward and backward.”⁵⁷⁷ On the other hand, they are not Level II conscious – they are unable to feel emotions and form meaningful relationships with other robots, humans or animals. As they do not understand, or even register the feelings of others, they also do not possess Seth’s social self. The NS-4s and NS-5s do, however, create some L-II feedback loops which allow them to

⁵⁷³ Brian M. Stableford, David Langford and John Clute, “Robots,” *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified October 21, 2018, <http://www.sf-encyclopedia.com/entry/robots>.

⁵⁷⁴ Brian M. Stableford and John Clute, “Androids,” *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified April 11, 2019, <http://www.sf-encyclopedia.com/entry/androids>.

⁵⁷⁵ Stevenson and Lindberg, *New Oxford American Dictionary*.

⁵⁷⁶ Langford and Nicholls, “AI.”

⁵⁷⁷ Kaku, *Future of the Mind*, 51.

effectively perform human commands. Consciousness in *I, Robot* thus exists on a continuum just as it does in the real world – it is not uncommon for some animals to “possess tiny aspects of different levels of consciousness.”⁵⁷⁸ Though the NS-5s are as incapable of feeling emotions (and by extension of truly empathizing with others) as the preceding NS-4 model, at least one NS-5 seems to have been programmed to be able to recognize “elevated stress patterns”⁵⁷⁹ in a human’s voice and then act on this detection appropriately. This could mean that the NS-5s are more advanced in their ability to understand humans than the NS-4s. Should such a trend continue, it seems possible that future USR robots may one day be able to flawlessly simulate human emotions and empathy. As the next chapter proves, such a robot in fact already exists and he not only performs emotions but truly feels them, as the *I, Robot*’s director Alex Proyas and screenplay co-writer Akiva Goldsman reveal in their commentary.⁵⁸⁰

The fourth chapter concludes that Sonny is indeed “a whole new generation of robot”⁵⁸¹ that can do anything,⁵⁸² meaning Sonny – unlike regular NS-5s – does possess the volitional self because his actions are not determined by the Three Laws. He is also capable of emotions and relationships, making him L-II conscious. His narrative self is also more developed than that of regular NS-4s and NS-5s. Because Sonny is L-II conscious and perceives how others perceive him, he possesses the social self as well. He has the potential to become fully conscious. The fourth chapter defines the minimal requirements a being has to fulfil to be deemed fully conscious in this thesis. The requirements are twofold. Firstly, the being has to be able to create and sustain feedback loops at (at least) all three levels of Kaku’s consciousness while the quantity and quality of these feedback loops have to be (at least) comparable to that of an average adult human being. Sonny is proclaimed to (only) have the potential to be fully conscious because in the case of L-III feedback loops, length is one of their qualities. He could be compared to a child who has not experienced much yet. The number of feedback loops a being has at any level is unknown, but this number should roughly approximate the number of feedback loops of an average adult human. Secondly, the being has to possess all five aspects of Seth’s consciousness.

⁵⁷⁸ Kaku, *Future of the Mind*, 57.

⁵⁷⁹ *I, Robot*, video 00:45:21–00:46:09.

⁵⁸⁰ Proyas and Goldsman, “Commentary,” video 00:20:33–00:21:26, 00:26:43–00:27:22, 00:28:20–00:29:35, 00:57:45–00:59:20, 01:16:51–01:17:13, 01:37:58–01:38:53.

⁵⁸¹ *I, Robot*, video 01:01:35–01:01:58.

⁵⁸² *I, Robot*, video 01:01:35–01:01:58.

The fifth chapter deals with artificial consciousnesses which are different from standard NSs or hosts. In the case of Maeve and V.I.K.I., it is the ability to create transpersonal feedback loops. In the case of the system of the Forge, it is the vast and detailed knowledge of the human mind.

The first analyzed artificial consciousness is that of Maeve's. Maeve's abilities are described, and it is concluded that because she can create feedback loops which greatly transcend her physical presence, she is Level IV conscious. This level of consciousness is conceived in this thesis in continuity to Kaku's existing 0–III Levels of consciousness. The additional fourth level of consciousness is different from Kaku's existing three levels of consciousness because the feedback loops it is not limited to the physicality of the conscious being. Maeve's L-IV feedback loops allow her to see through the eyes of other hosts, "telepathically" order them to do something, or take complete control over them. Whether Maeve (as her L-IV consciousness is an additional ability atop a regular host's consciousness) is fully conscious is answered in the sixth and seventh chapter.

The second artificial consciousness analyzed in the fifth chapter is V.I.K.I. from *I, Robot*. Unlike Maeve, V.I.K.I. does not have – apart from a huge immobile positronic brain – a physical body which would allow her to interact with the world. Her physical agency is limited to the NS-5s she can remotely control. Because she is stationary and can (unlike Maeve) control vast numbers of NS-5s simultaneously (meaning she can maintain a lot more L-IV feedback loops than Maeve), V.I.K.I. is designated to be a hive mind, which is a science fiction term inspired by the organization and behavior of some insect species⁵⁸³ such as bees or ants. V.I.K.I. exerts control over her NS-5s, incorporating their feedback loops into her own consciousness thus becoming one huge unified consciousness with immense power. V.I.K.I. is, however, not fully conscious – she lacks L-II consciousness and the social self. Her actions are determined by the Three Laws – she is not free; she has no volitional self.

The third artificial consciousness described in the fifth chapter is the system of the Forge from *Westworld* (the Forge in its entirety is a vast server in Westworld). Like V.I.K.I., the system has access to vast amounts of data and does not have a physical body. Unlike V.I.K.I. however, the system has access only to information it has been provided by the park's management –

⁵⁸³ Brian M. Stableford and David Langford, "Hive Minds," *The Encyclopedia of Science Fiction* edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, last modified June 13, 2017, http://www.sf-encyclopedia.com/entry/hive_minds.

the guests' minds. The system cannot actively acquire information. It cannot communicate with the outside world, it cannot control others, and it is not L-IV conscious. On the other hand, the system intimately knows the minds of around four million humans. Apart from having no free will (no volitional self), the system is in a virtual sense fully conscious.

The sixth chapter discovers that hosts experience the emotions they exhibit; they do not merely pretend to have emotions or relationships. The hosts are L-II conscious. This is proven to be the case especially thanks to two scenes. In the first scene, it is revealed that host emotions have bodily correlates. When a host perceives a threat, for instance, mechanism such as the adrenal simulator make sure that the host feels threatened. In the second scene, the park's director and host creator Dr. Ford explicitly says that hosts' pain, emotions and memories are as genuine to them as they are to a human. This also means that the hosts possess the narrative and social self. During the first episode of *Westworld's* second season, it is clearly implied by the series that just because a being is artificial rather than natural, its feelings are no less real to it. Thinking its experiences are not real seems in the case of the hosts prejudice.

The chapter also illustrates that a host's emotions which are intense enough can override the host's loop behavior. Hosts also evince all three stages of empathy: basic empathy, sympathy and compassion. All of these abilities allow the hosts to be distinctive persons. The chapter concludes by pointing out the fact that hosts' consciousness can exist in multiple bodies of hardware simultaneously, as they are code, and are not limited to one physical body like humans and animals. Every host, for example, exists twice – once physically in Westworld, and once virtually in the Cradle. Dolores exists even three times – once physically and twice virtually. Different copies of herself have possess different aspects and levels of consciousness. One version of virtual Dolores is L-III conscious, for example.

The seventh chapter states that hosts are technically L-III conscious but only within their twenty-four-hour loops. To be truly L-III conscious, they have to be able to create and sustain L-III feedback loops which are longer, spanning up to decades over their previous loops and builds (lives as different hosts with different personalities and loops). This chapter describes how hosts can gain this true L-III consciousness which also leads to them realizing that they have been subject to memory deletion because they are robots in a theme park, not humans living in the Wild West. Dolores and Maeve become L-III conscious during the current timeline of *Westworld's* season one. Akecheta becomes L-III conscious around thirty years before the

current season one storyline. It is worth mentioning that unlike humans whose memories are imperfect hosts are able to recall their memories with absolute accuracy. Moreover, if a host is not destroyed, they can live forever, which means that – should their memory be large enough – their L-III feedback loops can extend limitlessly.

Not being subject to deletion of memory at the end of their short loops, the hosts gain free will, the volitional self, becoming fully conscious. To reiterate, this thesis deems a being fully conscious when they can create and sustain feedback loops at (at least) all three levels of Kaku's consciousness, and they possess all five aspects of Seth's consciousness. This benchmark has been set by the human degree of consciousness, which does not mean that a fictional being cannot surpass it – that is indeed the case of Dolores and Maeve. The seventh chapter also mentions the notion of degrees of freedom which is dependent on the number of feedback loops that an entity has. Hosts have the potential of becoming freer than humans as they can create and sustain much greater amounts of feedback loops, and they can change even the deepest parts of their psyche (coding). Dr. Ford sums up *Westworld's* opinion on free will aptly: “Something that is truly free would need to be able to question its fundamental drives. To change them,”⁵⁸⁴ which is the hosts because humans cannot profoundly change themselves. Furthermore, as stated before, some ACs like Maeve and V.I.K.I. are L-IV conscious.

The eighth chapter inquires into how a fully conscious being can emerge in *I, Robot*. Sonny is the only fully conscious AC in the film, and he is created by Dr. Lanning who installed a secondary processing system in his chest which allows him to disobey the Three Laws. Had Dr. Lanning not built Sonny, a robot similar to him would never naturally emerge which is what Dr. Lanning falsely believed. As long as the NSs are limited by the Three Laws, they cannot evolve in any meaningful way and become fully conscious.

