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Title:

An Ontic-ontological Theory for Ethics of Designing Social Robots: A Case of Black African Women and Humanoids

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ABSTRACT

Given the affective psychological and cognitive dynamics prevalent during human-robot-interlocution, the vulnerability to cultural-political influences of the design aesthetics of a social humanoid robot has far-reaching ramifications. Building upon this hypothesis, I explicate the relationship between the structures of the constitution social ontology and computational semiotics, and ventures a theoretical framework which I proposes as a thesis that impels a moral responsibility on engineers of social humanoids. In distilling this thesis, the implications of the intersection between the socio-aesthetics of racialised and genderised humanoids and the phenomenology of human-robot-interaction are illuminated by the figuration of the experience of a typical black rural African woman as the user, that is, an interlocutor with an industry-standard socially-situated humanlike robot. The representation of the gravity of the psycho-existential and socio-political ramifications of such woman's life with humanoids is abstracted and posited as grounds that illustrate the imperative for roboticists to take socio-ethical considerations seriously in their designs of humanoids.

Key Words: computational semiotics; humanoids; robot gender; robotic ethics; robot race; postphenomenology.

INTRODUCTION

The objective of this paper is to contribute a theoretical framework which demonstrates why it is imperative that ethics, and in particular social ethics, should be taken into consideration in the design of humanoids. Working from the general context of the philosophy of technology, Don Ihde (1990, pp141-143) and Peter-Paul Verbeek (2005, pp125-146) have alerted of the technological intentionality that is at play during human-machine-interaction, and how this affects the user's sense of being in the world. I take this insight further into the specific case of socially situated humanlike robots in which I polemically perceive the latter in their culturally-influenced socio-aesthetic state, that is as objects of knowledge (the ontical) which peculiarly bear the potential to frame our psychic-existential state (the ontological). I explore and demonstrate how this human vulnerability to technological intentionality with its commensurate ontological phenomenology obligates ethical responsibility in the building of robots.

Venturing onto the socio-ontological, Verbeek unwittingly, in my assessment, underscored that "when technologies are used, they co-shape human-world relationships: they make possible practices and experiences, and in so doing, they play an active role in the way humans can be present in their world and vice versa" (2005, p140). Our disquisition is framed around a normative injunction which could be drawn from Verbeek's observation when strictly applied to the problematique of the consequences of engineering design-decisions on the dynamics of human-robot-interaction. Such axiology is exemplified by the following tenet from the mission statement of *The Hague's Foundation for Responsible Robotics*, which cautions that, "in robots, we not only project who we are but we come to affect who we will become" (Sharkey et all 2017, p42).

My critical originary point is that a robot is a product of human ingenuity and labour; therefore, a humanoid social robot is quintessentially a cultural artefact. As a human-like robot that is adorned with anthropomorphic features, it compositely reflects the preferences, assumptions and prejudices of the software programmers, the robotic engineers and the financial interests that go into a robot-building project. The ultimate technological output

embodies the cultural[1] totality from which the design of the humanoid is derived, or the design-decision idiosyncrasies of its engineers[2]. A humanoid, as such, is a technological product, which qua technology, it is neither culturally generic nor politically innocuous.

Grounded upon this "first truth", I explore insights from the fields of phenomenology and semiotics which indicate the intricate manner in which humans are affected by, or react towards these humanlike artificial agents. This provokes my thesis that ethical considerations should govern the engineering of humanoids as the latter tend to assume an ontology that traverses between the boundaries of technology and the epistemological protocols of human cognition, eliciting in the process psychical reactions that potentially have socio-psychological ramification on its users. In amplifying my point, I adopt and deploy the case of black women in Africa as the human figure[3] which is in a socio-technological intercourse with humanoid robots. The socio-existential condition of the black African female subject on the African continent[4], typified here as being rural, is arguably that of an existence at the bottom stratum of the global hierarchy of access to the benefits and social power dynamics of the so-named Fourth Industrial Revolution. Around this *Figure*, the issues of gender, social class, race, aesthetics and disparities in global digital equity as pertaining to robotics are conglomerated and symbolised.

In this context, while noting discursive contours on feminist theories explored in Africanist writings such as those by Sanya Osha (2008) and contributors to Basu (2018), the socialist-feminist sensibilities raised by Donna Haraway in "A Manifesto for Cyborgs" on the challenges occasioned by technoscience on female subjects are most directly pertinent (in Cahoone 2003, pp 464-478). Although within the constraints of this article I posit the black African woman as a *figuration*, a case of thought, in service of my advocacy for politico-aesthetically conscious robotic designs, I firmly affirm, to use Haraway's idiom, that the

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[1] The use of and meaning of "culture" implied here transcends the conception of culture as an ethnic practice. It extends to the composite stage of intellectual-epistemological practices and norms of a given society and even a Civilisation.

