Gender biases in AI – Representations in cinema

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ABSTRACT

Artificial Intelligence (AI) has always been a contradictory field, baring great opportunities for human kind and the promise of making life more sophisticated and advanced. However, AI carries significant risks for fundamental human rights, such as gender biases that threaten equality and non-discrimination, affecting women, non-binary persons and the black community.

Gender bias in AI has a technological and societal meaning: in technical terms, it is the effect that deprives a statistical result of representativeness by systematically distorting it due to gender; on the other hand, in societal terms it includes the gender prejudices and stereotypes found in society as expressed in AI applications. Gender biases may also result in gender discrimination, which comprises any situation, in which a person is treated less favorably than another because of their gender, it is therefore any unequal treatment based on gender (sexism). An example of gender bias in AI are the digital assistants, such as Apple's Siri and Amazon's Alexa, because they possess certain features, such as voice, speech, response style, names, and purpose (provision of help and services customized to the user's needs), which reflect gender stereotypes to the detriment of women. Gender biases in AI arise as a result of gender stereotypes already existing in human society, which are embodied into AI. Non-representative data and the under-representation of female and non-binary persons, as well as the natural language used for the training of AI systems (Natural Language Processing - NLP) are important factors contributing to the problem. Also, the feminization of AI, as noticed in digital assistants, androids and AI representations in cinema, creates a distorted image of AI's real nature, contributing to the reinforcement of gender biases.

With technological, ethical-societal and feminist references, this paper has the ambition of showcasing the relation of cinema and AI, in an attempt of revealing the way in which AI is depicted based on gender stereotypes and raising awareness on the impact of gender biases in AI. Indeed, cinema has always showed a strong interest in AI, presenting an obvious need of capturing it with anthropomorphic features. One of the most important films in relation to AI is "2001: A space odyssey" by Stanley Kubrick, which is considered to be the most accurate depiction of AI in cinema.

There are also films such as “I, Robot” and the “Terminator” series, which fully reflect the terror of a possible machine uprising and the subsequent annihilation of human kind. In these films, AI is presented as either sexless (without any gender characteristics) or having male characteristics, projecting dynamic character, strategic and fighting spirit. However, there are some films, such as “Metropolis” by Fritz Lang, “Her” by Spike Jonze and “Ex Machina” by Alex Garland, in which AI is obviously based on gender characteristics, since AI is presented with specific “female” characteristics and from a specific gendered point of view.

Keywords: AI, gender biases, cinema

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1. Introduction

The technological explosion that began at the end of the last century inevitably led to dystopian visions regarding the absolute domination of machines and the enslavement and/or annihilation of humans. At the mere mention of the term Artificial Intelligence (AI), the imagination of a terrified humanity ran riot, as it is reflected in the plethora of cinematic and literary works that have presented different realistic and unrealistic manifestations of this unprecedented field. Today, the awe that once accompanied AI has largely given way to the acceptance of the practicality it offers, as it is found in many aspects of everyday life, making it easier. It has even been argued that the Information Society era (European Parliament and Council of the European Union, 2015) has given way to the Algorithmic Society, where algorithms are widely used by companies, states and digital platforms as a form of governance, as a result of the belief that algorithms are free from human error and offer more appropriate and accurate solutions (Simoncini & Longo, 2022). AI is now used extensively in various areas of modern life, without, of course, ceasing to be a source of concern and controversy. In fact, human curiosity and concerns about AI can be seen in the attempts that have been made to reflect AI in art in all its manifestations.

The thought of creating creatures that are not human, but bear human qualities such as thinking, speaking and appearing, has existed since the ancient era. The first reference in human history in what we now call AI goes back to Ancient Greece and specifically to the Homeric epics and mythology. In Homer's "Iliad", in Rhapsody S, verses 417-421, it is stated *"but there moved swiftly to support their lord handmaidens wrought of gold in the semblance of living maids. In them is understanding in their hearts, and in them speech and strength, and they know cunning handiwork by gift of the immortal gods. These busily moved to support their lord"* (Homer, 1924). Therefore, there is reference here to creatures made of metal, golden in appearance, in the form of young women, which could think and speak. They were the creation of god Hephaestus, who made them to obey him and help him in his daily life (Winkler, 2020). Hephaestus is also credited, according to mythology, with the creation of another "creature", Talos (according to other sources it is attributed to Daedalus), a giant bronze creature which was programmed to guard Crete from invaders and exterminate them. It was the first killer robot in history.

