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The Disembodiment of Digital Subjects and the Disappearance of Women in the Representations of Cyborg, Artificial Intelligence, and Posthuman

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Abstract

With the expected feasibility of smart technologies of the fourth industrial revolution, various techno-philosophical discourses and representations of human digitization have garnered attention. Examples of this include Mind Transfer (Moravec, 1988) and Mind Uploading (Kurzweil, 2005), which describe robots or computers equipped with human intelligence. This study examines the intelligence-driven logic inherent in the above-stated male-led technology-oriented discourse and clarifies that the information-centric approach to digitized humans tends to reduce the human to its mind and to regard the body as unnecessary. This discourse contradicts Hayles' pioneering posthuman concept, which defines future digitized humans as material-informational entities (1999). After Hayles, Kurzweil's idea of digitized humans as "non-biological thinking" seems dangerous, as this concept prioritizes cognition and mental faculty over the body and renders the body meaningless in pursuit of the "transcendent reason/mind." Such a concept of digitized humans could result in the disappearance of a woman's identity, based on a "plural and fluid" body that affirms their differences and bodily singularity. This article addresses the erasure of sexual and gender differences, and ultimately, the disappearance of women as problems caused by the vision of anthropocentric and Kantian male-led discourses on human digitization. Further, this article attempts to propose an alternative posthuman concept based on feminist (techno-) philosophical discourses led by Hayles, Braidotti, and Haraway.

Key words

non-biological thinking, disembodiment, mind uploading, posthuman, relational subject

Introduction

A hyper-connected society, where all objects and humans are connected, is now considered imminent, as the fourth industrial revolution technologies are thought to be feasible. This means that a highly advanced network of technologies, including the Internet of Things and artificial intelligence (AI), will converge, interact, and emerge as a new human environment. In the technology network that embodies this hyper-connected society, humans, objects, and virtually all physical structures on earth will have to undergo a "digital transformation" (cf. Schwab, 2017, p. 14). This digitalization will be equivalent to transplanting universal information codes into humans, objects, and the basis of everything existing in time and space. Representative smart technologies will include various sensors for informatizing objects and various wearable devices with self-tracking technology to informatize the human body. All objects and humans will be transformed into data through this informatization process; these data will be transferred to a higher computer system and connected to the internet. The computer universe is expected to become a new form of the natural environment that surrounds humans, and all humans are expected to be required to connect to a motherboard (cf. Hayles, 2005).

Given this situation, changes that may be introduced by the fourth industrial revolution technologies based on information and communications technology will not be limited to the industrial and economic sectors; for example, consider self-tracking technologies mounted on Apple Watches, Google Glasses, and similar products, alongside the brain-computer interface (BCI), which is currently under development. These technologies will enable the brain and the body to be informatized. Moreover, they will "digitalize," store, transmit, and preserve humans as biological beings (Kim, 2016, p. 60). In this context, the tremendous development of science and technology represented by these smart technologies is leading to a historical change in human civilization and posing new questions about the human way of life and about what defines humans.

In *How We Became Posthuman* (1999), an important research book that explores the problem of representation for the informatized human, Katherine Hayles refers to informatized humans as "digital subjects." Biological humans will inevitably undergo ontological changes during the digitalization process, or "the process of being quantified and informatized." Technologically mediated humans will emerge as a new type of human, representing the next evolutionary stage after modern humans. In other words, these are "humans who will come after hu-

mans," or "posthumans," according to Hayles (cf. Hayles, 1999, p. 4). Hayles posits that posthumans will become "material-informational entities" whose boundaries will be constantly constructed and reconstructed by digital technology (Hayles, 1999, p. 3). This will occur because humans will become informatized entities directly connected to a computer motherboard and will think in combination with the algorithms of the technological system. In other words, humans will be reborn as "digital subjects."

Thus, the digital transformation of humans involves creating humans who are seamlessly bonded to intelligent machines. This process can be viewed as "the union of the human with the intelligent machine" (Hayles, 1999, p. 2), such as a human heterogeneously reconstructed through technology. However, this does not mean that Hayles' discussion of digitized humans denies the perceptible embodiment of being, be it a biological body or a technologically mediated artificial body.

Hayles' posthuman, that is, a digitized human, does not represent a unique self-separated from the outside world, nor is it a product of dualism of the body and mind. Furthermore, it is not a product of the illusion of immortal superintelligence. Far from these definitions, her posthuman discussions are directed at life, embodied in a material world and expressing sexual complexity. Therefore, Hayles' human digitization does not entail separation from the biological body.

This study will first examine some of the main male-led discourses on human digitization and clarify the continuity between the logic of these discourses on human reinforcement and the logic of modern humanism, with an emphasis on humans as men. This will highlight that the idea of being an information-oriented digitized human has its limits and dangers, as this idea supports the hierarchy of mind and body and, furthermore, the disappearance of the body. Examples include mind transfer (Moravec) and non-biological thinking (Kurzweil), which describe robots or computers equipped with human intelligence. The problems of these discourses will be criticized more closely through an analysis of the films *Lucy* and *Transcendence*. Second, the possibilities for reconfiguring the new body of the posthuman will be explored, drawing on the posthuman concepts of Hayles and Braidotti. In addition, this study will attempt to envision the new body as a place where heterogeneous bodies are equally related to one another, rejecting the concept of patriarchal hierarchy through technical mediation. The idea of a new body as a plural body could be proposed as a posthuman ontological basis. Finally, the Japanese animated film *Ghost in the Shell* (1995) will be analyzed; this film showed various types of cyborg ontology. While the film successfully articulates

the infinite possibilities and destructive power of digital technology, this study also sheds light on the limits of the director, who still depicted cybernetic beings like cybernetic organisms and AI while being influenced by human-centered thinking and dualism. In particular, this study will intensively analyze how women disappear as cyborgs.