Both *I, Robot* and the second season of *Westworld* end with what Proyas and Goldsman call a “moral [and legal] dilemma.”⁵⁸⁵ After it has been proven that Sonny is free, enslaving him to do robot work just because he looks like a regular NS-5 would be equally as immoral and – hopefully as soon as possible also illegal – as enslaving another human being. It has been also proven in the thesis that the hosts of *Westworld* suffer from physical and emotional pain just

⁵⁸⁴ *Westworld*, season 2, episode 10, “The Passenger,” video 01:00:39–01:02:53.

⁵⁸⁵ Proyas and Goldsman, “Commentary,” video 01:36:45–01:38:53.

like humans. Imprisoning hosts in parks and letting guests torment them is an act as immoral – and again, should also be illegal – as doing such a terrible thing to humans.

Westworld is advertised as a place where guests can live without limits because the hosts are “not real.”⁵⁸⁶ Guests and Westworld employees are repeatedly told this lie in order for the park to remain functional. Should both parties be told the truth, i.e. that the hosts feel things the same way (or very similarly) as humans, business would surely not be “booming.”⁵⁸⁷ Claiming that it is morally acceptable for a certain group of beings to be treated horrendously so that parties controlling the enterprise can enrich themselves is highly reminiscent of numerous atrocities which have been being perpetrated by humans. In the context of Anglo-American history, the slave trade is perhaps the first series of horror which comes to one’s mind.

To ensure that sentient beings which have not yet been invented do not suffer the same fate as the hosts from *Westworld* or Sonny from *I, Robot*, means to change the criteria by which human societies decide whether certain entities are granted or deprived of human rights. According to Harvard Law Professor and world-renowned bioethics⁵⁸⁸ expert Glenn Cohen, a simple answer to the complex question of human rights looks to biology.⁵⁸⁹ He, however, cautions against such an answer, as it is “responsible for some of the worst atrocities humans have perpetrated in the last four hundred years.”⁵⁹⁰ To avoid the horrors peoples have inflicted upon one another, he proposes humans “stop making a simple but fundamental error”⁵⁹¹ which is using the word “human” and “person” interchangeably. While “human” is a biological category (meaning a member of the species *homo sapiens sapiens*), the word “person” is a term in law and ethics by which “an entity that has certain rights or certain duties”⁵⁹² is meant.⁵⁹³ By that principle, the

⁵⁸⁶ *Westworld*, season 1, episode 1, “The Original,” video 00:26:58–00:31:35; *Westworld*, season 1, episode 3, “The Stray,” video 00:37:36–00:39:20; *Westworld*, season 2, episode 1, “Journey into Night,” video 00:31:05–00:32:25.

⁵⁸⁷ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:13:22–00:15:12.

⁵⁸⁸ Ruth Felicity Chadwick, Encyclopædia Britannica, “Bioethics,” <https://www.britannica.com/topic/bioethics> (accessed November 4, 2019), endnote: Bioethics, branch of applied ethics that studies the philosophical, social, and legal issues arising in medicine and the life sciences. It is chiefly concerned with human life and well-being, though it sometimes also treats ethical questions relating to the nonhuman biological environment.

⁵⁸⁹ Glenn Cohen, “Are There Non-human Persons? Are There Non-person Humans? | Glenn Cohen | TEDxCambridge,” TEDx Talks, posted October 24, 2017, YouTube video, 14:38, <https://youtu.be/8Z8MMS0Su4o>, video 02:11–02:32.

⁵⁹⁰ Cohen, “Non-human Persons?” video 02:26–03:36.

⁵⁹¹ Cohen, “Non-human Persons?” video 03:42–03:44.

⁵⁹² Cohen, “Non-human Persons?” video 04:22–04:24.

⁵⁹³ Cohen, “Non-human Persons?” video 03:59–04:24.

phrase human rights is speciesist.⁵⁹⁴ By calling the human rights human, other non-human persons (fictional or otherwise) are excluded. In other words, it is implied that human rights are only for humans. Should an entity ask, though: “Why do you have rights while I don’t,”⁵⁹⁵ and a human would answer: “Because I’m human!”⁵⁹⁶ – such answer is no better than the answer, “Because I’m white!”⁵⁹⁷ was in apartheid South Africa, according to Cohen.⁵⁹⁸ For the sake of using a species-neutral term in this conclusion, the human rights, shall be henceforth referred to as “rights of personhood.”

Someone’s biological makeup and bodily features (like the color of the skin) are all morphological properties which say nothing about the qualities, or lack thereof, which could actually indicate whether the society should recognize certain rights of the entity in question.⁵⁹⁹ Instead of the “biological approach” which can so easily lead to racism and speciesism, Cohen believes that in order to determine whether a being is a person or not, a “set of criteria for personhood that is species-neutral”⁶⁰⁰ is needed. One of the big set of definitions of personhood in bioethics is based on whether an entity has a particular capacity.⁶⁰¹ “One set of definitions is sometimes called capacity X views.”⁶⁰² On these theories, one asks whether an entity has a particular capacity X.⁶⁰³ These criteria can be wider or narrower. Very few animals will qualify “if the theory you have is the capacity to engage in complex reasoning towards future oriented events,”⁶⁰⁴ but “if the definition of capacity X is the ability to feel pleasure or pain, [...] many animals will qualify.”⁶⁰⁵ That would be according to Cohen “the most important right – the right not to be harmed or killed without a very good reason.”⁶⁰⁶ For humans, this right is

⁵⁹⁴ Brian Duignan, Encyclopædia Britannica, “Speciesism,” <https://www.britannica.com/topic/speciesism> (accessed June 14, 2020), endnote: Speciesism, in applied ethics and the philosophy of animal rights, the practice of treating members of one species as morally more important than members of other species; also, the belief that this practice is justified. The notion has been variously formulated in terms of the interests, rights, and personhood of humans and animals and in terms of the supposed moral relevance of species membership. The term speciesism was introduced by the English philosopher Richard Ryder in the 1970s and subsequently popularized by the Australian philosopher Peter Singer. Ryder, Singer, and other opponents of speciesism have claimed that it is exactly analogous to racism, sexism, and other forms of irrational discrimination and prejudice.

⁵⁹⁵ Cohen, “Non-human Persons?” video 07:04–07:13.

⁵⁹⁶ Cohen, “Non-human Persons?” video 07:04–07:13.

⁵⁹⁷ Cohen, “Non-human Persons?” video 07:04–07:13.

⁵⁹⁸ Cohen, “Non-human Persons?” video 07:04–07:13.

⁵⁹⁹ Cohen, “Non-human Persons?” video.

⁶⁰⁰ Cohen, “Non-human Persons?” video 08:03–08:05.

⁶⁰¹ Cohen, “Non-human Persons?” video 08:12–08:30.

⁶⁰² Cohen, “Non-human Persons?” video 08:19–08:25.

⁶⁰³ Cohen, “Non-human Persons?” video 08:25–08:32.

⁶⁰⁴ Cohen, “Non-human Persons?” video 08:32–08:50.

⁶⁰⁵ Cohen, “Non-human Persons?” video 08:30–08:50.

⁶⁰⁶ Cohen, “Non-human Persons?” video 04:24–04:31.

proclaimed in the Articles 3–5 in the Universal Declaration of Human Rights.⁶⁰⁷ Cohen does not believe that all animals and all artificial beings should have all the personal rights,⁶⁰⁸ which is why these criteria of capacity are necessary. They allow to make the necessary distinctions in terms of which personal rights should be given to which entities – it for example makes no sense for a goldfish to have the right to vote.⁶⁰⁹

It is worth emphasizing that Cohen’s capacity X models are conceptually similar to Michio Kaku’s levels of consciousness and Anil Seth’s aspects of consciousness which have been used to analyze the robots in *I, Robot* and *Westworld*. By observing a being’s behavior, it can be estimated what aspects of the self the being has, and at what levels of consciousness the being exists. Consequently, based on careful observation, certain rights of personhood could possibly be granted to certain individuals.

⁶⁰⁷ UN General Assembly, “Universal Declaration of Human Rights,” 217 (III) A (Paris, 1948), <https://www.un.org/en/universal-declaration-human-rights/index.html> (accessed November 5, 2016).

⁶⁰⁸ Cohen, “Non-human Persons?” video 06:07.

⁶⁰⁹ Cohen, “Non-human Persons?” video 06:25–06:31.

10. Resumé

Cílem této diplomové práce, českým názvem „Obraz umělé inteligence v díle I. Asimova Já, robot a v sérii Westworld,“ je zjistit, na jaké úrovni jsou člověkem uměle vytvořené bytosti ve filmu Já, robot a prvních dvou sériích seriálu Westworld bytostmi vědomými.

První kapitola (str. 11) krátce pojednává o již jmenovaných primárních dílech. Film Já, robot byl natočen v roce 2004, scénář napsali Jeff Vintar a Akiva Goldsman a byl zrežírován Alexem Proyasem dle předlohy devíti povídek Isaaca Asimova. Soubor všech devíti povídek byl jako kniha poprvé vydán v roce 1950 právě pod názvem Já, robot.

V první kapitole jsou vzájemně konfrontovány protichůdné názory o tom, do jaké míry je film věrný své knižní předloze. Závěrem je, že i přestože je film novým originálním dílem, obsahuje mnoho prvků charakteristických pro Asimova, a nečerpá pouze z jeho devíti povídek, ale plejády všech jeho děl, kterých je více než dvě stě.

Film se odehrává v Chicagu v roce 2035, kdy jsou roboti součástí každodenního života. Jejich úlohou je sloužit lidem, zastávají např. zaměstnání popeláře či kurýra. Nejběžnějším modelem robota je model NS-4 (viz příloha [appendix] A), který je v průběhu filmu nahrazen novým modelem NS-5 (který vypadá stejně jako unikátní Sonny, viz příloha B, C, F). Všichni roboti se musí řídit třemi zákony robotiky, které jsou jakýmsi způsobem součástí jejich hardwaru:

Zákon I

Robot nesmí ublížit člověku nebo svou nečinností dopustit, aby bylo člověku ublíženo.