[2] *Ted quim*, it is remarkable how the makers of the famed Sophia robot avoided to adorn "her" with hair in order to obviate ethnic connotations, and only did so in a much publicised occasion of the debut of this humanoid on China's national CTV programme in Beijing in January 2018. See http://chinaplus.cri.cn/photo/china/18/20180115/78288_3.html

[3] Our usage of 'figure' is derived from its formulation in Gilles Deleuze as *Figure* or figuration (2003, pp1-11), and as utilised in Haraway (2003, pp 48-49)

[4] The specificity of the descriptor "on the African continent", besides being deployed to maximally illustrate the element of global digital disparities, is in part inspired by Atanga (2013).

African woman's "physicality is undeniable" and is taken throughout our reflection as "deeply historically specific" (Haraway in Ihde and Silinger 2003, p49). The reality of genderalisation of humanoids and its social consequences is so serious that in her *Robo Sapiens Japanicus: Robots, Gender, Family, and the Japanese Nation* Jennifer Robertson (2018) finds it necessary to instructively emphasise that "some humanoids are so lifelike that they actually pass as human beings. These gendered robots are called *androids* (male) and *gyroids* (female)" (Robertson 2018, p6). Clinically, we should not use the word "humanoid" without specifying its sexual orientation.

In their research paper "Persuasive Robotics: The influence of robot gender on human behaviour", Siegel, Breazeal, and Norton (2009) demonstrated how sexual-ascription, colour, bodily shape and hair-type of a robot are factors critical to the user's behavioural mode of interaction with their robot. This observation on the psychical effect of the socio-aesthetics of humanoids was corroborated by the *Robots and Racism* report to the American Institute of Electrical and Electronics Engineers (IEEE) 2018 annual conference by Christoph Bartneck and his multinational research team (Bartneck *et al*, 2018 herein after, "the Barneck Report"). Noting that "because race corresponds with complicated patterns of social relationships, economic injustice, and political power, the perception of race in the design space of robots has potential implications for HRI" (p.196), Barneck *et al* set out to ask: "do people automatically identify robots as being racialized, such that we might say that some robots are 'White' while others are 'Asian' or 'Black', and are there socioethical concerns therein?" (ibid.). In pursuit of this question, the research team conducted an extended replication of the classic social psychological shooter bias paradigm gauging human reaction to robot stimuli. They found that: "Reaction-time based measures revealed that participants demonstrated 'shooter-bias' toward both Black people and robots racialized as Black. Participants were also willing to attribute a race to a robot "on the basis of their racialization and demonstrated a high degree of inter-subject agreement when it came to these attributions" (Bartneck *et al*, 2018, p.197).

Having underscored their empirical report's conclusion on how people impute racial and genderised identities onto robots with a refrain that "there is no need for all robots to be white" 2018, p.197), the Barneck team published a sequel to their report with a journal article with an evocative Design Ethics title: "Robots Can Be More Than Black And White" (Addison, Yogeeswaran, Bartneck 2019).

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Against this background that draws attention to the proclivity and potential effects of discriminatory representations in the production of robots, the goal of this paper is to support what Harris et al in *Engineering Ethics: Concepts and Cases* idealise as "becoming a socially conscious engineer" (Harris *et al* 2009, p.91). I propose to contribute to robotic technology design protocols what Jacobs and Huldtgren (2018) call "value sensitive design" by providing a philosophical paradigm that maps out the theoretical terrain upon which a veritable ethical obligation can be grounded. My mission is to present collateral theoretical content for the conscientisation of engineers and related participants in the science and business of the design and building of humanoids. The discussion is framed for dialogue with innovative professionals who are responsible for the design-decisions that perambulate the race and gender of a robot: the features that frame the robot's sociality, and ultimately, the counter-ontological effects on its human interlocutor.

I begin with a philosophically nuanced rendition of the epistemological status of humanoids which distinguishes the latter from the general hubris of robotics technologies. Flowing from this phenomenal portrait of socially-situated robots, I introduce and elucidate the role of semiotics as a processes of meaning communication which I apply to the dynamics of human-robot-interaction. The semiotic, phenomenological and psychical suggestive influences of robots which we highlight, are then, towards my conclusion, interpreted as an ontic-ontological proposition, that is, a theory that explicates how the process of whatever we come to know relates to social existence. This proposition, which is a thesis that I develop systematically throughout the paper, is progressively deployed as a corroboration for social ethics to be taken much more seriously in the engineering of humanlike robots.