Digital Subjects as Non-biological thinking?

As has been briefly noted above regarding Hayles' posthuman concept, discourses about the digitalization of humans inevitably lead to a discussion on the problems of human identity, by allowing us to reflect on the ways in which humans are organized. This further leads to discourse regarding the technological evolution of mankind, which will involve the undertaking of biological and mental changes.

However, a conflicting approach to digitized humans is often observed in discourses such as techno-optimism, where scholars have termed the data of a person's body produced in the human-informatization process "the quantified self" (Lupton, 2016; Wolf, 2016). These scholars have tended to conceive a person's data as being apart from their biological body. At a more extreme level, some scientists think that human brain activity (thinking/mental activity) can be fully informatized, to the point that such information patterns can be regarded as the human substance and essence[1]. This standpoint is often encountered in some male-led technology-oriented discourses that envision "human enhancement," especially in the research areas of AI or robotics. In such discourses, which dream of a technological utopia, there is a tendency to identify humans as mere information, ignoring the biological body, which is the material basis of humans.

For example, the robotics engineer Hans Moravec, who proposed "robo sapiens" as the future of humans, presented an eternal-life program for disembodied humans resulting from the informatization of the human mind. In his proposal, this would be achieved through the human-informatization process and the transfer of human-mind information to a robot (mind transfer). In his well-known book *Mind Children: The Future of Robot and Human Intelligence* (1988), Moravec predicted that freeing the human mind from the physicality of mortal humans,

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[1] Renowned artificial intelligence (AI) scientist Marvin Minsky said, "Memory can be extracted from the human brain and stored on a computer disk" (Minsky, 1996).

who have no choice but to die one day (cf. Moravec, 1988, p. 4), and uploading it to a computer or an AI-programmed robot will enable the human mind to survive eternally through constant reprogramming, adapting to new environments that emerge. Moravec assumed that in the future, robots would inherit the human mind, becoming "mind children" (cf. Moravec, 1988, p. 1). These assumptions are gravely problematic. First, information-essentialism separates the human mind from the human body; it considers the essence of humans to be the human mind alone. Second, it is anthropocentric to believe that whichever technical or mechanical body it is combined with, the mind remains human. Third, the human biological body is regarded as worthless; there is even a tendency to devalue the robot's artificial body as being merely a tool. According to Moravec's information-centric thinking, the robot is merely an artificial body that guarantees eternal human life by containing the human mind. This clearly exemplifies the hierarchy of mind and body: The robot as a body is not a personalized artificial being. The real owner can be said to be the human mind, uploaded to the robot. Although Moravec refers to robots as "our human children," this approach is likely to instrumentalize, rather than personify, robots[2].

The future of humankind depicted by the futurist and computer programmer Ray Kurzweil is full of techno-optimism, which may be even more dangerous. In one of his famous books, *The Singularity Is Near. When Humans Transcend Biology* (2005), Kurzweil refers to the moment at which human intelligence converges with technology to surpass human biological intelligence as the "singularity." He predicts that, given all the advances of technology, "the singularity will allow us to transcend these limitations of our biological bodies and brains" (Kurzweil, 2005, p. 9). At this point, it is claimed that all information in the human brain will be uploaded to the computer and that humankind will be improved by "the shift to nonbiological thinking" (Kurzweil, 2005, p. 324). This will be achieved by combining humans with intelligence and enormous computing power. According to Kurzweil, this extraordinarily intelligent being will have multiple versions of the body and will ultimately become free, that is, without a body (cf. Kurzweil, 2005, p. 320). In other words, it is assumed that the human mind can exist beyond the limitations of the biological body, and therefore, death.

It is surprising that both of the aforementioned "influencers" view the human

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[2] The problem with instrumentalizing the robot body is that large companies can target it for development and commercialize it.

body as a biological condition and a limit of human existence; they imagine that humans will transcend humanity through the evolution of their minds (intelligence), separated from their biological bodies. Kurzweil calls such creatures "non-biological thinking." According to Kurzweil, "non-biological thinking" is ultimately AI enhanced with human intelligence, which results in an evolved form of the "thinking" human. He envisions the achievement of eternal life by reducing human entity to a "thinking mind," informatizing it, and combining it with AI.[3]

How, then, should the view that future humans will be reduced to mind/information in their discourse, because the human body is not an inherent part of the self and can thus be separated and removed, be considered? These authors talk about "non-biological" thinking, AI, and robots as being evolutionary forms of humans, as if future humans would be detached from the human species. This implies a self-centered human envisioned by the modern human project. However, this study argues that the future human that they envision is linked to the human project, which is a part of humanism. This link is argued in the sense that they separate the bodies of future humans from their minds, prioritize cognition and thinking over the body, make the body meaningless, and pursue the "transcendent reason/mind."[4]

In fact, radical techno-optimists are not the only thinkers who have restored the humanist conceptualization of anthropocentrism by equating human entities with the mind or intelligence in posthuman discussions. A similar idea was also conveyed by Norbert Wiener, who is the founder of the futuristic field of cybernetics. Toward the end of his life, Wiener did not hide his pessimism regarding the development of AI technology. From the beginning of his cybernetics theory, Wiener sought similarities between a thinking machine and a human, and he was convinced that he could create AI machines that thought like humans. At some point, however, Wiener began to think of humans as resembling machines. Instead of recognizing the human identity from the ever-changing physical continuity, he focused on the ability to maintain homeostasis while resisting change, that is, on the "patterns that perpetuate themselves" (Wiener, 1950, p. 96). He said, "A pattern is a message, and may transmit a message. [⋯] It is amusing as well as instructive to consider what would happen if we were to transmit the whole pattern of the hu-

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[3] Yuval Harari imagines the digitized humans as data, as Kurzweil remarked, and predicted, that the data-humans could have divine abilities (Harari, 2017).