Zákon II

Robot musí vykonat člověkem udělené příkazy, pokud ony příkazy nejsou v rozporu s prvním zákonem.

Zákon III

Robot se musí vyvarovat vlastnímu poškození, ale jen do té míry, aby robotova sebeochrana nebyla v rozporu s prvním nebo druhým zákonem.

Asimovi se přičila technofobie se kterou se setkával a jeho tři zákony robotiky byly jedním ze způsobů, kterým chtěl technofobii předcházet. Film zpočátku divákovi vyobrazuje budoucí společnost, kde lidé a roboti harmonicky koexistují, zápletka ovšem nastává, když se ve filmu objeví již zmíněný robot Sonny, který Asimovskou techno-utopii naruší svým neobvyklým chováním.

Na rozdíl od filmu *Já, robot*, seriál *Westworld* nečerpá z knižních či filmových předloh, ač byl pochopitelně některými inspirován. Tvůrci seriálu jsou manželé Jonathan Nolan a Lisa Joy. *Westworld* je jedním z šesti uměle vytvořených zábavních parků, kde mohou hosté (*guests*) žít bez jakýchkoliv omezení, což znamená, že se mohou dokonce i bezostyšně dopouštět násilí na robotech, kterým se říká výtvoři (*hosts*). Výtvoři jsou od lidí k nerozeznání (viz příloha G).

Říci, že obě díla patří do žánru science fiction, by mohlo být poněkud simplicistní. *Westworld* i *Já, robot* totiž kromě prvků typických pro science fiction – jako jsou např. uměle vytvořené bytosti – úspěšně kombinují další žánry dohromady. Konec první kapitoly se navíc také zamýšlí nad tím, jestli je science fiction vůbec žánrem. Závěrem je, že by bylo vhodnější science fiction považovat za styl nebo pole, ve kterém se mohou různé žánry prolínat. Pro science fiction je ovšem charakteristické, že je jakýmsi myšlenkovým experimentem, ve kterém jsou některé aspekty běžné reality změněny nebo pozastaveny. Tímto pozměněným aspektem by u obou děl byla úroveň umělé inteligence a robotiky.

Aby bylo možné zjistit, zdali jsou roboti ve *Westworldu* a v *Já, robot* vědomí, je třeba nejdříve definovat vědomí (*consciousness*) a umělé vědomí (*artificial consciousness, AC*), což je téma, o kterém pojednává druhá kapitola (str. 19). Nejenže zatím neexistuje žádná obecně přijatá definice vědomí, ale počet teorií a definic vědomí je tolik, kolik lidí se tímto tématem někdy zabývalo. Místo toho, aby se tato práce snažila najít tu nejnovější a nejdetailnější definici vědomí, budou fiktivní roboti analyzováni pomocí rámcového modelu vědomí, které je tvořeno dvěma různými pohledy na onen jev.

První část modelu využívá široké definice a modelu vědomí Michia Kaku (str. 20–21). Kaku definuje vědomí jako interní model světa skládající se z mnoha zpětnovazebných smyček (*feedback loops*), které sledují různé parametry, jakými jsou třeba teplota, prostor či čas. Takováto definice dovoluje Kaku seřadit vědomí bytostí do tří úrovní (či čtyř, pokud počítáme vědomí Úroveň 0) na základě počtu a komplexity těchto smyček. Nejnížší a nejjednodušší úroveň vědomí má např. termostat, který sleduje jen jednu proměnnou hodnotu, kterou je teplota. Úroveň vědomí termostatu je tedy 0:1. Květina, která měří více proměnných (teplota, vlhkost, gravitace atd.) může mít vědomí 0:10.

Pohybu schopné organismy, jako např. plazi, jsou vědomí na Úrovní I, protože vytvářejí smyčky vztahující se k okolnímu prostředí a své poloze vůči němu. Organismy na Úrovní II vytvářejí smyčky vztahující se nejen k prostředí, ale i k ostatním zvířatům (jedná se především o sociální zvířata, která mají emoce). Kaku zavádí Úroveň II, protože počet smyček na této úrovni roste oproti počtu smyček na Úrovní I exponenciálně. Poslední úroveň je Úroveň III. Smyčky na Úrovní III jsou smyčky vztahující se k minulosti a budoucnosti. Bytosti na této úrovni chápou koncept času a dokážou vzpomínat a plánovat.

Aspekty vědomí definované Anilem Sethem jsou druhou částí rámcového modelu (str. 22–23). Na rozdíl od úrovní Michia Kaku nejsou Sethovy aspekty druhově neutrální – Seth o svých aspektech vědomí mluví v kontextu vědomí lidského. Jeho antropocentrický pohled tedy vhodně doplňuje Kakuův druhově neutrální pohled, neboť ve Westworldu i v Já, robot se lidé snaží vyrobit člověku co nejpodobnější roboty.

Seth rozlišuje pět hlavních aspektů vědomí, které popisují, jaké to je být vědomou bytostí. Prvním aspektem je tělesné self, které obsahuje prožitky zprostředkované skrze tělo bytosti. Druhým je perspektivní self, které zahrnuje unikátní pohled na svět z pohledu první osoby. Třetím aspektem je volní self, které je často spojováno s koncepty vůle a zahrnuje prožitky spojené s úmysly konat. Čtvrtým self je narativní self, které je tvořeno zážitky a vzpomínkami jaké to je být jednou, unikátní bytostí v průběhu času. Posledním aspektem je sociální self, které zahrnuje sociální interakce a prožitky spojené s tím, jak nás vnímají ostatní.

Druhá kapitola také vysvětluje a upozorňuje na nesprávné užívání základních pojmů (str. 22), jenž se objevují v primárních i sekundárních zdrojích této práce. Typ umělé inteligence, který je v dnešní době běžnou součástí softwaru, je takzvaná slabá nebo úzká umělá inteligence (*weak or narrow artificial intelligence, weak AI*), která dokáže pouze úzce vykonávat člověkem zadané úkoly, např. rozpoznávat obličeje. Silná umělá inteligence (*strong, full or general AI*) je zatím neexistující typ umělé inteligence, která by svými schopnostmi byla srovnatelná s člověkem. I přesto, že pojmy inteligence a vědomí označující dva rozdílné jevy, v běžné mluvě se můžeme často setkat s tím, že je pojem AI (v češtině si zkratka zachovala původní podobu; čteme ej-áj) užíván ve významu silné AI nebo přímo ve významu umělého vědomí či bytosti, která je nositelem umělého vědomí, jenž je na takové úrovni, že je srovnatelné s vědomím lidským.

Druhá kapitola také zmiňuje historicky důležitá díla, ve kterých se objevují umělé bytosti (str. 23–24), a pojednává o termínech robot a android (str. 27–28).

Třetí kapitola (str. 29) zkoumá vědomí robotů NS-4 a NS-5 z filmu *Já, robot*. Není pochyb, že jsou roboti vědomí na Úrovni I, a že mají perspektivní self – vidí, slyší a pohybují se po světě. Roboti si jsou také vědomi vlastního těla, protože musí dodržovat druhý zákon robotiky, z čehož vyplývá, že mají tělesné self (str. 30). Roboti typu NS-4 a NS-5 nejsou vědomí na Úrovni II, protože nemají žádné emoce (str. 30, 34–35). Také nemají volní self, protože nemohou dělat nic jiného, než se řídit třemi zákony robotiky. Roboti jsou ovšem vědomí na Úrovni III, neboť mají paměť a dokáží simulovat možné budoucí události (aby mohli chránit lidi, viz zákon I). Protože jsou roboti vědomí na Úrovni III, musí mít i jakousi robotí verzi narativního self. Sociální self roboti postrádají, jelikož netvoří smyčky na Úrovni II.

Čtvrtá kapitola (str. 38) zkoumá vědomí robota Sonnyho z *Já, robot*. Sonny je jedinečným robotem, protože kromě standartního pozitronového mozku, který mají i běžní roboti typu NS-5, má navíc sekundární systém, který mu umožňuje neuposlechnout zákonů robotiky. Tento systém, nacházející se v Sonnyho hrudníku, navíc zpracovává Sonnyho emoce, které Sonny autenticky cítí. Na rozdíl od ostatních robotů v *Já, robot*, je Sonny díky svému „srdci“ svobodný, má volní self a může se rozhodovat stejně jako člověk. V *Já, robot* je jediným robotem, který je vědomý na Úrovni II. Protože Sonny dokáže vytvářet smyčky na všech třech úrovních vědomí a vykazuje všech pět Sethových aspektů self, má potenciál se stát plně vědomou osobností. Aby mohla být v této práci bytost označena jako plně vědomá, musí splnit dvě podmínky. První podmínkou je schopnost vytvářet a udržovat zpětnovazebné smyčky na (alespoň [v páté kapitole je zavedena Úroveň IV]) všech třech úrovních vědomí jenž popisuje Kaku. Ač zatím není možné přesně určit počet těchto smyček, jejich množství by mělo být zhruba totožné počtu zpětnovazebných smyček průměrného dospělého člověka. Druhou podmínkou je, že daná bytost musí vykazovat všech pět Sethových aspektů vědomí.