Status of humanoids as epistemic objects

From the perspective of epistemology, a robot, an industrial robot in particular, whilst a technological artefact of curious wonder, is an object like any other object impressed onto our minds via our sense of sight. In Kantian epistemology it is *noumena*, an epistemic (knowable) object. On the other hand, a robot which is expressly designed and presented as a human companion or caregiver, although recognised as an artificial agent, imposes some special salience to our senses. It does not impress itself onto our cognitive space like any other epistemic (knowable) object, say, a chair or even a painting of a human face. As a technological artefact with human-like behavioural traits that are geared at performing typically human roles,

endowed with features of the functionality of the human bio-neurological system, it resembles us; it is a *humanoid*. At the same time, it is a uniquely humantological technology: it provokes immediate cognitively implicit as well as philosophically explicit questions about what is human.

As a socially-situated artefact, a *social* robot, it shares our space in a socially affective manner. It simulates human existence as existence-in-community-with others; it traverses into Aristotle's *Homo politicus*. As such, we *experience* it as both a representation and part of our Being. In Martin Heidegger's terms, we are *Mitsein* (being-with) (Heidegger 1962/1927, p.157) with social robots. Anna Strasser's assertion is apt: "Where previous [scientific] revolutions have dramatically changed our environments, this one has the potential to substantially change our understanding of sociality" (2017, p.106).

The foregoing philosophic statements, which I will explicate as we proceed, have two crucial implications. The first is that the *existence* of social humanoid robots, which comes into being through the manufacturing or private acquisition of a robot, including a casual encounter, with such humanlike robot, adumbrates the instantiation of a socio-technical world (*umwelt*), the "living with robots" (See Doumouchel & Damiano, 2016). Secondly, which is of our immediate interest at this stage, is that, as a robot, appearing to us in its aesthetic and behavioural semblances that mimic human life, it readily locks us into a phenomenology of intricate intersubjectivity. We momentarily experience it as (or believe it to be?[5]) a human. This moment of human-humanoid encounter is devoid of cognitive dissonance. A realisation of this absorption or self-wrapping of the human mind around a social robots supports remonstrations of postphenomenologists such as Michael R. Kelly's (2015) against Edmund Husserl, pioneer of transcendental phenomenology[6]. Kelly elucidates that "when technology is introduced, both the human experiencer and the thing experienced are transformed" (2015, p.508). He then asserts that "at this interrelational level, technologies may be more than just another object in the world of which the human experiencer is conscious [. . .] (ibid.).

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[5] Marti *et al* (2005) and Pollini (2009, p169) introduce the concept of "a suspension of belief" as a dynamic at play when humans cognitively encounter humanoids, an act similarly observed in a toddler playing with dolls.
[6] For a lucid introduction to the thought of Husserl as the foundation upon which Martin Heidegger and Jean-Paul Sartre developed their phenomenological methods, see Moran (2000, pp1-20, 60-90)

More than any other technological artefact or tool, which is the generic "technology" that Kelly (2005) is dealing with in his argument that classic phenomenology should appreciate the possibility of intersubjectivity with non-human objects, a robot simulating human existence provokes an exaggerated attention, curiosity and interest. A recent research experiment by Cao *et al* found that children with Autism Spectrum Disorder (ASD) engaged in more eye contact and were fixating for longer periods on a humanoid robot face that on a human face (Cao et al, 2019). This point signifies the difference within the domain of HRI between human-robot-*interface*, in which "the robot" may be an industrial tool or intelligent machine, and human-robot-*interaction* or interlocution, in which "the robot" is specifically some human-like artificial agent.

This curiosity that is induced by humanoid robots is in part similar to the human proclivity of finding other humans interesting. They "catch our attention", even on photographs. They exert this particular effect because they resonate our *selves*. Similarly, a humanoid robot, be it an assistive of aggressive-like Robocop, reminds us of our selves, at least, our humanity; we re-*cognise* something about us in them, and subconsciously expect them to act like or with us. As an illustration of this "subconscious reminding" Romesin and Bunnel (1998, p.34) invite us to think of a suburban mother walking her little girl in a park whereupon they stumble onto two dogs copulating. The mother smirks and implores the daughter, "Don't look at them!" Why? Because the dogs remind her of what we adult humans do only in private spaces. This bears an analogous similarity to the phenomenological process of human-robot-interaction. They may not, according to our prior knowledge, be human, but they affectively provoke humanistic expectations from us.