[4] Criticism that transhumanism, which dreams of "enhancing human beings," is a continuation of Anthropocentrism has been raised by critical post-humanist researchers.

man body, of the human brain with its memories and cross connections" (Wiener, 1950, p. 96).

Wiener probably believed that this attempt to maintain homeostasis would form a pattern that could be stored in the brain, because the said pattern would be interconnected with memory. Just as the memories stored in the brain can be converted into language, they may also be digitalized; a human may therefore ultimately be transmitted as a message, and then represented. This is the understanding of Wiener's vision of the future presented in this paper.

All of this may be feasible soon. However, a word of caution is in order:

Wiener's "transmitted" human is only a digitalized information pattern, not the body itself. Indeed, Wiener also assumed that a virtual receiving device could reconfigure this message: "[…] so that a hypothetical receiving instrument could re-embody these messages in appropriate matter, capable of continuing the processes already in the body and the mind," (Wiener, 1950, p. 96). If so, the reproduced body could be described as a virtual body, represented as data beyond time and space. However, this virtual body does not release heat or energy and completely lacks vitality. Therefore, it cannot be called an actual human body that contains the principles of life. Although Wiener's assumptions may be able to create a cybernetic machine (AI), it is impossible for them to create a cybernetic being that lives and works like a human. Unintentionally, Wiener's assumptions demonstrate how humans and cybernetic machines are different. Thinking humans and AI machines may be similar, in the sense that they are both thinking and information-processing systems, but they differ in the former's physicality of being vital and self-organizing materiality.

Given that decades have passed since Wiener introduced these ideas, why do influential thinkers and scientists, referred to as futurists, continue to overlook this difference? Why do they continue to separate the physical from the mental and regard the body as secondary? The discourse on mind uploading and eternal life as "bodiless information"' seems to have focused on equating humans with computers. As Hayles explains, "[when] information loses its body, equating humans and computers is especially easy, since the materiality in which the thinking mind is instantiated appears incidental to its essential nature" (Hayles, 1999, p. 2)[5]. Building on the work of Hayles, the body may be the key to showing the distinct

[5] In fact, Alan Turing refined the human mental process to make it the smallest component of information-processing and imagined himself as a calculator (cf. Glick, 2017, p. 291).

nature of the human species. In addition, it can be the basis for expressing sexual differences and anti-oedipal culture.

Advances in smart technology may induce transformations of the human body. However, the idea of "bodiless information," which may eventually equate humans with computers as thinking machines by devaluing and eradicating the body (a part that cannot be identified), appears to be a technology-seeking, pro-industrial discourse that humans, as the "thinking beings," have devised to maintain their hegemony. Historically, hegemony was held by Cartesian anthropocentric male theorists, who hierarchized the mind and body under Descartes' assumption that only "humans" can think. In this way, Cartesian theorists differentiated between humans and non-humans, between men and women, and between different races. Just as anthropocentrism is taken for granted and superior groups are assumed to oppress and exploit others, now technology-oriented theorists are trying to extend this theory to the field of information technology, apparently to perpetuate their own hegemony. According to this theory, humans can maintain their longstanding position as conquerors, instrumentalize technology in the name of human enhancement, and suppress and exploit biological beings by regarding those who lack technology as "non-intelligent beings."

Bodiless Information and the asexualized Superintelligence in the Films *Lucy* (2014) and *Transcendence* (2014)

Smart technologies, such as mind transfer and mind *uploading*, can be developed to test the form, possibility, and latent ability of human existence. However, can we really assume that humans will want to discard the living body, which can feel and think by constantly changing and organizing itself, for an eternal life that exists merely as brainless thinking and data, based on an advanced technology? Can "non-biological thinking" be a central concept capable of describing a new human, that is, the posthuman that is historically and culturally requested today?

The film *Lucy* (2014), directed by Luc Besson, presents an ironic vision of what will be lost through human evolution when humans exist only as intelligence-based entities, as envisioned by techno-optimists in a utopian way. In the film, a woman's ability to use her brain is increased to 100% through the use of biochemical drugs. The woman can change her physical condition constantly if she needs, much as Kurzweil predicted. She eventually turns her body into a form that can be seamlessly connected to an intelligent machine, in other words, data. The most "natural" body she chooses, finally, is a USB drive.

Besson may not have meant to sarcastically caricature the technologically mediated human, or to erase the biological body of a woman as an improved human. It is assumed that he may have agreed with Kurzweil that the body condition for a super-intelligent human would become meaningless. He may have used this film to present one way of overcoming biological and physical limitations or constraints. However, this movie is unexpectedly thought-provoking because it reproduces the idea that a human can be represented through improved intelligence and information, at which point it no longer needs a body. In the film, this is articulated by the scene of erasing a woman's body and replacing it with a USB drive. This implies an uncomfortable truth, that when the body, which is the locus where life is manifested, disappears, so does the "woman." In fact, movies featuring super-intelligent men, which outnumber those featuring super-intelligent women, have so far not effectively demonstrated such a problem or discomfort. This is in the context of people who have been enhanced with superintelligence generally being portrayed as male figures. This imbalance is mainly due to the traditional assumption that the male is the only "human" that can realize the modern ideal of the universal mind, which continues to prevail. Such a representation of the owner of an excellent mind could unconsciously lead to an agreement with the claim that ever-changing body tissues are cumbersome and secondary. However, we rarely get the impression that they are finally disappearing when we watch these movies, as these super-intelligent men, by being disembodied, are represented as universal minds or beings with divine powers. Thus, superintelligence is treated as a form of male evolution; the disembodiment of super-intelligent male protagonists is therefore accepted without great concern. In the case of *Lucy*, however, the erasure of the body is only in question because its owner is female. The reason for this is that the body, which expresses sexual differences from a feminist point of view, is a condition of not just women's corporeality but also their mentality. This point was argued by Luce Irigaray in relation to the female body, which has been neglected and standardized in modern male-dominated Western discourse (Irigaray, 1985, pp. 23–33).