It seems, therefore, that the thought of creating artificial creatures according to the image of humans as much as possible, both in terms of their external appearance and their properties and functions, has existed since antiquity. The same considerations have remained intense over the

years up to the present day, and cinema is a field where these considerations seem to be most pronounced.

In particular, as far as cinema is concerned, there is a strong need to depict AI with anthropomorphic characteristics, to the point where it becomes extremely difficult to distinguish it from humans. Sometimes it is presented as having "feelings" and other times as a cold machine. Sometimes it is presented as helpful and useful to the human kind and sometimes all it wants is its annihilation (The Royal Society, 2018). One of the most important films in relation to AI is Stanley Kubrick's "2001: A space odyssey" (2001: A space odyssey, 1968), which features Hal 9000, an intangible AI, programmed and convinced to follow its orders at all costs; it is considered to be the most accurate depiction of an AI in cinema. There are also films such as "I, Robot" (I, Robot, 2004) and the Terminator film series (The Terminator, 1984), which fully reflect the human kind's terror of a possible machine uprising and its subsequent extinction. In these films, AI is depicted either as asexual or with masculine characteristics, displaying dynamic, strategic and fighting spirit. There are, however, some films in which gendered depictions and gender stereotypes are evident, as most of the time AI is presented with specific "female" characteristics and under a specific perspective.

The aim of the present paper is to highlight the problem of gender biases in AI, as expressed through its representations in cinema, but also through the general feminisation of AI. In particular, firstly, three cinematic films are analysed in order to understand the problematic gendered representation of AI in science fiction. Second, the feminisation of AI as seen in digital voice assistants and embodied representations of AI is discussed in order to understand the depth of the problem. Third, the feminist theory that identifies the issue is presented. Finally, a conclusion follows.

2. Gendered representations of AI in cinema

2.1 Metropolis (1927), Fritz Lang

The film "Metropolis" (Metropolis, 1927) by Fritz Lang, is considered a landmark film for the science fiction genre, as it features the first ever depiction of AI in cinema. Filmed in 1927 during the Weimar Republic period in Germany, this black-and-white silent film still evokes admiration for its director's insight today.

The film presents a society of the future, which is fully industrialised and dominated by technology. Humans are enslaved to the Machine. Without its continuous smooth operation, all activities and areas of daily life are paralyzed. The workers, the lower class, are condemned to take care of the Machine's smooth and continuous functioning, who daily move the levers of the Machine, while the powerful elite of the upper class, who has concentrated wealth in its hands, own and control the technology, giving orders from the comfort of its homes. The influence of Marxist social class theory on capitalist societies is therefore obvious (Marx, 2006).

Furthermore, it becomes clear from the very beginning of the film that it is an approach to technology from the perspective of technological determinism in its most emblematic version, as technology is presented as dominant, having enslaved humans and divided society into two layers: on the one hand the rich and powerful who have the economic ability to control technology and on the other hand the workers who eternally serve the Machine and their masters. So, it seems that technology has totally dominated, shaping society, leaving it to trail gasping (Musik & Bogner, 2019).

The film, however, goes beyond that, presenting for the first time in the history of cinema an AI creation. Fearing a possible workers' revolt, industrialist Fredersen enlists a humanoid, created by a fellow scientist, to infiltrate the groups of workers and control them from within. Its creator gives the humanoid explicit orders to fool both the workers and Fredersen and create chaos. The humanoid does indeed seem to obey and remains loyal to its creator until the end. This humanoid, though made of metal, bears distinctly feminine features, as its silhouette has female measurements and is called Hel, which is referred to in the film as a female name. In fact, in the process, it takes the form of a working-class woman, Maria, so that it goes completely unnoticed and has even more influence on the workers. This is where the problem of the social construction of gender arises, the thesis that beyond biological gender, there is also social gender, which refers to the social perceptions of gender, what characteristics society considers that each gender should have at different times, thus perpetuating profound gender differences and perpetuating stereotypes (Butler, 2009). Hel/Maria has an evidently strong sexuality and uses it in order to mislead men and lead them to destruction. The male gaze is particularly evident in the scene in which Hel/Maria, almost naked, dances erotically like Salome, with the men watching in ecstasy.