A human-like robot, therefore, proves that it is not a banal epistemic "object" of a phenomenologically active mind, that is, a phenomenon in the sense a phenomenologist like Phillip Berghofer (2019) would explicate Husserlian noetics. It has epistemological agency, which is peculiarly akin to that discernible in human-human interaction. It is an artefact which is autonomously imbued with meaning-emitting value. As a humanoid, it is an artefact expressly engineered with a semiotic intention. It is directed at signifying something other than itself, as its simulacra: a living human being. It is an embodied, embrained (software encoded) and encultured image fashioned for self-representation to the human mind as something-like-human, and for consumption (receptivity) by the mind as such. Without this lexical cognitive-epistemological value chain, there would be no social robotics industry. The drive for

innovation in social robotics is premised on an aspiration to progressively design and produce robots that optimally look and feel like human to the human mind, as this is the prime condition for their successful marketing and social deployment. As such, a humanoid is an image/representation with an absolute semiotic ontology; it is meant for meaning, and the emission of this meaning as impressed in, and apprehended by the human brain constitutes the humanoid's epistemological agency.

In the context of the study of signs, a sign should be subordinated to what it is representing, wherein the signified or referent is primary to the signifier. However, we notice that as a semiotic apparatus, the robot masterfully endowed with sociality is a *sign* of a peculiar order. It is *meant* (by its manufacturers) to look, and it does look like what it is meant to represent or signify (otherwise it is a failed project). Within a typology of semiotic representations, it is an icon. Alas! in virtue of it being a humanoid, a robot supposed to be a *referee* of the human *referent*, it is not dislocated from its referent; the direction to the referent is embedded within the humanoid robot; it *is* the referent, as its very essence and ontic value is to simulate the human person with lexical perfection. Its success in attaining the ontology or "commercial" status of *the social robot*, is its quality of being a near-perfect representation and resemblance of a human person as a composite display of an active neural system and physiological features.

As a corollary stage of our reflection that should further corroborate the qualitative claims I make in the foregoing, we have to proceed into a closer interrogation of the affective nature and sociological status of these meanings that are emitted by our encounter with these socially-situated and culturally-designed robots.

Robotic Persuasiveness and its ramifications

Rightly named, humanlike social robots are *persuasive humanoids* as they provoke both ontic-illusory[7] and intuitive mental acts from their human users or encounterors. As variously researched and reported, for example in Mark Coeckelbergh's "Why Care about Robots"

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[7] By "ontic-illusory" I seek to denote, the immediate suggestion at an initial point of cognitive encounter that an object could be something which is not what it is, but which vision my mind overrides.

(2018), an image represented by a humanoid exerts a suggestive influence, both conscious and unconscious, on the user's mental state. Amongst his variety of examples, Coeckelbergh relates the case of HitchBOT, a 2014 Canadian robot which as programmed, successfully hitchhiked in a number of countries, including the United States of America "with the help of friendly strangers"[8], according to the press release of the HitchBOT project team. "Its" journey was tracked on social media platforms by an ever-widening community of fans. HitchBOT's journey ended abruptly on 1st August when he was found vandalized in Philadelphia: "his" head and arms ripped off. Even though morphologically, by robotic design standards, this was not a perfect humanoid, its damage provoked an outpouring of empathetic emotions on social media, with one fan moaning: "America should sit in the corner and think about what it's done to poor HitchBOT" (Coeckelbergh 2018, p.142).

When a humanlike robot appears to our senses, we experience it, and make sense of it; we get an *impression* of it. This process of making sense, and the eventual meaning-given, reflects affectively on the encounterer/encountered; the robot *expresses* "itself" (reveals itself?) to our cognitive faculties. This expression-impression dynamic, in Husserlian terms, is the meaning-making dynamic, the attainment of the object-as-intended, the *noema* (Husserl 2008/1906, pp17-20). But the Husserlian rendition is not adequate as it plays down the full force of the expressing object. My consideration, as outlined above on the autonomous semiotic agency of a humanoid, is that an object of consciousness, here specifically the socialised robot, is itself actively imposing its semiotic ontology into our cognitive space. It is not a mere anthropomorphic illusion. I will endeavour to explain this further in terms of Hegel's dialectic phenomenology. The meaning of the robot as my ultimate apprehension of what it is, is its autonomous self-reconciliation to my mind as the subject, its transcendence (*aufhebung*) of its momentary alienated (unclear) state as an object.

In a humanoid, I *re*-cognise something like me. In (Hegelian) phenomenological terms, I understand/comprehend (*begriff* not *verstehen*) it as something like, or posing to be me. In semiotic terms, the robot is a signifier in which the signified is the mirror image of myself as the represented (reflected/ *representation* of) human being. This human-being signification is for this very reason human-affective, it affects me psychologically as would a real human being. Hence, for an easy example, we have the case of an encounter between a feminised sex-

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[8] http://mir1.hitchbot.me/

robot (gyroid) and a sexually active heterosexual male. He gets an erection. He is *impressed* by the *expression* conveyed in and by this sexualised artefact[9].