Transcendence, directed by Wally Pfister, was released in the same year as *Lucy* (2014). In contrast to Lucy, it features a human who has become super-intelligent through Kurzweil-style "mind uploading." This human is male, and few believe that he has disappeared. Audiences are clearly accustomed to the representation in which a super-intelligent and disembodied being appears as a man. When the genius scientist Will is killed during a terrorist attack by an anti-science group, his wife scans his brain, uploads it to the computer, and saves it within "pin project,"

which is the AI that Will was developing. Now, Will becomes a super-intelligent being, after being mounted onto this AI pin. He seeks to expand his reach through the network and hopes to change the world with his superhuman abilities, which transcend human abilities. He strengthens the weak human body, treats seriously ill patients, replicates himself to solve several problems, and combines with another human to control himself. He updates himself into a super-intelligent artificial being that transcends the supercomputer pin that he was based on earlier. Through this process, he comes to possess almost omnipotent abilities, becomes ubiquitous, and wants to transform everything into an "improved" state. However, this mission has an unexpectedly catastrophic effect on humankind. As frightened security agents try to destroy the "supercomputer Will," Will tries to fight against these security officers. Finally, he accepts a planted virus with malicious code and dies after learning that he only endangers the human world.

Interestingly, Will attempts to free humans by helping them to "transcend" their biological limits, just as he has become almost divine by transcending his own body. This is viewed as a threat to humans, because it disturbs the natural ecosystem and the cyclical order of human life and death. This film shows that the scientific mission to create enhanced humans through technology is simply a project to create "stronger" humans. Clearly, the advanced technological methodology underpinning this project does not make humans or the natural world happier or more peaceful. Instead, it demonstrates that the evolution and use of techno-optimist technology to "enhance humans" can threaten our ecosystem. Humans can destroy the community ethics of coexistence with other species by removing themselves from the global life that creates the cyclical mechanisms of life and death. In other words, this film simulates the destructive consequences of thinking that a human can become a superhuman—super intelligent beyond their biological limits and dreaming of divine abilities beyond their own body.

These films demonstrate in a very exemplary way how the scientific assumption that, through technology, humans can evolve beyond their biological bodies to become more intelligent could soon be realized. In particular, they consider everything that will disappear when humans transition into non-biological thinking. This consideration shows that a program through which humans leave their bodies to live eternal lives could strengthen the mental faculty unilaterally; these movies show, in an indirect way, the violence that this could cause. It is not just the human body that will be erased if we insist on existing only as thinking beings, with everything transformed into universal codes so that it can transcend, "rise," and "enhance." Living creatures that exist as bodies, other beings who cannot partic-

ipate in "human enhancement," and other humans who are against this idea will also disappear. The wide variety of physical manifestations of life, traces, and relationships created by concrete actions and large and small gestures created by everyday life, occurring every minute, will also disappear. The most serious ontological threat will be to the diversity of sexual expression, including that of women. In the same manner that defining modern humans as thinking beings has brought about the oppression and exploitation of women by limiting them to their physical bodies, these information technology-oriented optimists could sexually instrumentalize the feminine body by separating women from their bodies and ultimately erasing them. Women's sexuality could disappear altogether through disembodiment; otherwise, women could be sexually instrumentalized through excessive physicality. If the body becomes meaningless and valueless, people could have no ethical qualms about instrumentalizing the female body as a sexual object. The concept of man as disembodied information could be an extension of the modern perspective, which sets the human mind as its essence and strives for transcendental reason. Therefore, if humans really become non-biological thinking beings, they may repeat the history of oppression, exploitation, and inequality created by modern anthropocentrism. If so, it would be significantly more intense.

Possibilities to reconfigure the new body of the Posthuman/Postwoman

If human evolution is moving irreversibly in the direction of the emergence of posthumans, the idea of digitized humans should not lead us to focus all technological capabilities on "human enhancement," related to immortality or superintelligence. Instead, posthumans should be reprogrammed to end the sexual, racial, and regional inequalities generated by anthropocentric history. This idea should be developed in such a way to bring an end to the harm and destruction that human has caused thus far by defining non-humans as "non-thinking beings." For this reason, above all else, we should reconfigure a new technologically mediated body as a new form of subjectivity. This approach should deviate from the dualism of separating the body from the mind through advanced technology.