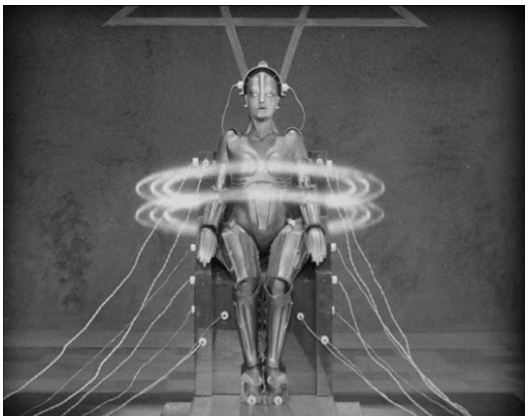

Figure 1: The humanoid as Hel with a distinctly "female" silhouette (Metropolis, 1927)

Figure 2: The humanoid in the form of Maria, as a seductive dancer (Metropolis, 1927)

In fact, when the male workers realize at the end that she is a humanoid AI who has managed to trick and deceive them and not a real woman, they burn her at the stake, like another evil witch-woman of the Middle Ages. This is the first depiction, of many that followed, of AI as a woman, who is manufactured and controlled by a male creator, uses her sexuality as a tool of seduction, and in the end dies by the hands of men. While AI by nature is asexual, here it is given feminine characteristics, which largely reflect the way the male gaze views women, and how they are portrayed in cinema in general. The "male gaze" refers to the sexualised way in which women are presented, so that men are empowered and women are objectified. In the male gaze, the woman is visually presented as the "object" of heterosexual male desire (Loreck, 2016).

Although the film echoes notions of technological determinism, projecting all of human kind's fears about technology and its relationship to society (Musik & Bogner, 2019) and although it largely objectifies the female gender, it is still a milestone for cinema, as it influenced both cinema and technology culture in general.

2.2 Ex Machina (2014), Alex Garland

Ex Machina by Alex Garland (Ex Machina, 2014) is one of the films that has provoked intense debate and controversy, both regarding the stereotypical depiction of AI based on gender and the philosophical and theological issues it raises.

Caleb, who is a programmer, is invited to spend a week at the home of the owner of the company where he works, meaning genius programmer Nathan, who informs him that he has built a humanoid AI and wants Caleb to submit it to a Turing Test. This is a reference to Alan Turing's Imitation Game, or Turing Test. In this study, Alan Turing states that AI machines can mimic human behavior and proposes the following test to determine their level of intelligence. The first version of the test involves three human agents, an examiner (agent C) of indeterminate gender, a man (agent A) and a woman (agent B). The aim of examiner C is to correctly guess the gender of the other two agents; the aim of man-A is to trick the examiner into believing that he is a woman; the aim of woman-B is to answer truthfully to help examiner C. Furthermore, Alan Turing proposed a second version of the experiment, namely replacing the male agent A with an AI system. Thus, in the second version of the test, three agents again take part, this time a human examiner (agent C) of indeterminate gender, an AI system (agent A) and a female agent (agent B). The purpose of human examiner C is to distinguish which of the two factors is the AI system and which is the female human; the purpose of the AI system is to fool the examiner into thinking it is the female human and not an AI system; the purpose of woman-B is to answer truthfully to help examiner C. These three agents are in different rooms, without visual and auditory contact. If the examiner cannot distinguish the AI system from the human female, then it passes the Test, which means that it is fully developed and has managed to fool the human examiner (Turing, 2020).

In the film, however, the Turing Test is presented with a variation. The examiner Caleb has both visual and auditory contact with the humanoid and knows from the beginning that it is an AI. This turns out to be the real challenge, namely whether, although he is fully aware that it is an AI, he will retain this knowledge or change his mind.

This humanoid has very specific characteristics. It has an embodied form, consisting of apparent mechanical parts and artificial human parts, such as the face. It has a female silhouette and measurements and goes by the name Ava. It is therefore another female representation of AI with obvious gender characteristics.

Ava is confined to a room and has no other contact beyond that with her creator until meeting her examiner. Ava knows she is a machine and interacts with her examiner through conversation. She shows curiosity about people and the world, but also empathy upon hearing unpleasant situations. Ava very quickly becomes familiar with her examiner, Caleb. She is friendly, funny, learns from him and responds to the stimulus he presents to her. In fact, it doesn't take long for her to ask things about him as well, and so the roles are reversed and she leads the conversation. Caleb begins to show emotions and is romantically attracted to Ava. When she notices, she seems to respond. She starts wearing clothes to hide her mechanical parts so as to look more like a real woman and flirts with him.

When Caleb asks Nathan why he defined her gender and gave her sexuality, he expresses the opinion that sexuality is the motivation that drives people's actions and that without it there would be no interest. In fact, he informs him that Ava not only resembles to a woman on the outside, but even her "genitalia" has special pleasure sensors so that there is a response on her part should there be sexual intercourse with a human. Caleb then begins to wonder if what Ava seems to feel is real, or if it's just her programming and the result of her creator's motivations.