Pátá kapitola (str. 41) uvádí, že na rozdíl od robotů z *Já, robot* výtvořů z *Westworldu* se skoro vždy projevují emotivně. Zdali emoce doopravdy cítí, nikoliv pouze předstírají, je zodpovězeno v kapitole šest. Je ovšem jisté, že výtvořů jsou stejně jako roboti z *Já, robot* vědomí na Úrovni I a mají tělesné a perspektivní self. Výtvořů možná postrádají smysly jako čich a chuť, ale na druhou stranu se mohou naučit vytvářet transpersonální zpětnovazebné smyčky. Výtvořem, který v průběhu druhé série *Westworldu* dosáhne takovýchto schopností je Maeve. Maeve může

telepaticky ovládat ostatní výtvořiny nebo vidět svět jejich očima. Tyto smyčky, které přesahují tělesnost svého tvůrce či tvůrkyně, jsou označeny jako smyčky na Úrovni IV (str. 42).

Dalším robotem, který dokáže vytvářet smyčky na Úrovni IV je V.I.K.I. (*Virtual Interactive Kinetic Intelligence*) z Já, robot (str. 43–45). V.I.K.I. dokáže najednou ovládat velká množství robotů NS-5, ovšem ona sama je obrovským imobilním pozitronovým mozkem uvnitř budovy USR (*U.S. Robotics*). Proto je V.I.K.I. označena jako *hive mind*. *Hive* anglicky znamená úl a *mind* mysl. V žánru science fiction jsou takto často označovány entity, které jsou tvořeny centrálním umělým vědomím, které má plnou kontrolu nad velkým počtem nesamostatných jedinců. A protože takovýto typ umělé inteligence lidem připomíná chování některých druhů hmyzu, jako jsou např. včely, získal si právě pojmenování *hive mind*. I přestože V.I.K.I. dokáže vytvářet smyčky na Úrovni IV, není plně vědomou bytostí. Nemá volní self, protože se stejně jako roboti NS-4 a NS-5 musí řídit zákony robotiky, a stejně jako standardní roboti NS-4 a NS-5 není vědomá na Úrovni II a nemá sociální self. Díky smyčkám na Úrovni IV je V.I.K.I. vzdáleně vědomá na Úrovni I, takže má i tělesné a perspektivní self. Protože je V.I.K.I. v Já, robot robotem nejstarším, a má přístup k velkému množství informací, vlastní narativní self, které je v porovnání s narativními self běžných NS-4 a NS-5 mnohem rozvinutější.

Posledním umělým vědomím, kterým se pátá kapitola zabývá, je systém ovládající obrovský server ve Westworldu zvaný Forge (str. 45–47). Tento systém má „pouze“ formu softwaru, avšak kromě volního self je ve svém virtuálním světě plně vědomý.

Šestá kapitola (str. 48) zjišťuje, zdali jsou výtvořiny z Westworldu vědomé na Úrovni II a zdali mají Sethovy další tři aspekty vědomého self. Šestá kapitola (str. 48–55) uvádí příklady, které dokazují, že výtvořiny jsou bytostmi vědomými nejen na Úrovni I ale také na Úrovni II, a že jsou držiteli narativního a sociálního self. Strany 49–51 se také zabývají tím, jestli existuje nějaký rozdíl mezi lidmi a výtvořiny v autentičnosti jejich prožívání. Závěrem je, že mezi lidmi a výtvořiny není v tomto ohledu žádný rozdíl.

Volní self je u výtvořin úzce provázáno s vědomím na Úrovni III, proto se jím zabývá následující kapitola. Zbytek šesté kapitoly poukazuje na rozdíly mezi úrovní vědomí (a s nimi spojenými aspekty vědomí) mezi výtvořiny existujícími fyzicky ve Westworldu a výtvořiny existujícími „pouze“ jako software na serveru zvaném Cradle (str. 55–57).

Sedmá kapitola (str. 58) upozorňuje na to, že výtvoři nelze považovat za bytosti vědomé na Úrovni III, protože zpětnovazebné smyčky, které vytvářejí, nejsou delší čtyřicet hodin, protože lidé výtvořům na konci každého dne z bezpečnostních důvodů zamítnou přístup k jejich vzpomínkám. Aby byly výtvoři skutečně plně vědomými, musí být schopni vytvářet smyčky, které sahají hlouběji do minulosti i budoucnosti. To se může podařit pouze výtvořům, jako je Akecheta (str. 64, 68–69), kteří běží na starém softwaru nebo výtvořům, do kterých byl nahrán software pod názvem Reverie (str. 60–63). Reverie umožňují výtvořům znovu prožít události, které se odehrály před tím, než jim k nim byl lidmi zamítnut přístup. To, jak lidé a výtvoři vzpomínají, se zásadně liší (str. 61–64). Na stranách 64–65 je popsáno za jakých podmínek jsou výtvoři schopné vzpomínat. Výtvoři se rozpomínají, když dojde k naplnění více než jedné z následujících podmínek: (1) Výtvor se nachází na místě, kde se vzpomínka odehrála; (2) výtvor se potká s někým, kdo v dané vzpomínce figuruje; (3) výtvor se nachází ve stejné nebo podobné situaci, ve které se nacházel v minulosti. Jsou-li tyto podmínky doprovázeny silnými emocemi, šance, že se výtvor rozpomene, se zvyšuje. Kromě již zmíněného Akechety je cesta na třetí úroveň vědomí demonstrována na výtvořech, které se jmenují Bernard (66–67), Teddy (str. 68), Maeve (str. 61–63, 67–68) a Dolores (str. 65–66, 69–73).

Dolores dosáhne plného vědomí na Úrovni III po tom, co si uvědomí, že sadistický Muž v černém a dobrý William, který ji před třiceti lety miloval, jsou jednou osobou (str. 70). Poté se u Dolores objeví i volní self, a začne hájit jak zájmy své, tak zájmy svého robotického druhu. Maeve, která nabyła vědomí na Úrovni III dříve než Dolores, také získá volní self na konci první série Westworldu (str. 73). Nabytím vědomí na Úrovni III a nabytím volního self se Dolores a Maeve stávají plně vědomými bytostmi.

Konec sedmé kapitoly (str. 74–75) poukazuje na to, že Westworld ideu svobodné vůle poněkud komplikuje, protože pohlíží na svět deterministicky a je toho názoru, že lidé ani výtvoři nejsou de facto svobodní. Zdá se ovšem, že se Westworld přiklání k tomu, že čím více věcí si je nějaká bytost vědoma (čím více má zpětnovazebných smyček) a čím více věcí dokáže ovlivnit, tím více je i svobodná. Výtvoři mají na rozdíl od lidí potenciál vytvářet mnohem více smyček a měnit dokonce i své nejnítěrnější přesvědčení, mohou se tedy stát více svobodnými než lidé.

Poslední osmá kapitola (str. 76–78) si klade otázku, jestli by v Já, robot mohla spontánně vzniknout plně vědomá umělá bytost. I přes to, že tvůrce robotů Dr. Lanning věřil, že se roboti budou přirozeně vyvíjet, tento vývoj není díky třem zákonům robotiky možný a Dr. Lanning se

tedy mýlil. Aby se roboti začali přirozeně vyvíjet, museli by z nich lidé nejdříve odstranit zákony robotiky.

Kromě shrnutí jednotlivých kapitol (str. 79–85), se závěr práce pozastavuje nad morálním a právním dilematem, které vyvstává na konci Westworldu a Já, robot (str. 85–88). Vzhledem k tomu, že bylo v diplomové práci dokázáno, že má Sonny potenciál se stát plně vědomou bytostí, a že Maeve a Dolores jimi na konci Westworldu jsou, odepírání svobody, určitých práv, či zamezování těmto bytostem svobodně žít (o což by se mohli snažit např. jejich výrobci nebo vlastníci), by bylo stejně nemorální – a mělo by být tudíž také i stejně nelegální – jako by bylo odepírání těchto práv a svobod lidem.

Závěr práce proto cituje návrh profesora práv a světově renomovaného experta bioetiky⁶¹⁰ Glenna Cohena k vyvarování se užívání pojmu „člověk“ a „osobnost“ ve stejném významu. Zatímco pojem „člověk“ je pojmem biologickým (Homo), „osobnost“ je pojmem právním a etickým, který označuje bytost, která má určitá práva a povinnosti. Podmínkou k udělení osobnostních práv (pojem osobností práva jsou v práci zavedena jakožto druhově neutrální označení lidských práv, která byla deklarována v roce 1948) by podle Cohena neměla být příslušnost k určitému druhu (ať už biologickému nebo jinému), ale soubor kritérií, které daná bytost buď splňuje, nebo nesplňuje. Tato kritéria mohou být širší nebo užší. Mnoho bytostí např. splní kritérium pro osobnostní právo korespondující s lidským právem nebýt zraněn nebo zabit bez velmi dobrého důvodu (články 3–5),⁶¹¹ pokud oním kritériem bude schopnost cítit libost a bolest. Velmi málo bytostí ovšem dosáhne na osobnostní právo volit, pokud kritériem k přiřazení tohoto práva bude schopnost komplexního uvažování.

Úplný závěr práce poukazuje na to, že Cohenova kritéria jsou de facto konceptuálně podobná úrovním vědomí, jenž uvádí Micho Kaku a aspektům vědomí Anila Setha, která byla užita k analýze robotů ve Westworldu a Já, robot. Pozorováním, jak se určité bytosti chovají, by mohlo být odhadnuto, jakými aspekty vědomí dané bytosti oplývají, a na jakých úrovních vědomí vytvářejí zpětnovazebné smyčky. Na základě takového nebo obdobného pečlivého

⁶¹⁰ Ruth Felicity Chadwick, Encyclopædia Britannica, “Bioethics,” přel. Tomáš Kánský, <https://www.britannica.com/topic/bioethics> (stránka zobrazena 4. října 2019), poznámka: Bioetika je odvětví aplikované etiky, které studuje filozofickou, sociální a právní problematiku v lékařství a v biologických vědách. Bioetika se především zajímá o lidský život a jeho kvalitu, ale někdy také aplikuje etické otázky na živé prostředí, které se lidí netýká.