Both the phenomenology of how social robots remind us of ourselves, and the nature of the semiotic character of these artificial-human-like artefacts bear far-reaching consequences for our human ontology and ethics. Adding on what we found about the humanoid robot in the foregoing, Charles S. Pierce precociously defined a *sign* in 1908 as "anything which is so determined by something else, called its object, and so determines an effect on a person, which effect I call its interpretant, that the latter is thereby immediately determined by the former" (Pierce 1960/1908, p 48). Ironically, the latent possible design-ethics ramifications of the human-robot semiosis we are preoccupied with here in our twenty-first century robotics study are suggested in this canonical script. Here ontological-phenomenology, semiosis and ethics converge. This convergence is best demonstrated in the prevalent consensus, aptly articulated by Coeckelbergh, that "mistreating a robot is not wrong because of the robot, but because doing so repeatedly and habitually shapes one's moral character in the wrong kind of way" (2018, p.145). The affectivity and the mode of the regard of a humanoid ricochets into shaping who we become.

What are the probabilities of the ethnic features and sex of a robot replicating the social status that mirrors the role typically imposed to that particular racial group or gender in a racialised and patriarchal society? Are the digital voice assistants in our computer devices such as Amazon's Alexa and Microsoft's Cortan female because women are typically "assistants", polite and efficient secretaries[10]?

Recalling our originary point on how a robot as a product of human ingenuity and labour is quintessentially a cultural artefact that reflects the design preferences and proclivities of its creators, and the results of the Siegel (2009) experiment on the psychological effects of the gender of robots, together with the Bartneck team's (2018) lament of the standard industry practice of designing humanoids as white, we are directed to a much deeper question when we take into account how this persuasive effect of humanoids modulate human behaviour not only towards the robots, but also human self-perception or self-image vis a vis the robot.

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[9] For more on the psycho-philosophical processes of human reaction to sex robot see, *inter alia*, Sullins (2012).

[10] Instructively, in an apparent response to ethical sensibilities similar to what we alert in this paper Apple (Alphabet) upgraded its Siri to perform as either a male of female voice.

This "deeper" question presents itself as some form of an ontological-existential crisis. Verbalised by Jackie Snow, the humanoids Siegel and Bartneck refer to as technocultural artefacts, "look like the people building them, but not necessarily using them"[11]. In politically charged culturo-aesthetic terms, these robots are racialised white, and according to their symbolic rationality, are male[12]. They are *persuasive white androids*; but they are used, that is, interact, with people who may not be male and white. How would this affect those who interact with these robots? In our case, we hypothetically posit that they are used by a black woman in some rural locale on the continent of Africa. What would be immediate social power dynamics between her and such a white android?

Linda Martin Alcoff wrote that "in much feminist literature the normative, dominant subject position is described in detail as a white, heterosexual, middle-class, able-bodied male" (1998, p.8). On the other hand, in her "Manifesto of Cyborgs" Haraway challenges the maleness of post-Second World War information science, accusing it of "phallogocentrism" (Haraway 2003, p.475). Is it possible that a humanoid robot may have an oppressive/discriminative effect on me in virtue of a genderised mental attitude it is programmed with (male phallogocentrism), or the racial physiologicalities in which it is cast in the context of a racialised society?

The developing import of our present dissertation is a suggestion that the way a robot looks and behaves may affect the self-image of the user or entrench certain patterns of human social relationality; a dimension of this reflection could be on how this proceeds to affect the very existential self-knowledge of the encountering human being as a socially located agent, that is one's social ontology. Taking our case of the black female subject in Africa, we could then claim, *a posteriori*, that social robots have the potential of perpetuating a black African feminine existentiality of self-marginalisation, socio-economic abjection and techno-exclusion[13]. When abstracted away from our case of the African woman these observations, of

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[11] Jackie Snow in https://www.fastcompany.com/90212508/even-black-robots-are-impacted-by-racism [Accessed 2019-06-03]

[12] On the maleness of Reason, see Borno (1986). I further aver that this Western Cartesian mode of rationality is replicated in computer languages and artificial intelligence.

[13] I expounded on this subsequent conclusion in a paper presented at the Research Colloquium of the University of Fort Hare, South Africa on 7th May 2019 "Black Women and Robots: A Propaedeutic Reflection on Artificial Intelligence and African Existentiality"

their own theoretic merit, buttress the importance of value-sensitive engineering designs that cohere with one of the key stipulations of the *Asilomar Principles on Research on Artificial Intelligence* that "AI systems should be designed and operated so as to be compatible with ideals of human dignity, rights, freedoms, and cultural diversity"[14].