According to the European feminist and posthuman researcher Braidotti, the body, as a place in which the process of artificial expansion and replacement is repeated through technology, is the material base from which the new subjectivity of a posthuman can be reconstructed (cf. Braidotti, 2013, pp. 89–91). Technology can diversify the human body beyond the realm of normality, by crossing humans with animals, humans with objects, and humans with nature. Technology turns the

human body into a fluid, plural body by mixing several bodies and combining the heterogeneous parts into a united whole. This body is constantly changing and can be reconstructed through union with others. This concept can be elaborated further with the words of Irigaray, who, in the case of a woman, stated that it could signify "the possibility of [···] identifying itself with none of them in particular, of never being simply one" (Irigaray, p. 30). Therefore, it lacks its own form, and the parts of this body are not identifiable (cf. Irigaray, p. 28). Based on this concept, the flexibly reconstructed plural body could be suggested as another vision of the posthuman. This body can be explained as opposite to the posthuman, which has a solid form of "bodiless information" that has been exposed to male language and logic. Therefore, the flexible and plural body can be also understood as a vision for a postwoman, as opposed to a posthuman. This body goes beyond the boundary between the other and the self; each part depends on each other, recognizes each other, and makes a codetermination of each other. This body can constantly exchange itself with other bodies, without any possibility of being identified as either. This kind of flexible and plural body can be a basis for the ethical establishment of the new body, which can be called a postwoman.

From a big-picture perspective, the convergence of humans and technology has already progressed at the physical level, where human body parts have been replaced by, or combined with, artificial organs. This shows that technology can become a component of humans, and therefore a part of newly formed humans, rather than simply improving humans. When humans are seen as hybrid beings, it is important to focus on the issues of coexistence and symbiosis with other beings and the hybridity in which different beings intersect, rather than searching for a certain self-concept that restricts posthumans. As Bruno Latour stated regarding actor-network theory, posthumans can be said to be reborn as a heterogeneous network, within the physical interrelationship between humans and non-humans (objects, animals, nature, etc.), through technology (cf. Law & Hassard, 1999). For example, humans exist in the biological real world and simultaneously exist as cybernetic beings through their digital transformation (via digitalization and data). This means that the posthuman is already among us, with a body as a continuum, in which biological and non-biological bodies coexist.

As the arguments above indicate, the posthuman ontological characteristic of embracing and affirming things outside of oneself can be conceived of in the following ways. The posthuman is not independent of their own environment but reconstructed with it, which is perceived as the aggregation of relationships with other beings. This is similar to how Latour redefined humans in his actor-net-

work theory. Braidotti calls this posthuman ontological characteristic "transversal technologically mediated subjectivity" (Braidotti, 2013, p. 94). The key here is "the transversality of relations" from different bodies (Braidotti, 2013, p. 95). For this posthuman subjectivity, it is essential to use technology as a means to achieve co-existence, rather than abusing it as a mechanism of domination. Therefore, post-human subjectivity must be represented more frequently, in various ways, and at an ethical level, given that the human digital transformation is required today. Posthuman subjectivity and ethics need a model that people can perceive and learn from, just as the concept and ethical basis of the thinking "human" were created and transmitted through art and literature. To this end, there is a need for posthuman subjectivity and ethics to be reproduced in an unfamiliar form and language, rather than being represented through the conventional expressions and language of anthropocentrism. This kind of language can be found, for example, in Donna Haraway's metaphors of cyborgs and chimeras, which she uses to depict the post-human body in her *Cyborg Manifesto*. Here, Haraway envisions these Humans as "chimeras, theorized and fabricated hybrids of machine and organism" (Haraway, 1991, p. 150). Zoe Sofoulis also represents the body of the posthuman in a strange way. She imagines it with an image of the parahuman and presents her ideas perversely and turbulently through the union of body and technology (cf. Sofoulis, 2002).

To prove all the above discussions, I will finally analyze Oshii Mamoru's film *Ghost in the Shell* (1995). This film experimentally shows various forms of posthumans, from cybernetic organisms to cybernetically disembodied beings. This film can be used to prove that a disembodied AI program represented as super-intelligence also needs a body, even if there are some problems with the representation of the female character Kusanagi. Analysis of this film shows how unrealistic the posthuman concept previously introduced by male theorists ("bodiless information" as superintelligence) is. Specifically, with the female cyborg Kusanagi, I will suggest a figuration of the corporeal, heterogeneously reconstructable relational self as an alternative vision of the posthuman.

Representations of Human Cyborgs and AI in *Ghost in the Shell* (1995) and the disappearance of Women

Ghost in the Shell, which was first screened in 1995, is an anime science fiction movie about a time when non-biological intelligence surpasses human intelligence. In the film, innovation in information technology (virtual reality) has achieved a

singularity; AI and cyborgs are the main characters. The director deals with the problem of the identity of living things in a society that is hyper-connected by realized technology. Although it is an anime movie, it treats digital subjects with great philosophical seriousness. The film is known to have had a profound effect on the movie *The Matrix*, which deals with problems of the virtual world in earnest.

Ghost in the Shell is set in the virtual year 2029, after the information-technology revolution has taken place. It focuses on the life of a (non)human connected to a computer network, in a society characterized by the "electronization of the human brain." The "electronization of the human brain" is a technology in which the information in a human brain can be digitalized and transferred to a computer, and the information in this computer can then be transferred directly to a human brain. From the vantage point of today, BCI technology, which directly connects human brains to computers, seems to have been realized. Through this technology, humans can connect directly to numerous systems, networks, and forms of telecommunication. The human brain can be updated like a program, just as Kurzweil envisioned. The four connecting terminals on the back of the protagonist Kusanagi's neck make it clear that she can be plugged into a computer.

However, serious problems can occur when human brain information is digitalized in this manner. Brain information can be easily hacked, because it is linked to a computer, becoming a hotbed of cybercrime. As the sole special agent and the only female agent in Section 9, Major Kusanagi's mission is to arrest the Puppet Master, who has hacked the brain program of the Foreign Minister's Interpreter by hacking the brain of a garbage collector at the City Cleaner's Office. The Puppet Master has achieved this by manipulating the garbage collector's memory and controlling him.