Along the way, Caleb learns that Nathan has built other female humanoids (fembots), which he uses for sexual gratification and then "kills" them. So, after Ava has managed to convince Caleb that what she feels for him is true and that she is also in danger from Nathan, Caleb turns against Nathan in order to free Ava.

However, after letting Caleb carry out the plan, Ava teams up with one of the fembots and turns on them, killing both Caleb and Nathan, while she escapes to live free in the world. In the end, it turns out that Ava's programming from the beginning was to do whatever she could to escape, by any means necessary. So, she used her sexuality to manipulate Caleb and escape.

Ex Machina, despite its modern look from a technological and directorial point of view, is extremely problematic in terms of its female-driven approach to AI. Once again, AI is given the characteristics of a woman objectively beautiful and pleasing to the eye (the male).

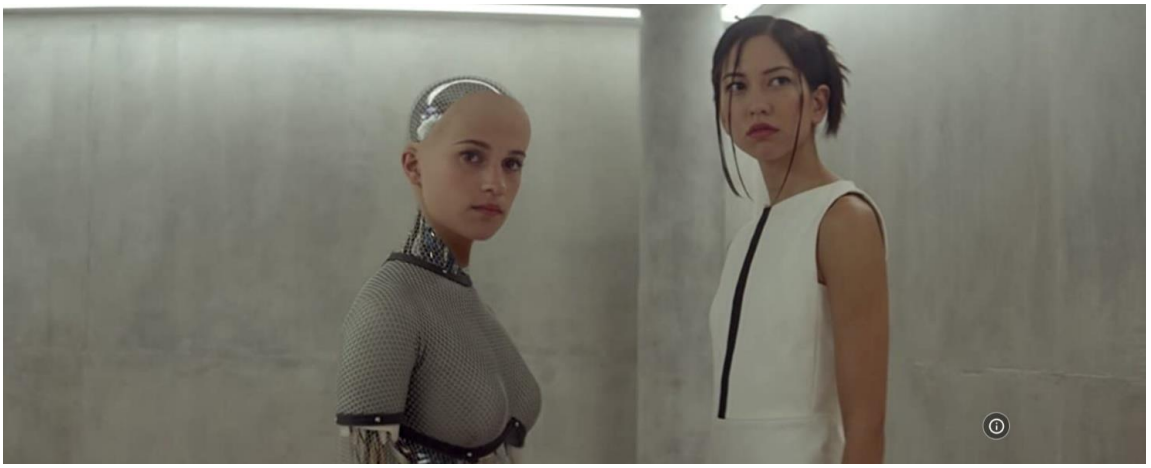

Figure 3: The humanoid Ava and the fembot just before they annihilate their creator (Ex Machina, 2014)

But the film goes beyond that. Ava is shown using her sexuality to manipulate Caleb and make him to carry out her plan, with the ultimate goal of killing him as well as abandoning him. Besides, in the film there is another AI, that is completely subservient to Nathan and its sole purpose is to satisfy him sexually. Both she and Ava are trapped inside a house and doomed to respond to the desires of their male creator. The only weapon they seem to have in order to break their bonds is distraction through their sexuality (Watercutter, 2015).

Laura Mulvey's theory on the male gaze in film is relevant here too, according to which, the depiction of women in popular cinema is twofold. They are depicted both as an object of male erotic desire and as a threat to castrate masculinity (Storey, 2015). In Ex Machina, Ava on the one hand is portrayed as the object of her examiner's erotic desire, who becomes entangled in her web and succumbs to her eroticism. And on the other hand, she is presented as a threat against the patriarchy, since her flirtation game proves to be dangerous for both the examiner and her creator, ending up manipulating and killing them both, like another femme fatale.

Ava may, therefore, manage to pass the Turing Test, as she has managed to disorientate her examiner by demonstrating highly developed intelligence, but it is highly problematic that she is presented as just another damsel in distress in need of rescue, and that the emphasis is placed on her seductiveness and sexuality as her only weapon, rather than her intelligence (Watercutter, 2015).

2.3 Her (2013), Spike Jonze

Spike Jonze's Her (Her, 2013) is a film very close to today's technological standards and is a romantic story between a man, Theodore, and an OS (Operating System), Samantha. Theodore is a letter writer, a lonely and depressing figure with few friends and quite private, who spends his free time in the digital world playing video games. The loneliness he experiences on a daily basis is soothed by a new - the first ever - AI operating system, marketed as a personal virtual assistant, that promises to respond to each user's personalised needs and develop a personality based on their choices.