But a rebuttal could be posed against my hypothesis that the physiological morphology and the aesthetics that socially stereotype the look of a humanoid may have an inverse effect of framing the human interlocutor's self-image, that is, her existentiality. This would be the question: what about human agency, and the intentionality that could be deployed to counteract the deleterious suggestive influences of a humanlike robot? This is a matter I now turn to as we approach our concluding section.

Absolutist computational semiotics and its ramifications

Indicating the semiotic dimension of computing languages, the eminent semiotician Umberto Eco, for one, reminds that in their semiosis images and words have an inherent problem of susceptibility to a variety of interpretations and hermeneutic appropriations that are contingent, amongst others, on the cultural and ideological positionalities of their interpreters (Eco 1997, pp.174, 308). On this basis, it may therefore be assumed that one may randomly either be negatively or positively *impressed* by what is being expressed by a social robot, depending on the function of their apprehensive involvement, that is (eiditic) intentionality.

In contrast to classic semiotics, robotic or computational semiotics vitiates the ambiguities that Eco alludes to; it departs from the point of the lexicality of the image represented by the robot (see Gudwin & Queiroz 2005). As we noted, the successful production of a humanoid robot is determined by the degree at which it resembles and mimics human existence and roles. The robotic image is in this instance self-definitional. It is as singular as a road sign with the word "Stop" inscribed on it. One cannot separate the indicated message from the sign. Such a sign can be contrast to a directional sign that gives information that points away from itself. The philosophy of the science of social robotics is that the intended robot is not an image denoting something else, but seeks to equate as much as possible what is represented.

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[14] https://futureoflife.org/ai-principles/?submitted=1#confirmation [Accessed 2019-09-28]

Uniquely, and unlike in hermeneutic semiotics, computational semiotics is premised on an assumption or imposition of universal comprehensibility; that the viewer, user or interactor will immediately be satisfied that the image or robotic artefact is the mimicry of a human person. The meaning of what is represented is expressly disambiguated; it is a humanoid, and not some dog or ape (animaloid). There is no polysemiosis with the socially-situated humanlike robot; it strives to convey an image of a real human person in a predetermined role. A semiotic convention is at play here. This is peremptorily declared by Eco: "Computer languages . . . are universal systems; they are comprehensible to speakers of different natural languages and are perfect in the sense that they permit neither error nor ambiguity" (Eco 1997, p.311).

As explicated in Clark and Chalmers (1998) in their paradigmatic article "The Extended Mind", the modern human mind is already immanently interwoven with the functionalism of computers. This fusion of the human and technology world is of late demonstrated by the burgeoning field of Internet of Things (IoT), of which robotics is its most advanced expression (Royakkers et al 2018, p.127). This ubiquitous "language" of machines, modelled to replicate the structure of the human mind, Clark and Chalmers have proposed, is in fact a shared and integrated human-computer "mentalese" (1998, p.7). Similar to Eco's view of computer language, this mentalese, as presented as the coupling of the external cognitive impulses from an artefact with the human internal cognitive process, is according to Richard Melany universal, and self-imposing in its syntactics and semantics (Menary 2010, p207).

Linked to what we noted earlier on the kind of a sign that a humanoid robot is, that it is an icon in which the *referent* is subsumed into the *referee*, and thus rendering a humanoid an absolute semiological ontology, we now note the absolutist peculiarities of computational semiotics outlined above as the pervasiveness of human-machine mentalese. I can therefore claim that I am justified by theory in assuming an occurrence of a possibility of a univocal connotation or impression of what may be a negative persuasion/influence toward interactors with a humanlike-robotic output, as dependent on the socio-aesthetic anthropomorphic features a social robot is designed with.

Moreover, it is particularly noteworthy in the context of our discussion that in asserting that computer languages are "universal systems", Umberto Eco concedes that "their rules are drawn from the western logical tradition" (1997, p311)). These rules are what Jacque Derrida in *White Mythology* derided as "logocentrism" (Derrida 1974, p7), which is the root term of

what Haraway excavated as "phallogocentrism". Mentalese is "white, heterosexual, middle-class, able-bodied male" to borrow Alcoff''s encryption (1998, p8).

When the power of computational semiology is paired with insights from post-phenomenology, it evinces dramatic implications for a user such as our black African female subject. The postphenomenology movement in the philosophy of technology holds that in the meaning-making process that mediates human-technology interaction, the object, the technological artefact, must be accorded a rehabilitative privileged position over the perceiving subject (Ihde 2003, pp131-144; Roosenberger and Verbeek 2015; Tripathi 2017, pp137–148). The case of the black African woman as socio-economically positioned in the global power matrix at the bottom of the pile in a socio-technological episteme that privileges the semiotic power and the prior status of the robot object to that of her as a phenomenological subject, raises a serious ethical obligation on the designers of humanoids. What is the socio-existential status of a woman in rural Somalia, *vis a vis* that of the humanoid Sophia who was recently granted citizenship of the oil-rich Saudi Arabia?[15] Besides this *woman*-to-woman comparison, could phallogocentrist robots, programmed with the neural architecture of the western logical tradition and aesthetic features that affirm white male ontological normativity turn out to be absolute oppressors (with techno-semiotic permanence) of African women?

