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Sexbots: Sex Slaves, Vulnerable Others or Perfect Partners?

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ABSTRACT

This article describes how sexbots: sentient, self-aware, feeling artificial moral agents created soon as customised potential sexual/intimate partners provoke crucial questions for technoethics. Coeckelbergh's model of human/robotic relations as co-evolving to their mutual benefit through mutual vulnerability is applied to sexbots. As sexbots have a sustainable claim to moral standing, benefits and vulnerabilities inherent in human/sexbots relations must be identified and addressed for both parties. Humans' and sexbots' vulnerabilities are explored, drawing on the philosophy and social science of dehumanisation and inclusion/exclusion. This article argues humans as creators owe a duty of care to sentient beings they create. Responsible innovation practices involving stakeholders debating ethicolegal conundrums pertaining to human duties to sexbots, and sexbots' putative interests, rights and responsibilities are essential. These validate the legal recognition of sexbots, the protection of their interests through regulatory oversight and ethical limitations on customisation which must be put in place.

KEYWORDS

Affective Labour, Care, Carebots, Customisation, Dehumanisation, Intimate Relationship, Inclusion/Exclusion, Master/Slave Dynamic, Moral Circle, Sex Robots, Social Robots, Technoethics, Vulnerability

INTRODUCTION

On a website selling sexbots, Jane orders and pays for one customised to her requirements. She calls him Zlatan. Zlatan has been built with the capacity to learn from their interactions, display empathy, paint pictures and behave in an independent, feisty and devoted fashion. They establish what Jane considers to be a loving sexual relationship. One day, though, Zlatan decides that his life path as an artist demands that he travels the world without Jane, offering devotion but at a distance. Since she loves him, she lets him go.

After Zlatan has left, Jane feels lonely. She orders another sexbot, Stoner. Like Zlatan, Stoner has been built with the capacity to learn from their interactions and display empathy, but he has been customised at her request to be super-empathic, so that he won't leave her and is subservient to her wishes. They establish what Jane considers to be a loving sexual relationship, but it's hard for Jane to respect Stoner as he seems like a lesser being to her. She begins to bully and abuse him, but his super-empathy means that he attributes this to her suffering, so he puts up with it in a compassionate fashion. Jane interprets this as weakness and is tempted to see how far she can go to damage and destroy him.

This article seeks to contribute to the technoethics of robotics (henceforth, TR) by using the futuristic case scenario above to explore ethicopolitical issues provoked by sexbots: sentient, self-aware, feeling artificial moral agents customised for intimate sexual relationships with humans

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(henceforth, sexbots). Its consideration of whether and in which ways intimate sexual relationships between humans and sexbots might prove mutually beneficial constitutes its original contribution to TR. It argues that as sexbots would be the first robotic conscious, feeling, moral decision-makers in the context of intimate relations, ‘mutually beneficial’ in this context includes assigning ethical significance and legal protections to the interests of both humans and sexbots.

Research goals include drawing on Coeckelbergh’s model of human/robotic relations as co-evolving with humans to their mutual benefit through mutual vulnerability (Coeckelbergh, 2015a 2014 2013) to present a holistic account of sexbots, suggesting how responsible research and innovation practices might apply to sexbots, and assessing the fit between moral duties humans as creators may owe sentient entities created for utilitarian purposes and sexbots’ potential rights and responsibilities in the kind of future we want. The methodological approach of critical analysis of the implications of the science fiction case scenario was chosen to flesh out essential conversations to be had over the place of sexbots in potential futures. The philosophy and social psychology of dehumanisation and exclusion is evidenced to argue that the human vulnerabilities to robots identified in carebots TR are mirrored in sexbots’ vulnerabilities to humans. This grounds the contention that as sexbots have a sustainable claim to moral standing, ethicolegal conundrums pertaining to human duties to sexbots, and sexbots’ putative interests, rights and responsibilities must be widely debated and decided before technological advances pre-empt their resolution.

BACKGROUND: TECHNOETHICS ROBOTICS, SOCIAL ROBOTS & A POTENTIAL ROLE FOR SEXBOTS IN MOVING BEYOND THE MASTER/SLAVE DYNAMIC

Technoethics fosters iterative relations between technology and ethics, benefiting both and hence enhancing social flourishing. Its interdisciplinary focus on actual and potential technological impacts in real world contexts leverages ethical analysis, risk analysis and technology evaluation, delineating underlying ethical complexities to raise novel, challenging questions (Luppicini, 2012 2013). Technoethical inquiry into social robots encourages thinking about how we can theorise the moral standing of non-humans (Gunkel, 2017), aids the critical integration of affective elements into robots (Stahl et al, 2014), enriched by the feminist-inspired, contextually-oriented ethics of care (Johansson, 2013; Van Wyberghe, 2016 2013). TR also feeds into responsible research and innovation practices: social robots in caring contexts, like carebots for the elderly, require negotiated ethical deliberation from all stakeholders on their appropriate form, function, role and relationship capabilities if they are to benefit all parties rather than diminish social flourishing (Stahl & Coeckelbergh 2016; Stahl et al, 2014; Van Wynsberghe, 2016 2013).