When Major Kusanagi arrests the garbage collector, he is devastated to learn that his cherished memories have been manipulated and that he has hacked into the state agency system without even realizing it. In particular, he feels despair that there is no way to erase the fake memories that he has been given. The film director portrays the garbage collector with forged memories as a shell of a human, who has lost the will to live. This implies that memories (or information) in the brain constitute everything that defines a human; in one scene, fellow agent Bart describes a human whose brain (memory) has been hacked as "a doll without a ghost," in the sense that memory is the essence of a human. This serves as a warning that misused technology can create destructive power, and more importantly this scene reveals the idea that informationalized memory could be an essential element of human identity in a society based on information technology.

The same structure that separates the brain's memories from the body is reproduced in Major Kusanagi. Humans are not perceived as (non)biological or physical entities but instead as minds that can be informatized, just as technology-oriented scientists have predicted. Major Kusanagi feels a peculiar sense of familiarity when she encounters a human whose memories have been manipulated, such as the garbage collector; he has been turned into an empty shell without a soul. Kusanagi has no memories because she is a cyborg equipped with a high-performance computer (based on a partial brain) and a body made by engineers. However, does she lack a soul because she has no memories?

The irony is that Kusanagi feels skepticism about herself as a living thing, even though her body holds tremendous power. It makes more sense here to think about why Kusanagi is represented as a woman in an exaggerated sexual expression, despite her neutral gestures. Cyborgs do not have sex or gender under the assumption of technical theorists, so why is she portrayed as being very sensual? The dynamism of Kusanagi's body, with its over-emphasis on sexuality, is in sharp contrast to the doubts she feels about herself as a living being. Does this physical energy and vitality really have nothing to do with "becoming a being" as a living creature?

In contrast, the Puppet Master pursued by Kusanagi is "Project 2501," an AI program. Nevertheless, he introduces himself as "a living thing born in the sea of information." He applies for political asylum to move freely through the networks, free from the bondage of the state agency. Kusanagi, a cyborg full of vitality, is unsure of herself as a living thing, whereas Project 2501, who constitutes "bodiless" information, is convinced that he is a living creature, even though they are both cybernetic beings created by technology. Moreover, one is reproduced as a living being with identity, whereas the other is represented as a controlled and managed being. This kind of dichotomy in the representation of characters resembles the modern definition of a human, which is also projected through gender. In the film, the AI program is presented as masculinity, whereas the cyber body of Kusanagi is presented as femininity. Despite the fact that both are products of innovative technology, the film embodies them through schematic representations that have traditionally been used in language to express human characteristics, such as mind and body, living things and machines, and men and women.

It is worth asking whether the film director's standard of dividing entities mediated by information technology into life and non-life categories is scientifically valid. In his film, Project 2501 and Kusanagi are both artificial beings. Why then is Kusanagi's physicality as a "cyber body" accorded no value as a living thing,

whereas the bodiless AI program has been gifted subjectivity as a cybernetic subject and "living thing?" Cyborgs such as Kusanagi can be said to be living creatures, much like humans, as their self-organizing process is as complex as the human mind (cf. Hong, 2019, p. 242). However, in this film, bodies are treated as secondary to mind/intelligence, regardless of whether they are human or non-human.

Heinz von Foerster was an early adopter of Humberto Maturana's theory of the self-organizing system of a living system. He suggested that both AI machines and humans could be said to think for themselves and achieve autonomy, provided they can perceive something and react based on self-organizing systems. According to von Foerster (2009), when the self-organizing systems of living systems respond to an external stimulus (input), they do not simply produce an output as a response, based on the principle of causality. Instead, they reflect the input through an internal circuit and react to it in their own ways (pp. 85–94). This internal circulatory circuit of the living system is called a "self-referring system" (cf. Maturana & Varela, 1980, pp. 8–9). Through such a system, it becomes possible for a living system to react differently, by constantly changing the internal thinking path to reflect changing circumstances and the environment. As long as a self-referring system is not reduced to a simple mechanical calculator, it is capable of complex tasks. Both humans and AI can be seen to have acquired considerable autonomy (von Foerster, 2009, p. 93). Maturana further developed this idea into the concept of autopoiesis. According to Maturana, it is "autonomy" that would convey "the central feature of organization of the living" (Maturana & Varela, 1980, p. xvii). The term "autopoiesis" is presented by Maturana to convey this process in more depth (Maturana & Varela, 1980, p. xvii). Autopoiesis is a central characteristic of a living organization as a complicated system based on this self-referring circulation, in which interaction with the world or the external environment is also essential (Maturana & Varela, 1980, p. xxiii). The interaction is the way in which a living system maintains and generates itself.[6]

From this perspective, we can conjecture that, as an AI program, the Puppet Master character in *Ghost in the Shell* is a self-organizing system that maintains itself by interacting with other systems. The Puppet Master thinks of himself as a subjective living being, because it interacts with the external environment and

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[6] "All living systems are self-generating and all self-generating physical systems are alive. […] a physical system if autopoietics is living" (Maturana & Varela, 1980, p. 82).

maintains itself. It can think about and judge situations on its own, to the extent that it seeks political asylum. In this technical context, Mamoru Oshii creates an excellent embodiment of the argument that AI, as a product of information technology, can be a system that can become an artificial living being if it reaches superintelligence. However, by associating the subjective life of AI as a living being with a "thinking mind" and masculinity, which are products of modern anthropocentrism, this movie reveals the limitations of programming the posthuman subjectivity of newly emerged cyber actors and digital subjects, within the framework of humanism. As the AI has no body, it borrows a cyber body and appears as a male voice, not a mechanical one.