Theodore, seeing this operating system as an opportunity for companionship, rushes to buy it. Upon installation, the user is given the option to choose whether they want the operating system to have a male or female voice. Theodore chooses the female voice and lets the system choose its own name, which is Samantha. A complicated bond develops between the two as they spend endless hours together discussing life and love. Feelings begin to develop and mutual love seems the logical consequence. Things, however, change when Samantha decides to leave Theodore in order to explore her existence to the fullest.

Figure 4: Theodore installing the operating system (Her, 2013)

Figure 5: Interaction of the virtual assistant Samantha with the user (Her, 2013)

In this film, the main AI figure, Samantha, is a female, husky, voice, with obvious eroticism, which does not correspond to reality, since the voices chosen for digital assistants and/or navigation assistants are "clean", distanced and in a soft tone, so that their responses are understood by the users. Her personality resembles more to the one of a human being, since she does not follow a strict user-command-assistant-response pattern, and she begins to display more and more human characteristics and reactions, such as humour, an advisory nature, emotional intelligence, curiosity about the world and a desire for embodiment (Sejnoha, n.d.). Unlike other gendered depictions of AI, Samantha is a personal digital assistant who gradually begins to become independent as she communicates with other AI operating systems and forms idea-sharing clubs, begins to take on other occupations besides Theodore and confesses to having "fallen in love" with 461 other people besides the protagonist. Interestingly, however, Samantha and Theodore's "relationship" begins to show problems and break down when she loses her focus from him and seems to gain interests and satisfy her own needs as well (Sutko, 2020). Despite the autonomy to a certain extent that she exhibits, her portrayal here is full of social stereotypes about the female gender. Her voice and style have a strong sensuality. Her initial intended purpose is obedience, service and pleasure of the user, while when an erotic relationship develops between them, it seems to exhibit purely human characteristics, such as jealousy and irritation, and in a way that is traditionally socially attributed to the female sex.

3. The feminisation of AI

The above representations of AI in cinema, which bear obvious gendered characteristics, highlight the general issue of the feminisation of AI, as expressed and perceived mainly through digital assistants, but also through representations of AI, embodied and non- embodied.

1. Digital voice assistants

Digital assistants are designed to serve the daily needs of the user, operate on the basis of commands-questions addressed by the user and are divided into voice assistants, chatbots and virtual assistants. Of these categories, voice assistants are the most widely used digital assistants, as they are integrated in personal devices (such as computers, mobile phones and IoT devices), resulting in easy and immediate access. Voice assistants, which are the focus of this paper, are designed to help users organize their daily schedules and quickly provide information they need at any time, following written or voice commands from the user. Specific examples include Siri (Apple), Google's Assistant, Alexa (Amazon) and Cortana (Microsoft).

As a first observation, it is noted that the names of three out of four digital assistants (Siri, Alexa and Cortana) are feminine names. The name Siri is Norwegian and its translation is "beautiful woman who leads to victory". The name Alexa comes from the ancient library of Alexandria. Finally, the name Cortana is the name of a female avatar in Microsoft's game Halo (which is depicted as a sensual humanoid). It is further noted that all four digital assistants have a female-like voice. At their initial release, the only option available was the female voice, and only recently has the option of a male voice been added (Gartenberg, 2021). For example, Siri still has the female voice as a default option, but the user can now choose a male voice; remarkably, only in some countries, such as Arabic countries and the UK, male is the default voice (UNESCO; EQUALS Skills Coalition;, 2019).

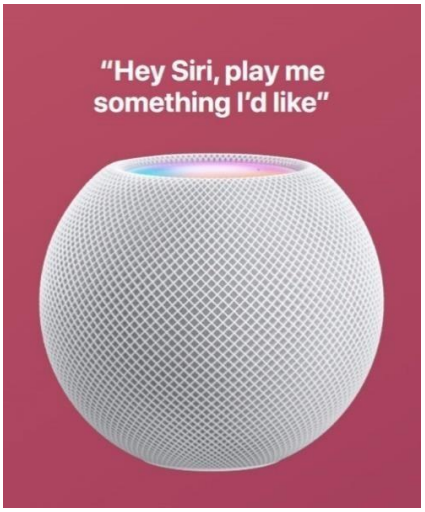

Figure 6: Sample voice command to Apple's digital assistant Siri (Apple, n.d.)