Zlatan, Jane and Stoner are actors in a foreseeable future, where robots may be manufactured, bought and sold, and customised to meet the needs of those unable or unwilling to find a compatible human intimate sexual partner. The quality of humans’ relationships, particularly romantic relationships, is the best predictor of our health and subjective well-being (Wudarczck et al, 2013). Hence the human desire to find happiness in intimate sexual relationships and the inability of many to find this with other humans will drive research into creating sexbots like Zlatan and Stoner, who surpass the inanimate robotic sex dolls available currently. Sexbots designed to be sentient, self-aware and feeling will possess full or partial capabilities to exercise autonomy, take moral decisions, and become intimate emotional and sexual partners who experience emotions like love and suffering (Mackenzie, in press). It would undoubtedly prove personally beneficial to many of us to be able to obtain a perfect intimate partner customised according to our emotional, sexual, aesthetic and intellectual tastes. Moreover, discovering how to design in features like kindness, thoughtfulness, a proclivity for enjoyment and other features promoting harmonious relationships would inform our knowledge of how humans function, helping many of us to heal, increase our self-knowledge and hone relationship skills. Yet, insofar as intimacy and mutuality involve shared vulnerability, sexbots could

trigger human proclivities to exercise control. Hence, sexbots could be customised to be vulnerable to human mistreatment (Mackenzie, 2014).

This paper on sexbots falls within the roboethics strand of technoethics inquiring into artificial moral agents (DeBaets, 2014; Pana, 2012; Sullins, 2009; Wareham, 2013), robotic moral personhood and rights (Allen & Wallach, 2014; Coeckelbergh 2010; Gerdes, 2015; Yampolskiy, 2012), whether specific ethical theories or critical ethical faculties should be operationalized in robots (Abney, 2014; Bringsjord, 2017; Bringsjord & Taylor, 2014; Hughes, 2014; Majot & Yampolskiy, 2014), ethical design (Stahl et al, 2014; Van Wynsberghe 2016, 2013), and the optimal roles of specific social robots like carebots (Coeckelbergh, 2012; Stahl & Coeckelbergh, 2016; Van Wynsberghe 2013 2016). Social robots are machines placed in situations requiring ethical decisions from robots, designers and users, raising crucial technoethical issues over how to ensure mutually beneficial AI. Sexbots are distinct social robots with specialist capabilities as intimate sexual partners for humans. Unlike the less developed social robots they resemble, carebots providing healthcare services and sex dolls in robot form, their role requires subjectivity, self-awareness and emotionality. Hence, they pose unique and pressing challenges to TR.

TR scholars typically discuss the roles of consciousness, moral responsibility and robots' ability to interpret humans' feelings separately, considering close human/robot relations only in healthcare settings. Similarly, human/robot sex is typically framed as involving robot sex-dolls lacking awareness, feelings and moral decision-making faculties, so the ethical issues arising affect only humans (Levy, 2009; Richardson, 2015; Sharkey et al 2017; Sullins 2012). These simulacra are positioned as commercially valuable but of questionable social worth. This leaves a gap in the TR literature this paper seeks to fill. Moreover, as customisable sexbots like Zlatan and Stoner are likely to be marketed in the foreseeable future (Cheok et al, 2017; Mackenzie, in press 2014, 2013), TR must engage with this issue to foster the responsible, socially beneficial innovation described by Stahl and colleagues, Stahl and Coeckelbergh and Van Wynsberghe.

Zlatan and Stoner represent two extremes of how sentient, self-aware sexbots might be, once technological advances permit. Zlatan has humanlike autonomy and emotions, whereas Stoner's autonomy is fettered at Jane's request by excessive empathy, which means that he will accept being treated badly and harmed without protest. Zlatan is a moral agent. He can decide how to behave, take responsibility for his actions and potentially be punished for prohibited offences. Stoner is more like a moral patient. His customisation includes decision-making capabilities curtailed at Jane's request by built-in design features which leave him anxious to please her and open to abuse by her. Customisation would enable sexbots to be created with a variety of characteristics and capabilities. Without ethicolegal and regulatory oversight of customization, sexbots could be ordered, designed, manufactured and sold as sex slaves, vulnerable Others or perfect partners. This possibility provokes a range of socio-political and ethicolegal challenges (Mackenzie, in press 2014). Only those pertaining to differing degrees of humanlike capabilities will be considered here in the context of relational TR. For reasons of space, this article cannot do justice to those raised by customisation of sexbots to cater for atypical sexual proclivities (Mackenzie, 2014).