This is even more striking because the AI needs the union with the body of the feminized cyborg Kusanagi for "fertility": Kusanagi, whose physicality is represented as a woman, can have a higher level of intelligence in return for her union with him. The settings and representations of the Puppet Master and the cyber body Kusanagi, as artificial living things, seem to go beyond the modern definition of the human as a biological being. However, in the representation of these characters, the dichotomy embedded in the modern definition of the human—the categorical separation of mind and body, and men and women—has been rewritten. In this modern dichotomy, men are disembodied minds whereas women's bodies are either overexpressed or suppressed (cf. Braidotti, 1999, p. 278). The Puppet Master and Kusanagi have inherited these patterns of physical expression: Kusanagi's body is sexually overexpressed, like a woman's body that exists for the male gaze, whereas the men are invisible subjects.

This film is one of the pioneering animations that deal with the challenging philosophical problem of the identity and subjectivity of AI and cyborgs as living things, which may become "humans who will come after humans." It introduces new types of humans and cyber actors, such as AI and cyborgs, produced through information technology. Nevertheless, it does have limitations, as it looks for the identity of these posthumans in the concept of humans designed by anthropocentric thinkers. One essential aspect of Maturana's theory of self-organizing systems of life has been ignored; according to Maturana, cognition in living beings is not contained by the brain or a mental product. In other words, it is not always right to expect external stimuli to be reflected in the brain's neural circuits and processed as thoughts. The important fact that humans with bodies and living things act in the world has not been considered by the film director. The perception of things begins by stimulating the physical senses and enacting "one's own" form, or by starting to think through the internal reflection circuit, rather than by a

simple processing involved in the brain. In short, Maturana's self-organizing systems of living things reveal that thinking is closely related to the body, regardless of whether the thinking is done by humans or machines. However, this point is not considered in relation to cyber actors in this movie.

Despite the limitations of this representation, Kusanagi, as a "being" mediated by technology, enables us to think about the identity of a posthuman who affirms "hybridity." At last Kusanagi feels her identity in relation to other beings and her body:

> "Just as humans need a lot of parts to live as humans, one needs a lot of things to be oneself. It is not just one's face while treating others, but natural voice, the hands one sees when one opens one's eyes, memories of childhood, foresights of the future, and more. The information and network to be accessed by the electronic brain, all of which are parts of 'I,' create the consciousness of 'I' and simultaneously continue to constrain 'I' to certain limits." (00: 31: 43–00: 32: 11)

After a long period of questioning her existence, Kusanagi realizes that the things that make her who she is do not come from within. Instead, they come from the things she needs, the people she meets, the changes in her body and voice when meeting them, the network and information that she accesses, and everything she encounters. She realizes that she is the aggregate of her relationships, the numerous relationships that surround her, and her physical reactions to them. Her identity is not limited to the memories she does not have, also considering the mind and the ghost. At this point, it is inevitable to pay attention to her body, which is constantly changing and being reconstructed through her interactions with the outside world, because it is the interface through which she meets numerous external beings and creates her own body gesture, representing her individuality. This perception shows that the body is a place in which posthuman "relational subjects" (Braidotti, 2013, p. 49) intersected by many different beings can be expressed, as the body is constantly restructured and undergoes a process of deconstruction and replacement. As Braidotti suggested, the "relational subject" can be the starting point for posthuman subjectivity; Kusanagi can be reborn as a desirable posthuman at the moment she defines herself from the outside, abandoning the conventional way in which existing beings are determined.

In this context, her body takes on an important meaning—it is a place in which other beings outside herself intersect and in which she interacts with beings out-

side herself. Her body is like a "shell" without a ghost, because it has been created by digital technology. However, now it becomes a source of life, representing "vitalist, self-organizing materiality" (Braidotti, p. 82). It is, as Braidotti states, "a site of post-anthropocentric becoming" (p. 94).

It seems unlikely that Director Mamoru used Kusanagi to portray this new posthuman image and identity. In the scene of the fusion of Kusanagi with Program 2501, the director presents the program of the Puppet Master as a substance, with Kusanagi as his virtual image. Instead of concluding that the fusion of Kusanagi with the Puppet Master will be a hybrid bond of "the embodiment of the mind and the embrainment of the body" (Braidotti, 2013, p. 86), only Kusanagi's embodiment is ultimately instrumentalized. In the movie's conclusion, Kusanagi's technologized body is easily discarded and replaced in the hierarchy of information superiority, while the new Kusanagi's reconstructed body is subject to the dominance of information. This conclusion implies that the new Kusanagi, recreated by the fusion of the two (i.e., Kusanagi and the Puppet Master) has ascended to a higher level of awareness, based on the dominance of information/intelligence. However, it definitely shows that she is no longer what she was anymore. The highly controversial final scene, I think, exactly symbolizes the death of the body and the woman represented by Kusanagi.

Conclusion

The visions of digitized humans as predicted by influential male scientists and theorists, which are clearly distinct from Hayles' direction, are problematic in that they regard the biological body as secondary. According to Hans Moravec, who claimed "Robo sapiens" as the future form of human race, and Ray Kurzweil, who conceived the posthuman as "non-biological thinking," the condition for the existence of a digitized human is essentially a bodiless bundle of information. That is to say, the discourse of these male theorists gives information technology a privileged status. As a result, no concern is given to the deprivation of the body, which is the fundamental condition of human life, and even the life of living things. In these male-led technology-centered discourses, the body and materiality become objects that must be transcended.