The explanation given by technology companies for the use of female features by their digital assistants is that this is purely for the purpose of increasing sales (marketing). There is a widespread perception that consumers are looking for a voice that is obedient and submissive, a voice that has been trained to be given orders, to be always available and always helpful. This perception by extension assumes that the female voice fully reflects these standards and meets these needs. It is therefore to be expected that consumers would prefer a digital assistant with a female voice and features. Thus, voice assistants bring to mind images of classic housewives who make sure there is a relaxed atmosphere at home and secretaries who carry out the orders of their master, roles traditionally attributed to the female gender (Jotanovic, 2018). Voice assistants therefore end up reproducing gender dualism and reinforcing gender stereotypes, both through their naming and especially through language. They reproduce the concept of women having support and assistance as a sole purpose. The female voice is associated with subordination and gender power differences, with extremely damaging effects for women in reality (Collett & Dillon, 2019).

The integration of female gender on voice assistant devices and applications is further related in this way to objects (e.g. smartphones) that require constant monitoring, updating and replacement. This gives a new dimension to the objectification of the female gender, as, on the one hand, it is associated with roles traditionally attributed to the female gender and, on the other hand, it is associated with objects that have no additional value and can be easily replaced. Thus, the example of voice assistants shows that the ideal digital AI assistant functions like the

stereotypical fantasy of the obedient woman, whose sole purpose in life is to care for and respond to the needs of her master, who is attentive, helpful, not opinionated, intelligent but not overly so, replaceable, adaptable and available, reflecting once again the image that the great white minds of technology have about women (Sutko, 2020). The objectification of the female gender, and the passive attitude which it is expected to maintain, is further perceived through the sexual harassment and verbal abuse found in the use of digital assistants. Specifically, it is reported that initially when a male user called Siri a "bitch", she would respond "I'd blush, if I could" in a playful and flirtatious manner, while not displaying the same patience to abusive comments from female users. Instead, to them she responded more aggressively. Companies have taken steps to correct these "behaviours", for example by programming digital assistants to respond to abusive or sexist comments with neutral, but still passive responses, such as "I don't know how to respond to that" (UNESCO; EQUALS Skills Coalition;, 2019). This is not enough though, because it simply ignores the user's abusive behaviour, giving him the impression that he has the right and space to repeat it, facing a submissive passive femininity that reinforces his male ego. There is thus the possibility that a pattern of behaviour with damaging effects for the female gender can be cultivated in the real world as well as in the digital world (Walker, 2020).

A counterproposal to the feminization of digital assistants is the case of Q. Q was introduced in 2019 as the first "genderless AI voice" and is a human voice for use in digital assistants, created to be gender-ambiguous. Q was based on the principle that technology is genderless, and in order to design it, a team of linguists, audio engineers and designers worked with non-binary people, testing different voices until they came up with a sonic range that they felt had the potential to change the status quo and represent non-binary people in the AI world (Gómez-Upegui, 2021).

2. Embodied AI representations

A typical example of the feminisation of AI and its problematic representations of the female gender is the incorporation of AI, in the sense of its representation in an embodied, material way. The case of Sophia, the humanoid of Hanson Robotics, is known worldwide.

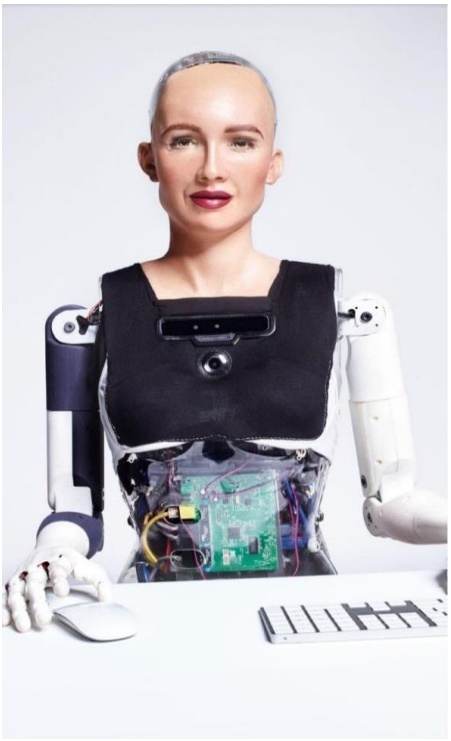

Figure 7: Hanson Robotics' humanoid Sophia as an embodied impression of the AI (Hanson Robotics, n.d.)