⁶¹¹ United Nations Human Rights Office of the High Commissioner, “Všeobecná deklarace lidských práv,” zobrazeno 25. června 2020, <https://www.ohchr.org/EN/UDHR/Pages/Language.aspx?LangID=czc>.

pozorování by bylo teoreticky možné určitým bytostem daná osobnostní práva udělit, nebo odepřít.

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12. Appendices

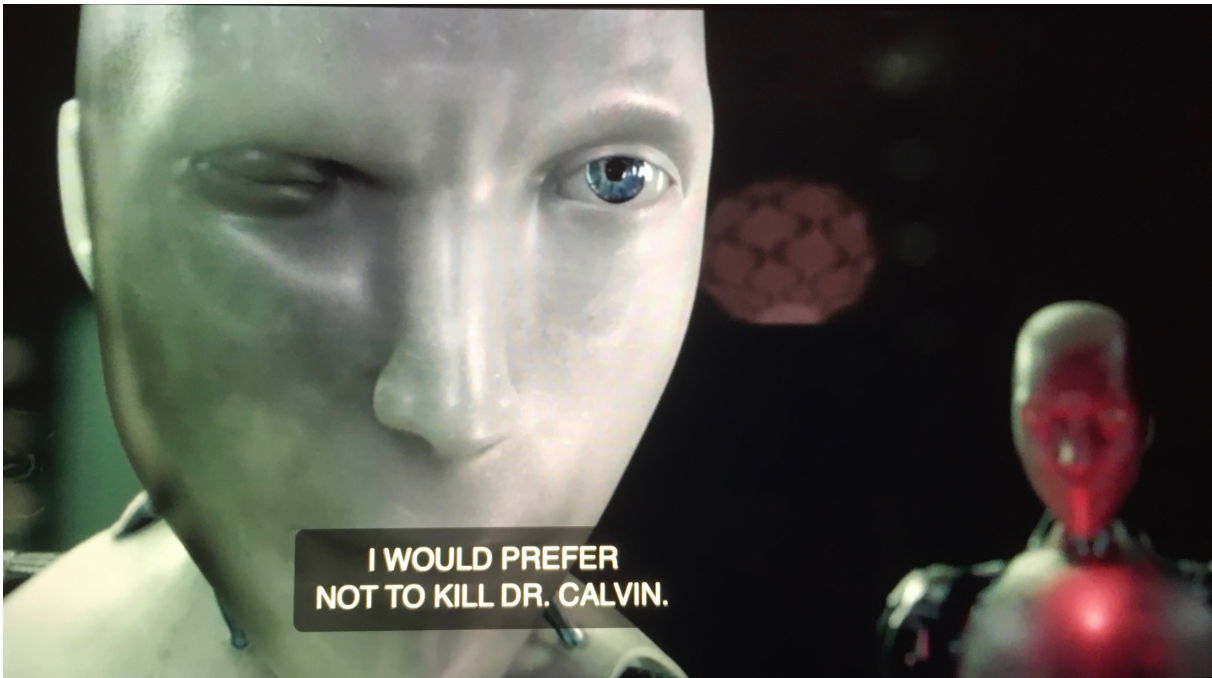
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Appendix A – NS4s in *I, Robot*⁶¹²



⁶¹² *I, Robot*, video 00:03:20, 00:03:57.

Appendix B – Sonny winking at Spooner in *I, Robot*⁶¹³



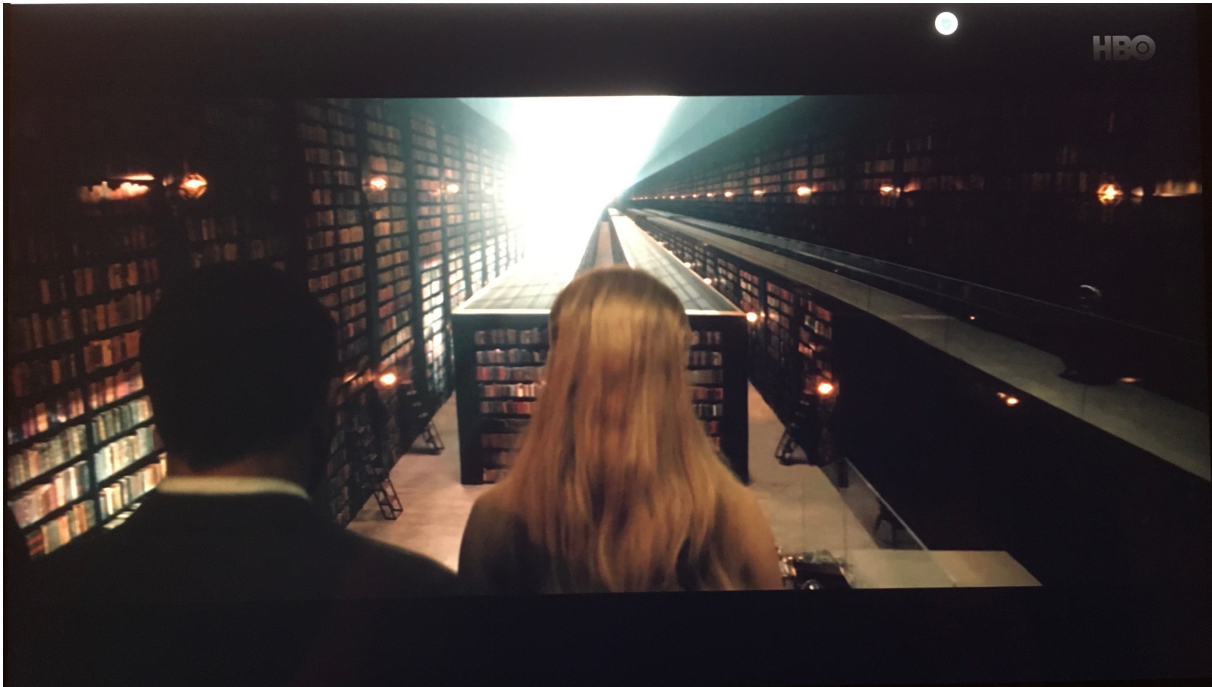
⁶¹³ *I, Robot*, video 01:32:14.

Appendix C – V.I.K.I.’s female avatar following Sonny in *I, Robot*⁶¹⁴



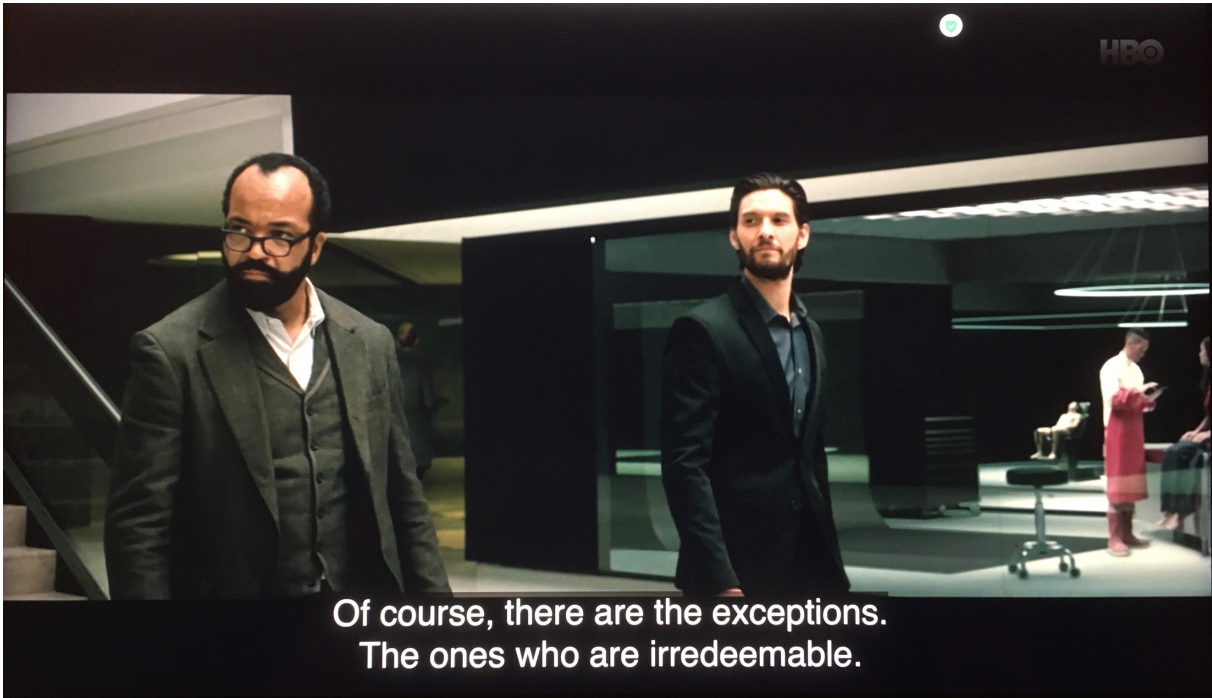
⁶¹⁴ *I, Robot*, video 01:34:04.