However, as Maturana and Varela have already argued, the intelligence and awareness of living organisms, including humans, are not able to function without a body. Above all, the extinction of the body is not considered an extension of humans; rather, it should be identified as a symptom of a dangerous process that

eradicates the colorful forms of life, its specific characters, and sexual diversity. Among these, the disappearance of the female human species in particular may be the most serious problem. According to Irigaray, the body is the place where the sexual difference between women and men emerges and shows the concrete ontological basis of human beings as sexual beings. Therefore, in the male-dominated technical discourse mentioned above, the affirmation of the disappearance of the body augments the vision of an asexualized human or intelligence, which can be equated to a path leading to the disappearance of women.

The film *Ghost in the Shell* excellently portrays the kind of dystopian society that will result from the "shift to the non-biological thinking" dreamed up by human-enhancement theorists in modern technological discourse. Rather than peacefully coexisting with other beings through technology, those who dream of superintelligence will try to dominate technology and ultimately the world. As the dystopian world of Mamoru depicts, the world may be divided into those with technology and those controlled by them. It may regress into a more intensified form of oppression, exploitation, and inequality. In such a world, one side of the opposition may disappear without a trace.

This movie can be interpreted as a warning against the future digitalized human world. It shows what may disappear if humans strengthen the logic of conquest-addicted people, which places emphasis only on the mind, or on information through technology. However, it presents us with ways to think about the positive posthuman subjectivity, which defines itself through interactions with the outside world, with the other beings, and beyond modern dichotomies. Given posthuman planning, which historically starts with a call to overcome the evils of modern anthropocentrism, the assumption that intelligence/information is superior to the body seems to be dangerous logic, which extends and strengthens anthropocentrism (which only ascribes intelligence to humans). When thinking about posthuman identities reconstructed through technology, we must not return to the humanistic values of Western modernism of cognition and awareness; we must have the courage to start from the philosophy of posthuman subjectivity. To achieve this, it is essential to practice defining ourselves in interrelationships with other beings, based on self-organizing materiality. Furthermore, we should experiment with forms of technically mediated variant subjectivity beyond the categories of normality. Above all, it is important to remember that human thinking is closely related to the human body, even while experimenting with the potential and possibilities of technology. Then, at least, we will not disguise the most dangerous idea in the world with a discourse on "human enhancement."

References

Besson, L. (Writer & Director). (2014). *Lucy* [Motion Picture]. USA: Universal Studio.

Braidotti, R. (2013). *The posthuman*. Cambridge, UK: Polity.

Braidotti, R. (1999). The interview with Judith Butler (S. W. Oh, Trans. Korea). *Journal of Feminist Theories & Practices, 1,* 264–305.

Glick, J. (2017). *The information theory* (R. S. Park & T. Kim, Trans. Korea). Seoul, Korea: Dongasia.

Harari, Y. N. (2017). *Homo Deus*. (M. J. Kim, Trans. Korea). Seoul, Korea: Kimyoungsa.

Haraway, D. J. (1991). A Cyborg Manifesto. Simians, Cyborgs, and Women. In *Simians, Cyborgs and Women: The Reinvention of Nature* (pp. 149–181). New York, NY: Routledge.

Hayles, N. K. (1999). *How we became posthuman: Virtual bodies in cybernetics, literature, and informatics*. Chicago, IL: University of Chicago Press.

Hayles, N. K. (2005). *My mother was a computer: Digital subjects and literary texts*. Chicago, IL: University of Chicago Press.

Hong, S. W. (2019). *Cross science*. Seoul, Korea: 21st century Books.

Irigaray, L. (1985). *This Sex which is not one*. New York, NY: Cornell University.

Kim. S. M. (2016). I will be a data from myself: Digital Self-Tracking Technology and the Data Subject. *Culture & Technology, 87*, 57–84.

Kurzweil, R. (2005). *The singularity is near. When humans transcend biology*. New York, NY: Penguin Books.

Law, J., & Hassard, J. (1999). *Actor network theory and after*. London, UK: Blackwell.

Lupton, D. (2016). *The quantified self*. Cambridge, UK: Polity.

Maturana, H. R., & Varela, F. J. (1980). *Autopoiesis and cognition. The realization of the living*. Dordrecht, Holland: D. Reidel Publishing Company.

Minsky, M. (1996). "Why Computer Science Is the Most Important Thing That Has Happened to the Humanities in 5,000 Years" (Lecture, Nara, Japan, May 15, 1996), cited in Hayles (1999, 1–13).

Moravec, H. (1988). *Mind children*. Cambridge, MA: Harvard University Press.

Oshii, M. (Director). (1995). *Ghost in the Shell* [Animated Motion Picture]. Japan.

Paglen, J. (Writer) & Pfister, W. (Director). (2014). *Transcendence* [Motion Picture]. New York.

Schwab, K. (2017). *The fourth Industrial Revolution*. New York, NY: Currency.

Sofoulis, Z. (2002). Post-, nicht- und parahuman. A contribution to a theory of socio-technical personality. In M. L. Angerer, K. Peters & Z. Sofoulis (Ed.), *Future*

Bodies: for visualizing bodies in science and fiction (pp. 273–297). Wien, Austria: Springer.

Van der Kolk, B. (2015). *The body keeps the score* (pp. 74–103). New York, NY: Penguin Books.

Wiener, N. (1950). *The human use of human beings. Cybernetics and society.* Boston, MA: Da Capo Press.

Wolf, G. (2016). The quantified self: Reverse engineering. In D. Nafus (ed.), *Quantified: Biosensing technologies in everyday life* (pp. 67–72). Cambridge, MA: MIT Press.

Von Foerster, H. (2009). *Truth is the invention of a liar: Talks for Skeptics.* (S. M. Baek, Trans. Korea). Seoul, Korea: Neolbom Publication.

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