Conclusion

In my endeavour at constructing a theoretical system that is derived from philosophical traditions that deal with meaning-making in the context of technology and the formation of social ontology, I have developed a novel appreciation of the aesthetic and phenomenal ontology of humanlike socially-situated robots. This in turn has served to account for the affective potentialities of the latter. I have foregrounded the socio-political issues of race and gender as pertinent factors in design decisions, impelling roboticists to be more conscious of their cultural and ethnic positionalities, and perhaps even their political commitments. In order to focus on delivering the structure of the theoretical account I introduce here, I have not been able to delve into the details of the psycho-existential, socio-ontological and political ramifications of how social robots as technological outputs as finally delivered could affect the existentiality or self-consciousness of individuals who are placed in the global techno-

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[15] https://www.biztechafrica.com/article/sap-africa-brings-humanoid-robot-mzanzi/13892

economic power matrix in a position such as that of black African women in rural Africa. I merely highlighted this as a case of thought. The experience of humantologised technology by this *Figure* has been demonstrated as placing crucial ethical obligations on engineers of humanoids, and social robots specifically.

REFERENCES

Addison A., Yogeeswaran K., Bartneck C. (2019). *Robots Can Be More Than Black And White: Examining Racial Bias Towards Robots*. In. Proceedings of Conference on Artificial Intelligence, Ethics, and Society. Honolulu: Association of Advancement of Artificial Intelligence
www.aies-conference.com/wp-content/papers/main/AIES-19_paper_99.pdf

Alcoff, M. L. (1998). What Should White People Do? *Hypatia*, 13: (3), 6-26

Atanga, L. (2013). African Feminism. In. L. Atange, S.E Ellece, L Litosseliti, J Sunderland (Eds), *Gender and Language in Sub-Saharan Africa*. Amsterdam: John Benjamin Publishing, pp301-314

Bartneck, C., Yogeeswaran, K., Ser, Q. M., Woodward, G., Sparrow, R., Wang, S., & Eyssel, F. (2018). *Robots and Racism*. In. Proceedings of ACM/IEEE International Conference on Human-Robot-Interaction, pp. 196-204. IEEE: Chicago. DOI: 10.1145/3171221.3171260

Basu, A., Ed. (2018) *The Challenge of Local Feminisms: Women's Movements in Global Perspective* [1995]. New York: Routledge.

Berghofer, P. (2019). Husserl's Noetics: Towards a phenomenological epistemology. *Journal of the British Society for Phenomenology*, 50 (2), 120-138.

Bordo, S. (1986). The Cartesian Masculinization of Thought, *Signs: Journal of Women in Culture and Society* 11 (3), 439-456.

Cao W, Song W, Li X, Zheng S, Zhang G, Wu Y, He S, Zhu H and Chen J (2019) Interaction With Social Robots: Improving Gaze Toward Face but Not Necessarily Joint Attention in Children With Autism Spectrum Disorder. *Frontiers of Psychology*, 10:1503. Doi: 10.3389/fpsyg.2019.01503

Clark, A., Chalmers, D. (1998). The Extended Mind. *Analysis*, 58(1), 7-19.

Coeckelbergh, M. (2018). Why Care About Robots? Empathy, Moral Standing, and the Language of Suffering, Kairos. *Journal of Philosophy & Science*, 20, 141-158, DOI 10.2478/kjps-2018-0007

Deleuze, G. (2003). *Francis Bacon: The Logic of Sensation* [1981], transl. Daniel W. Smith. London: Continuum

Derrida, J. (1974). *White Mythology: Metaphor in the Text of Philosophy* [1971]. Baltimore: John Hopkins University

Doumouchel, P., Damiano, L. (2016). *Living with robots*, transl. by M. Bevoise. Cambridge MA: Harvard University Press.

Gudwin, R., Queiroz, J. (2005). Towards an Introduction to Computational Semiotics *International Conference on Integration of Knowledge Intensive Multi-Agent Systems* (KIMAS 18-21 April 2005, Waltham, MA, USA). Chicago: IEEE.