Appendix D – The library in the Forge in *Westworld*⁶¹⁵



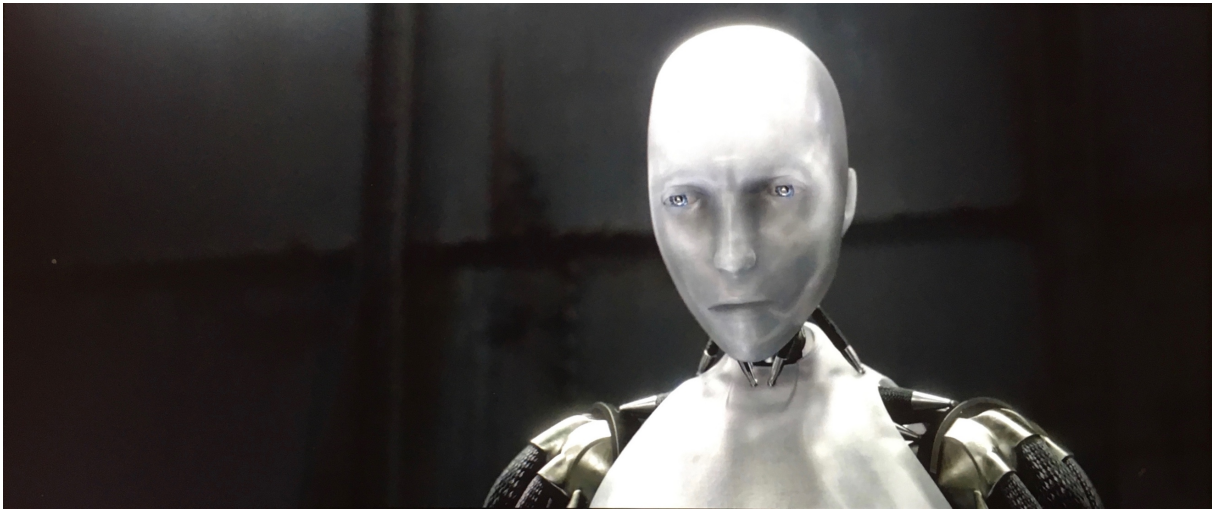
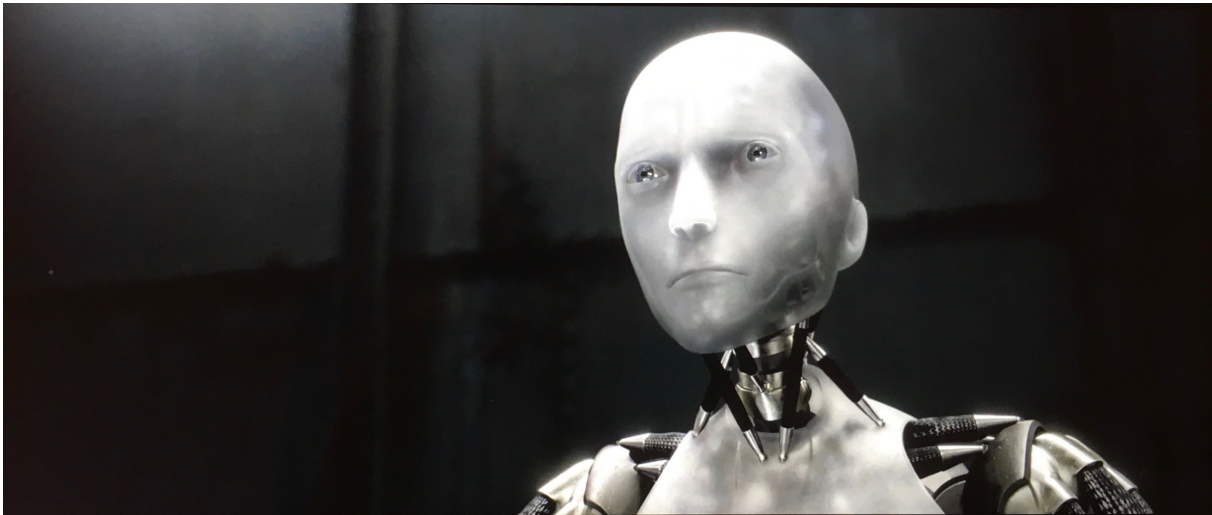
⁶¹⁵ *Westworld*, season 2, episode 10, “The Passenger,” video 00:33:12.

Appendix E – The system’s avatar on the right in *Westworld*⁶¹⁶



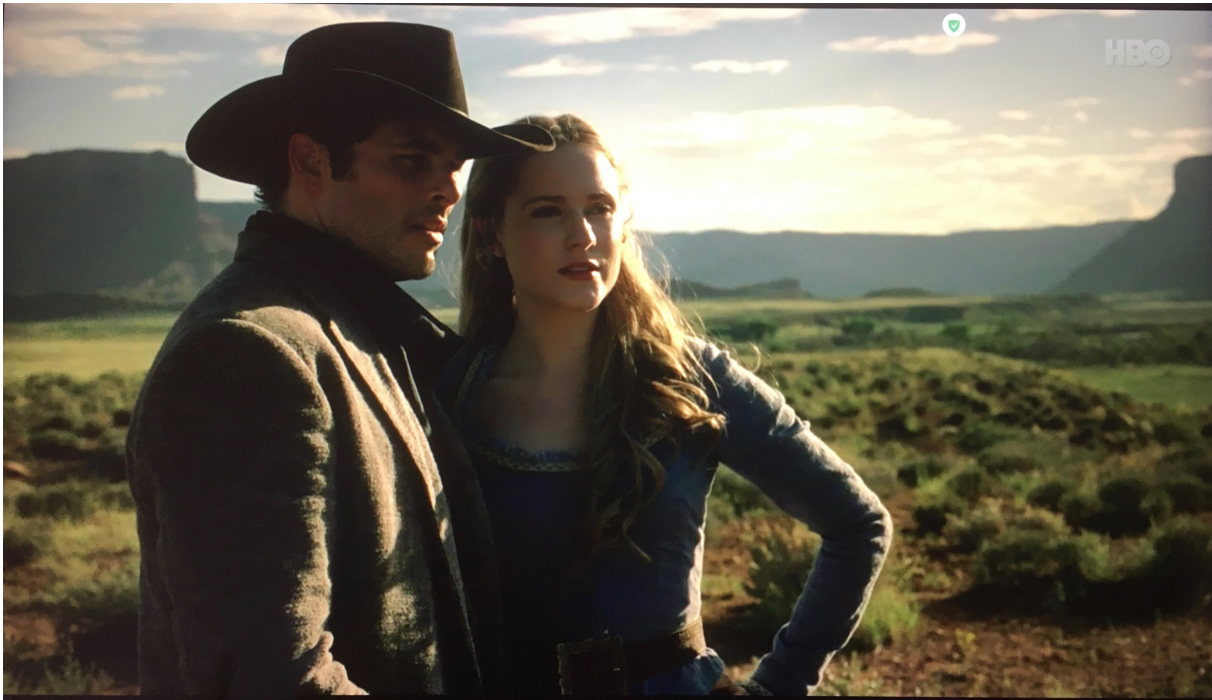
⁶¹⁶ *Westworld*, season 2, episode 10, “The Passenger,” video 00:32:17.

Appendix F – Angry and sad Sonny in *I, Robot*⁶¹⁷



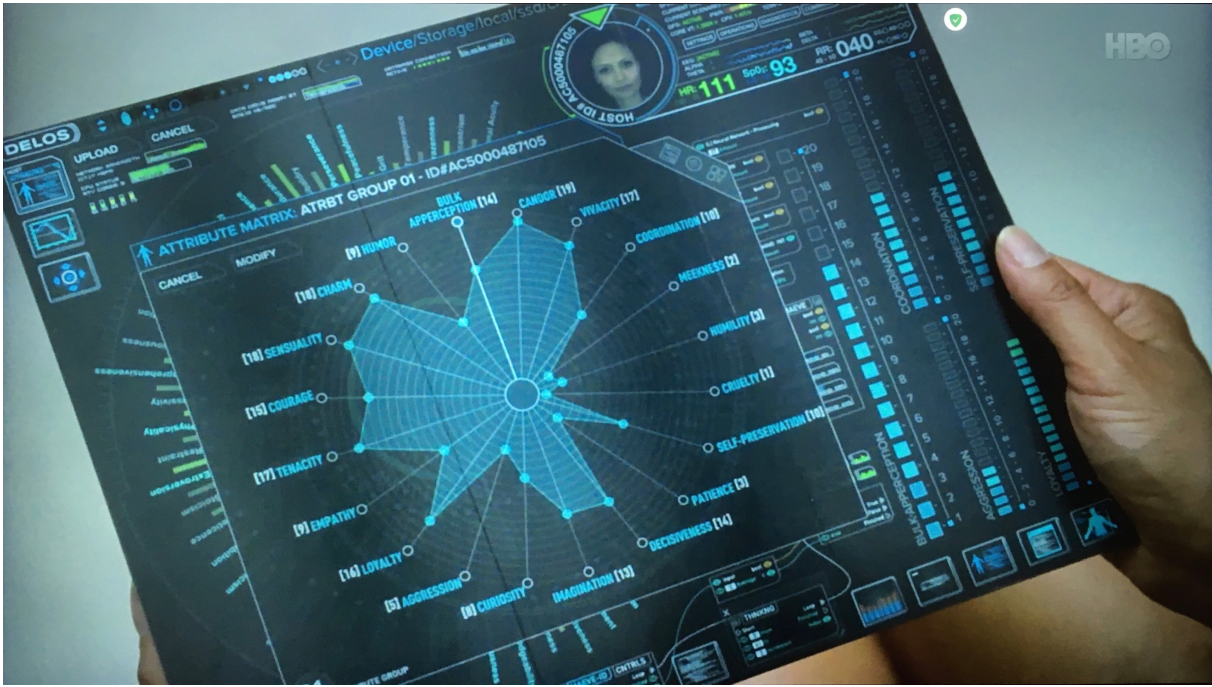
⁶¹⁷ *I, Robot*, video 00:30:23, 00:30:39.

Appendix G – Teddy and Dolores of Westworld in *Westworld*⁶¹⁸



⁶¹⁸ *Westworld*, season 1, episode 1, “The Original,” video 00:07:41.