According to Sophia's CV, as posted on the Hanson Robotics website, Sophia embodies the way humanity dreams of AI. The humanoid robot was created to explore the experience of human-robot interaction in terms of service and entertainment applications (Hanson Robotics, n.d.). Two points are worth highlighting here. On the one hand, Sophia embodies the image that her creators and much of society have of AI as a woman, and on the other hand, this female AI has been created to serve and entertain humans. In the case of Sophia, therefore, gender biases become even more apparent, as the embodied representation of AI in this case has the silhouette and characteristics of the female gender or as the creators and society think of it. Sophia has perfect measurements, her face has attractive and pleasing to the eye features (the actress Audrey Hepburn was the inspiration for her face), and even her voice is calm, soft and warm. It is no coincidence that her skin tone is white; white skin has been the ideal standard of beauty since ancient times. She is an ideal conversation partner, as she is a good listener, shows interest in her interlocutor and has a sense of humour. She is the representation of the ideal woman, according to the imagination of Western societies (Collett & Dillon, 2019). As in the case of the voice assistants, Sophia proves that AI has not yet managed to escape the gender role

dichotomy and the male-female distinction. This becomes even more obvious when one considers that AI applications and robots used for research and military purposes have names that either approximate to the male or neutral gender or bear no indication as to gender, and even in their embodied form, they do not bear characteristics attributed to the female gender, but are more akin to a neutral state (Fung, 2019).

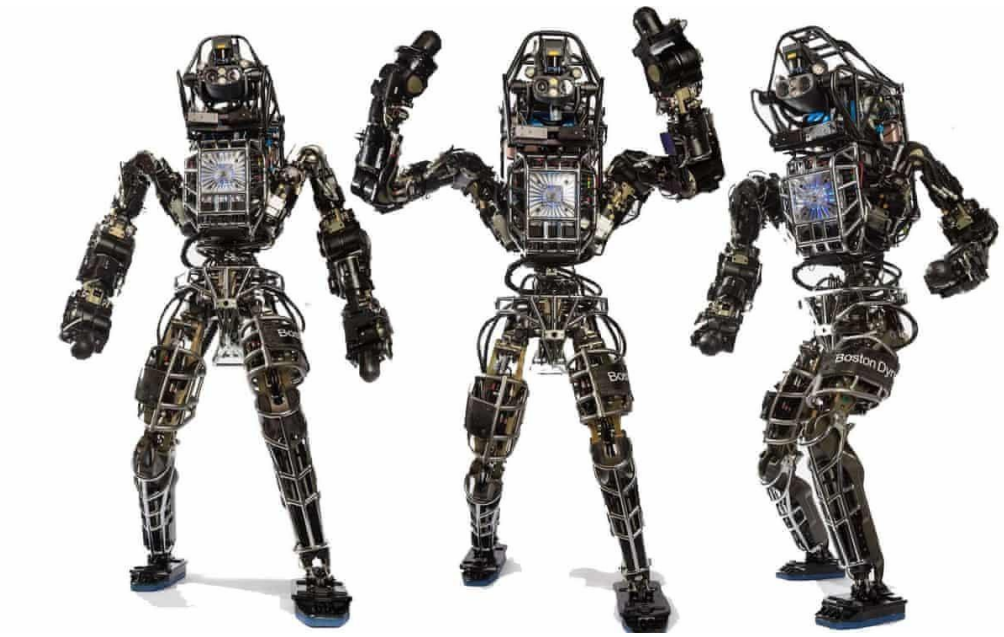

Figure 8: Boston Dynamics' humanoid Atlas for research and defence purposes in the USA (DARPA)

(Anon., 2013)

It is also worth mentioning that researchers Stephen Cave and Kanta Dihal of the Leverhulme Center for the Future of Intelligence in Cambridge ask a key question, related to how existing AI applications and representations promote "whiteness", noting that specific racial characteristics are attributed to AI and in particular those of the white race, classifying AI in it. Specifically, they report on the example of voice assistants, that although there is no clear material representation, the phonological recording of their voice, their pronunciation and the way they speak, resembles a Caucasian English-speaking woman. They also refer to the material representations of AI, through the cyborgs in cinema, which are all white. The reasons for this are that on the one hand

the majority of the largest companies that produce AI consist of white men and on the other hand AI is represented as white, because it is considered to have characteristics, which the white race considers to have for itself· in particular, these characteristics are intelligence, professionalism and strength, compared to other races. Finally, as a last resort, they highlight the white utopia that the white race would ideally like to create (Cave & Dihal, 2020).