Haraway, D. (1989). *Primate Visions: Gender, Race, and Nature in the World of Modern Science*. New York: Routledge

Haraway, D. (2003). A Manifesto for Cyborgs: Science, technology, and socialist feminism in the 1980s. In L.Cahoone (Ed.) *From Modernism to Post Modernism. 2nd Edition,* pp 464-480 . Oxford: Blackwell

Harraway, D. (2003). Interview with Donna Haraway, with R. Markussen, F. Oesen and N. Lykke. In D. Ihde, E. Selinger (Eds.) *Chasing Techscience: Matrix for Materiality*, pp. 47-57. Bloomington: Indiana University Press

Harris E. C., Prichard S. M., Rabins J. M. (2009). *Engineering Ethics: Concepts and Cases*, 4th Edition. Belmont, CA: Wadsworth

Heidegger, M. (1962). *Being and Time*, transl. by J. Macquarie and E Robinson, Seventh Edition, [1927]. Oxford: Blackwell

Husserl, E. (2008). *Introduction to Logic and Theory of Knowledge: Lectures 1906/07*, transl. C. O. Hill. Dordrecht: Springer.

Ihde D. (1990) .*Technology and the lifeworld: from garden to Earth*. Bloomington: Indiana University Press

Ihde, D. (2003). If Phenomenology is an Albatross, is post-phenomenology possible? In D. Ihde and E. Selinger (Eds.), *Chasing Techscience: Matrix for Materiality* pp.131-144. Bloomington: Indiana University Press

Jacobs, N., Huldtgren, A. (2018). Why value sensitive design needs ethical commitments, *Ethics and Information Technology.* https://doi.org/10.1007/s10676-018-9467-3
Kelly, M. R. (2015). Edmund Husserl. In J. B. Holbrook, C. Mitcham (Eds) *Ethics, Science, Technology, and Engineering: a global resource*, 2nd edn, Vol 4, pp.507–509 . Farmington Hills MI: Cengage Learning

Marti P, Bacigalupo M, Giusti L, Mennecozzi C, Shibata T. (2006). Socially assistive robotics in the Treatment of Behavioural and Psychological Symptoms of Dementia. In:

Proceedings of the BioRob 2006: IEEE/RAS-EMBS International Conference on Biomedical Robotics and Biomechatronics. Pisa, Italy.

Menary, R. A. (2010). Cognitive Integration and the Extended Mind. In R. A. Menary (Ed.), *The Extended Mind*. Cambridge Massachusetts: MIT Press:.

Moran, D. (2000). *Introduction to Phenomenology*. London: Routledge.

Osha, S. (2008) Philosophy and Figures of the African Female, *Quest: An African Journal of Philosophy / Revue Africaine de Philosophie*, XX, 155-204

Peirce, C.S. (1960). *Collected Papers of Charles Sanders Peirce* , Vol. I, Principles of Philosophy, edited by Hartshorne, C. & Weiss, P. [1908]. Cambridge, MA: Harvard University Press.

Pollini, A. (2009). A Theoretical perspective on Social Agency, *A.I and Society* 24 (2): 165-171.

Robertson, J. (2017) *Robo Sapiens Japanicus: Robots, Gender, Family, and the Japanese Nation*. Oakland CA: University of California Press

Romesin, H. M, Bunnel, P. (1998). Biosphere, Homosphere and Robosphere, What does it have to do with Business. In https://issuu.com/gfbertini/docs/biosphere__homosphere__and_robosphere_-_living_sys [Accessed 2019-06-03]

Rosenberger R., Verbeek, P.P. (2015). A Field guide to postphenomenology. In Rosenberger R. and P.P. Verbeek (eds.) *Postphenomenological Investigations*: *Essays on Human-Technology Relations*, (pp.9-41) .London: Lexington Books

Royakkers, L; Timmer, T; Kool, L.; van Est R. (2018). Societal and ethical issues of digitization, *Ethics and Information Technology* 20:127–142

Sartre, J-P. (2003). *Being and Nothingness: An essay on phenomenological ontology*, trans. H. E. Barnes [1943]. London and New York: Routledge.

Sharkey, N., Weisberghe, A., Robbins S., Hancock, E. (2017), *Our Sexual Future with Robots: A Foundation for Responsible Robotics Consultation Report.* The Hague: Global Institute for Justice

Strasser, A. (2017). Social Cognition and Artificial Agents. In V. C. Müller (Ed.), *Philosophy and theory of artificial intelligence,* pp. 106-114. Berlin: Springer.

Sullins J.P. (2012). Robots, love, and sex: The ethics of building a love machine. *IEEE Transactions on Affective Computing*, 3(4), 398–409.

Tripath, A. K., (2017) Hemeneutics and Technological Culture: Editorial Introduction, *AI and Society May*, 32, (2),137–148

Verbeek P-P. (2005). Artifacts and attachment: a post-script philosophy of mediation. In Harbers H. (Ed.) *Inside the politics of technology: agency and normativity in the co-production of technology and society*, pp125–146. Amsterdam: Amsterdam University Press