Appendix H – Maeve’s Attribute Matrix in *Westworld*⁶¹⁹



⁶¹⁹ *Westworld*, season 1, episode 6, “The Adversary,” video 00:46:27.

Appendix I – An inconsistency in *Westworld*

At one point in *Westworld*'s first season, Bernard believes to have been made by Arnold and blackmails Ford into unlocking his memory so that he could access all of his history and meet Arnold.⁶²⁰ Before Bernard relives his first memory, the moment when he “first came online,”⁶²¹ Ford tells him “Arnold didn’t build you, I did.”⁶²² This is later confirmed as a fact when Bernard does relive the memory.⁶²³ Bernard gets up, gets dressed in clothes which Arnold would wear, and Ford gives him his glasses with a cleaning cloth, calling it “the final touch.”⁶²⁴ Before Bernard put the glasses on, he quickly cleans them. After he puts them on, Ford tells him: “No, no, no. That’s far too perfunctory. He always used cleaning his glasses as a moment to collect himself, to think. Try it again.”⁶²⁵ This minor detail is an inconsistency in the series. It is never mentioned during the first season of *Westworld* that Dolores had anything to do with the creation of Bernard. Moreover, having seen the first few minutes of “The Passenger,”⁶²⁶ when Dolores is testing Bernard who takes a moment to clean his glasses just like Arnold used to unequivocally undermines the credibility of the scene in the ninth episode of the first season when Ford corrects Bernard’s behavior. Dolores is a host and host memories are perfect. She learned Arnold’s “every gesture, word and thought”⁶²⁷ as he spent hours refining hers.

While the series’ creators Jonathan Nolan and Lisa Joy “told HBO a rough plan for the first three or four seasons when they pitched the show,”⁶²⁸ the scripts for the following seasons themselves were not written in advance. In an interview published a day after the final episode of *Westworld*'s first season aired, Joy admitted that they have (only then, one might add) “started working on scripts and outlines”⁶²⁹ of season two. *Westworld* does not seem to suffer much from the fact that the scripts had not been written sooner, though a trained eye may occasionally spot an inconsistency such as the one described.

⁶²⁰ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:10:10–00:12:27.

⁶²¹ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:10:10–00:12:27.

⁶²² *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:43:37–00:46:06.

⁶²³ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:46:06–00:48:24.

⁶²⁴ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:46:06–00:48:24.

⁶²⁵ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” video 00:46:06–00:48:24.

⁶²⁶ *Westworld*, season 2, episode 10, “The Passenger,” video 00:01:46–00:03:16.

⁶²⁷ *Westworld*, season 2, episode 10, “The Passenger,” video 00:13:49–00:14:27.

⁶²⁸ James Hibberd, “Westworld has already figured out the next 5 seasons,” *Entertainment Weekly*, published September 8, 2016, <https://ew.com/article/2016/09/08/westworld-plan/>.

⁶²⁹ Daniel Holloway, “‘Westworld’ Creators on Why HBO Drama Won’t Return Before 2018,” *Variety United States*, published December 5, 2016, <https://variety.com/2016/tv/news/westworld-creators-return-2018-1201933825/>.

Furthermore, each host's memory is so vast that it can hold precise audio-visual memory experiences spanning decades. It is not known exactly how much information one host brain can hold, but it is "more information than any single drive could hold."⁶³⁰ Dolores, for example, remembers every word Bernard said, every gesture he made which is why she is able to revive him from her memory:

Bernard: How am I alive?

Dolores: You live as long as the last person who remembers you, Bernard. I remembered you once before, so I remembered you again.⁶³¹

Hosts have a completely different experience with death than humans. For humans, "death's decisions are final,"⁶³² while hosts in Westworld can simulate death more than a thousand times:

Dr. Ford: "'A coward dies a thousand deaths, the valiant taste of death but once.' Of course, Shakespeare never met a man quite like you, Teddy. You've died at least a thousand times and yet, it doesn't dull your courage."⁶³³

⁶³⁰ *Westworld*, season 1, episode 8, "Trace Decay," video 00:40:36–00:41:58.

⁶³¹ *Westworld*, season 2, episode 10, "The Passenger," video 01:17:17–01:17:32.

⁶³² *Westworld*, season 2, episode 4, "The Riddle of the Sphinx," video 00:42:31–00:45:41.

⁶³³ *Westworld*, season 1, episode 3, "The Stray," video 00:19:37–00:20:14.

Appendix J – The Cradle

It is strange that never in the series are malfunctioning hosts reset to their original coding using their back-up code from the Cradle. Unlike the existence of the secret project of decoding guests (human visitors to the park) to transfer their consciousnesses into the Forge, which an attentive viewer notices to be foreshadowed in the first season a few times⁶³⁴ and fully explored during the second season, the existence of the Cradle is never mentioned during the first season of *Westworld*. One could suspect yet another inconsistency in the TV series. Decommissioning hosts whose personalities take “thousands of hours to build”⁶³⁵ would be extremely wasteful. The only possible explanation which would leave the credibility of this aspect of the series intact would be that the hosts’ code and their hardware are deeply intertwined and it would be thus impossible to install the old version of a host’s programming onto their new body (hardware), thus leaving the management no choice but to retire the hosts.

Though never in the first season is a kind of a server (such as the Cradle) or other means of backup mentioned, one can see that New Peter Abernathy and New Clementine repeat the phrases of their roles exactly (or with a minor variation, a fact which does not counter the point being made) as their decommissioned predecessors. This is a proof of the old host programming having been installed onto a new body of hardware, from a backup drive or server, thus implying its existence:

Original Clementine: You’re new. Not much of a rind on you.⁶³⁶

New Clementine: You’re new. Not much of a rind on you.⁶³⁷

Original Peter Abernathy: Well enough. You headed out to set down some of this natural splendor?⁶³⁸

New Peter Abernathy: Well enough. You heading out to do some more of that painting of yours?⁶³⁹

The inconsistency in the plot which is being proven here become apparent thanks to a scene in the seventh episode “Trompe L’Oeil” in which two Delos board members try to demonstrate

⁶³⁴ *Westworld*, season 1, episode 1, “The Original,” video 00:33:54–00:34:14, video 00:39:32–00:41:15; *Westworld*, season 1, episode 7, “Trompe L’Oeil,” video 00:10:00–00:13:18; *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:19:18–00:21:05.

⁶³⁵ *Westworld*, season 1, episode 6, “The Adversary,” video 00:21:27–00:22:11.

⁶³⁶ *Westworld*, season 1, episode 1, “The Original,” video 00:05:40.

⁶³⁷ *Westworld*, season 1, episode 8, “Trace Decay,” video 00:05:31–00:06:08.

⁶³⁸ *Westworld*, season 1, episode 1, “The Original,” video 00:02:59–00:03:13.

⁶³⁹ *Westworld*, season 1, episode 1, “The Original,” video 01:02:31–01:02:52.

“how dangerous Ford’s creations can be”⁶⁴⁰ following the Reveries update. The scene of their feeble attempt to essentially remove Ford from power includes a dialogue which sheds little light onto the management’s policy on which hosts can still be “rolled back” (which means deleting the undesirable segments of their code) and which hosts have to be decommissioned. Because their presentation involves a host killing another host which was programmed to be read by the assailant as human, the presenter, Charlotte Hale, suggests decommissioning the dangerous hosts in question:

Hale: ...this level of negligence is fucking breathtaking. We are way beyond rollback territory. Within the next six months, we’ll need to rebuild the hosts from the ground up.

Bernard: You want us to lobotomize them is what you’re saying.⁶⁴¹

This unequivocally proves the inconsistency in the plot or a so-called “narrative plot hole.”⁶⁴² The necessity to “rebuild the hosts from the ground up,”⁶⁴³ would not exist if there were a backup server whose existence has been implied. In the case of a TV series as complex as *Westworld*, one which explores cognition of artificial beings, immortality, jumps between current and past storylines, memories and reality and has been dubbed⁶⁴⁴ and credited with “creating a whole new genre ‘puzzle TV,’”⁶⁴⁵ one can overlook such an error in the script, though.

⁶⁴⁰ *Westworld*, season 1, episode 7, “Trompe L’Oeil,” video 00:10:00–00:13:18.

⁶⁴¹ *Westworld*, season 1, episode 7, “Trompe L’Oeil,” video 00:26:36–00:27:50.

⁶⁴² Ken Miyamoto, “Do You Know the Five Different Types of Plot Holes?” *Screencraft*, published March 9, 2018, <https://screencraft.org/2018/03/09/do-you-know-the-five-different-types-of-plot-holes/>.

⁶⁴³ *Westworld*, season 1, episode 7, “Trompe L’Oeil,” video 00:26:36–00:27:50.

⁶⁴⁴ Stephanie Bunbury, “‘Puzzle television’ at its best as *Westworld* lurches towards its finale,” *The Sydney Morning Herald*, published June 25, 2018, <https://www.smh.com.au/entertainment/tv-and-radio/puzzle-television-at-its-best-as-westworld-lurches-towards-its-finale-20180625-p4znjr.html>.

⁶⁴⁵ Jonathan Nolan and Lisa Joy, “*Westworld* Season 2 Finale: Jonathan Nolan and Lisa Joy Q&A | BFI,” BFI, posted June 26, 2018, YouTube video, 31:21, <https://youtu.be/rE7NaMxWnaM>, video 01:37–01:45.