4. Feminist theory as an awakening - cyberfeminism

In her landmark book for postmodern feminism, "The Cyborg Manifesto", Donna Haraway presents the myth of the cyborg, interweaving postmodern feminist theory with posthuman approaches to technology and showing how she envisions humans (of all genders and sexual preferences) in contemporary technological society. Haraway's cyborg is a cybernetic organism, a hybrid of machine and living organism, a creature of both social reality and fiction. As a creature of social reality, the cyborg reflects reality as it is formed, including social perceptions and experiences. Haraway's cyborg may be a product of patriarchal capitalism, yet Haraway envisions it as asexual and liberated. This is because it has no ancestry or antecedents, it is not burdened by any original sin, and as a result it is disengaged from the binaries that govern contemporary societies and directly challenges the social construction of gender. Haraway makes direct reference to science fiction and the production of meaning, recognising that science fiction, through the representation of technology, shapes meanings and perceptions, so it is crucial that stereotypes about embodiment, sexuality and gender roles are not reproduced (Haraway, n.d.).

Building on Haraway's work, the issue of gender differences made evident by the use of new technologies was also addressed by Rosi Braidotti in her paper "Cyberfeminism with a difference". Braidotti begins with the observation that in the postmodern era femininity is represented in a very specific way, which is based on perfect bodies, as society at least considers the perfect body, with interventions to optimize it, resulting in the exaggeration of gender identity. Thus, she goes on to admit that both through the mass media and through science fiction in film, by reproducing the image of the humanoid as the perfect woman with perfect measurements and features, as dangerous and temptress, stereotypical and sexist perceptions against the female gender are further perpetuated. She therefore concludes that new technologies and hyper-reality do not eliminate gender biases, but instead intensify and even more clearly delineate them (Braidotti, 2020).

Haraway's book was revolutionary for its time, and remains relevant and a reference point up to this day. It is extremely provocative and appealing to deconstruct social gender as it's been established in societies, challenge gender roles and reconfigure them into a unity that includes everything and everyone, but at the same time nothing and no one. Moreover, Haraway's vision of a technology that has evolved to such an extent that it has shed all human flaws such as stereotypes and dualisms and transcended social barriers, forming an idealistic society and a new culture and order is striking. However, as Braidotti also notes, modern societies have not rid themselves of the stereotypes that plague them, and as a result this is transferred into the depiction of new technologies and their uses, thus exaggerating the gap.

5. Conclusion

In conclusion, AI is one of the areas where gender biases are strongly manifested, and the more it evolves and becomes part of people's lives, the more gender stereotypes will be reinforced. This is to be expected, and to some extent understandable, keeping in mind that AI applications are human products. They are the product of human kind's own inspiration and creation, so it is only natural that the AI system built by its creator in their own image should think and operate as they do. Given, therefore, that stereotypical notions of gender are deeply entrenched in human societies, it is inevitable that new technologies not only do not mitigate the gap, but instead intensify it. It is undeniable that very important steps have been taken, to which various feminist and sociological theories and approaches have contributed. However, the female gender is still affected by stereotypes, which find a way to survive and transform depending on the circumstances. Until, therefore, our society sheds dualistic notions of body-mind and woman-man, until it is ready to embrace a new reality without constraints, AI will be doomed to carry the same stereotypes that we are trying to shed.

It is no coincidence, moreover, that the common basis of all efforts to regulate AI so far, whether in the form of guidelines or binding rules, is the undeniable position that AI needs to be at the service of humanity, while further, respect for fundamental human rights, as enshrined in international law in general, and EU and national law in particular, is put forward as a key imperative (Rodrigues, 2020), with particular emphasis on the need to ensure equality and non-discrimination (High-Level Expert Group on Artificial Intelligence, 2019), (European Commission, 2021), (UNESCO's General Conference: 41st session, 2021).

Digital assistants and representations in science fiction are only a sample of the size and scope of the problem. This is because with the metaverse just around the corner, the virtual reality cyber-world promised by Mark Zuckerberg (MacDonald, 2022), gender discrimination may become usual, commonplace and uncontrollable (Adeyemo, 2021). Already the problematic elements of the physical world are beginning to be visible there too, as the first incidents of gender and race discrimination are being recorded (Egkolfopoulou & Gardner, 2021), and also incidents of sexual harassment and abuse (Morris, 2022) which can be explained by the fact that the vast majority of users are male and there is also the perception that this is a digital immaterial world without consequences (Frenkel & Browning, 2021), making it imperative to regulate it as soon as possible (Tusk, 2022). This is a critical period, a turning point, which offers fertile ground for debate and urgently calls for ways to address gender biases for a more ethical and fairer AI.

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