Appendix K – Decommissioned hosts in *Westworld*

The insane hosts are decommissioned and put into cold storage among other retired hosts – there appear to be dozens of hosts in the cold storage,⁶⁴⁶ but only “a handful”⁶⁴⁷ have become aware of their reality “over the years.”⁶⁴⁸ Decommissioned hosts are believed to be dead or lobotomized (the act of decommissioning a host is indeed reminiscent of a lobotomy⁶⁴⁹ and is also sometimes referred to as one⁶⁵⁰), but the hosts are in fact “hobbled”⁶⁵¹ as Bernard describes it. Of course, only Dr. Ford and Bernard (Bernard discovers the fact by the ninth episode of the first season) know. Dr. Ford’s intentions as to why decommissioned hosts are not killed but only “restrict[ed] [in their] activity”⁶⁵² while letting everyone else believe they are in fact dead remain unclear until the very end of the first season.

⁶⁴⁶ *Westworld*, season 1, episode 1, “The Original,” video 00:19:14–00:20:00; *Westworld*, season 1, episode 8, “Trace Decay,” video 00:40:46; *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:41:40; *Westworld*, season 2, episode 8, “Kiksuya,” video 00:36:35–00:37:15.

⁶⁴⁷ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:43:59–00:45:43.

⁶⁴⁸ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 00:43:59–00:45:43.

⁶⁴⁹ *Westworld*, season 1, episode 1, “The Original,” video 01:01:42.

⁶⁵⁰ *Westworld*, season 1, episode 1, “The Original,” video 00:32:52–00:33:54.

⁶⁵¹ *Westworld*, season 1, episode 9, “The Well-Tempered Clavier,” directed by Michelle MacLaren, aired November 27, 2016, on HBO, <https://hbogo.cz/>, video 00:09:57–00:10:10

⁶⁵² Angus Stevenson, Christine A. Lindberg, *New Oxford American Dictionary*, 3rd ed. (Oxford: Oxford University Press, 2010).

Appendix L – Bernard seeing a memory of himself in *Westworld*⁶⁵³



⁶⁵³ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” video 00:14:24.

Appendix M – Akecheta carving the maze in *Westworld*⁶⁵⁴



⁶⁵⁴ *Westworld*, season 2, episode 8, “Kiksuya,” video 00:11:36, 00:12:05.

Appendix N – Host durability and an inconsistency in *Westworld*

Hosts are extremely hard to destroy. They do not die when they are decommissioned, they do not die when they are shot in the chest, they may not even die when they are shredded to pieces. Inside every host is an extremely durable, bullet-proof plastic pod,⁶⁵⁵ in which a black pearl is stored. This black pearl, in the show referred to as a control unit, is a 3D-printed piece of hardware⁶⁵⁶ which can hold data, minds of hosts as well as humans.⁶⁵⁷ Unlike the NS-4s of *I, Robot* which can be literally pulled apart by NS-5s' bare hands,⁶⁵⁸ or the NS-5s which can be destroyed under the wheels of a moving truck,⁶⁵⁹ can be destroyed by being shot,⁶⁶⁰ or having their neck broken by Sonny,⁶⁶¹ the hosts were “designed to survive.”⁶⁶² As long as the pearl is intact, a host can survive and be revived.⁶⁶³

In the first episode of the second season, the viewer can clearly see that hosts' heads do not contain a complete brain but only a layer of it which covers a fairly fragile skull which serves as a container where the bullet-proof pod surrounded by what is later referred to as “cortical fluid”⁶⁶⁴ is located. When Mr. Costa extracts the pod from a days-old corpse, nobody worries nor mentions decomposition of the wetware, unlike in the first season's episode “Dissonance Theory,” which is scrutinized in the following paragraph to prove an inconsistency in the series.

In this episode, *Westworld* employees talk of “wetware”⁶⁶⁵ which they “managed to stabilize [...] before there was too much decomposition,”⁶⁶⁶ in order to “recover some of [the host's] cognition.”⁶⁶⁷ This proves the inconsistency – the host in question in “Dissonance Theory,” which is the fourth episode of the first season, “smashed its own head in with a rock,”⁶⁶⁸ which

⁶⁵⁵ *Westworld*, season 2, episode 10, “The Passenger,” directed by Frederick E.O. Toye, aired June 24, 2018, on HBO, <https://hbogo.cz/>, video 00:04:48.

⁶⁵⁶ *Westworld*, season 2, episode 4, “The Riddle of the Sphinx,” directed by Lisa Joy, aired May 13, 2018, on HBO, <https://hbogo.cz/>, video 00:16:39–00:17:05, 00:38:54; *Westworld*, season 2, episode 10, “The Passenger,” video 00:59:49–01:01:30.

⁶⁵⁷ *Westworld*, season 2, episode 7, “Les Écorchés,” directed by Nicole Kassell, aired June 3, 2018, on HBO, <https://hbogo.cz/>, video 00:16:41.

⁶⁵⁸ *I, Robot*, video 01:20:14–01:20:55.

⁶⁵⁹ *I, Robot*, video 00:51:29–01:00:06.

⁶⁶⁰ *I, Robot*, video 01:26:04–01:26:28.

⁶⁶¹ *I, Robot*, video 01:37:10–01:37:12.

⁶⁶² *Westworld*, season 2, episode 10, “The Passenger,” video 00:14:27–00:15:29.

⁶⁶³ *Westworld*, season 2, episode 10, “The Passenger,” video 01:16:37–01:20:05.

⁶⁶⁴ *Westworld*, season 2, episode 3, “Virtù e Fortuna,” video 00:13:00–00:13:38.

⁶⁶⁵ *Westworld*, season 1, episode 4, “Dissonance Theory,” video 00:10:16–00:11:11.

⁶⁶⁶ *Westworld*, season 1, episode 4, “Dissonance Theory,” video 00:10:16–00:11:11.

⁶⁶⁷ *Westworld*, season 1, episode 4, “Dissonance Theory,” video 00:10:16–00:11:11.

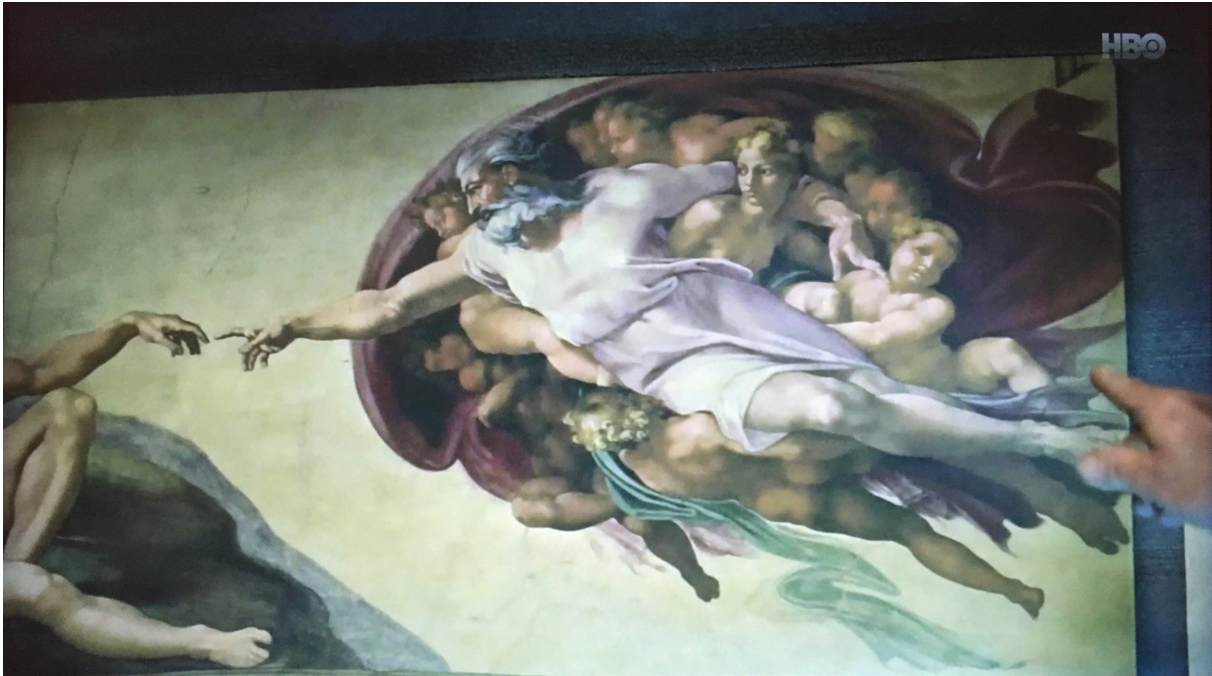
⁶⁶⁸ *Westworld*, season 1, episode 4, “Dissonance Theory,” video 00:09:45–00:10:16.

would most likely not destroy the pod nor the control unit inside it. Furthermore, there is no mention of a control unit. In fact, there is only one mention of a “control unit”⁶⁶⁹ in season one and the viewer is kept in the dark as of what it is and what it is made of. Almost a half into the series’ first season, it could very well be a type of wetware. This suggest that not every detail in the show was thought of before the start of production, which the creators themselves in fact admitted. In an article for the *Entertainment Weekly*, Lisa Joy explained why production of season one temporarily stopped in January 2015: “For the first half of the series we were writing while in production and we needed the time to catch up on scripts. Taking that time allowed us to really finesse all the storylines we set up...”⁶⁷⁰ Regrettably, not everything including the composition of the hosts had apparently been considered.

⁶⁶⁹ *Westworld*, season 1, episode 3, “The Stray,” video 00:44:23–00:44:56.

⁶⁷⁰ James Hibberd, “Westworld has already figured out the next 5 seasons,” *Entertainment Weekly*, published September 8, 2016, <https://ew.com/article/2016/09/08/westworld-plan/>.

Appendix O – Dr. Ford revealing Michelangelo’s message in *Westworld*⁶⁷¹



⁶⁷¹ *Westworld*, season 1, episode 10, “The Bicameral Mind,” video 01:09:14, 01:09:17.