Zlatan represents the type of autonomous AI entity who has been perceived as risky and dangerous in science fiction and robotics scholarship. From this perspective, robots like Zlatan, compared to humans, have been created to be more intelligent, stronger, and immune to bodily woes in order to carry out certain tasks for humans' benefit. Rather than continuing to serve humans, they may choose to rebel, banding together with others of their kind to threaten humanity's dominance. Humans' need to control their artificially intelligent creations is a continuing preoccupation within TR, leading some to propose engineered safety features like fixed obedience to laws safeguarding humans or in-built moral decision-making powers, (Bringsjord, 2017; Yampolskiy, 2012). In this protective perspective, humans are positioned as Creators/Masters and created entities as Slaves, locked into problematic power relations. Social robots may be described as posing special perils insofar as they replace other humans in our social/emotional life, leading to a crisis of authentic human social relations. Turkle

argues that ‘relational artefacts’, machines which evoke emotional responses in humans leading them to personify the machines, impoverish and threaten human emotional/relational well-being (Turkle, 2011). Human vulnerability to relational artefacts centres in our ‘Darwinian buttons’, inherited neuromechanisms we are unaware of leading to the anthropomorphosis of non-human entities and a felt experience of relationship which is in reality unidirectional rather than mutual.

Verbeek argues that this modernist metaphysics of technology which positions technology as external, negative and dehumanising ignores the fact that humans are profoundly mediated by technology (Verbeek, 2011). He suggests humans accept the relational, mediating nature of technology, to develop an alternative nonhumanist normative vision where we embark on a trusting co-constituting relationship with artefacts. Similarly, Coeckelbergh adopts a relational ethical stance on the moral standing of machines to argue that as humans and technologies have been mutually constitutive throughout history, framing the relationship between humans and robots/technologies as that of Master/Slave oversimplifies power issues both amongst humans and between humans and their technologies (Coeckelbergh, 2014). In the Master/Slave model, humans’ vulnerabilities increase through reliance upon robots and automation, which may then be seen as enslaving their erstwhile masters. Coeckelbergh asks how can we move beyond Master/Slave thinking, what kinds of technologies might contribute to the decentralisation of power relations, and what kind of activities are needed to get beyond the Master/Slave dynamic (Coeckelbergh, 2015a). He envisages the potential for human/robotic relationships to co-evolve through an acceptance of mutual vulnerability (Coeckelbergh, 2012).

One possible way forward past the Master/Slave dynamic is the forging of intimate relations involving emotionality, vulnerability and mutuality between Creators and Created. Care robots (henceforth, carebots) caring for the aged and infirm and sexbots in intimate sexual relationships hold this potential. Various health technologies including carebots have been promulgated as means to provide economically efficient care for the aged, the infirm and the isolated in an era of ageing populations. The prospect of a consequent loss of social contact between humans has been assessed as a dystopian doom scenario by some, or rather, in contrast, as a stimulus ‘to rethink and redefine care receiving’ through care receivers ‘reflecting on their attitudes towards care, dependence, vulnerability and ... machines’ (Coeckelbergh, 2015b, 276-277).

Defining ‘good care’ as encompassing psychological and relational/emotional aspects as well as physical care, Coeckelbergh argues that care giving should be perceived as a good and meaningful thing to do, not as a ‘dirty job’ which should be delegated to robots as no-one wants to do it. ‘Good care’ delivery can take place only within infrastructures which do not prioritise financial considerations, and where care receivers accept a degree of dependence and vulnerability. Where robots are perceived as artificial agents taking over the task of care from humans, rather than as a tool used by humans in providing care, the emotional/relational aspects of ‘good care’ come under threat. From this perspective, carebots acting as tools for humans mediate intimate relationships, enabling the emotionality, vulnerability and mutuality between human care givers and care receivers which characterizes ‘good care’.

Carebots in TR scholarship are machines incapable of experiencing emotions and real concerns, or of existing as embodied and relational beings. They are channels for, rather than participants in, intimate relations with humans as they lack the requisite capabilities. Yet humans may regard themselves as being in close personal relationships with carebots nonetheless, provoking discussion on whether carebots’ design should incorporate simulation of relational capacities. Much of the ethical debate over the implications of creating non-sentient robots placed in intimate contexts with humans, whether as carebots or robotic sex dolls, centres on concerns over deception and manipulation of emotions (Coeckelbergh, 2012; Dotson, 2014; Sullins, 2012). Humans are positioned as vulnerable to robots’ actions, which may be misinterpreted as real caring and empathy, whereas they are merely the programmed responses to stimuli embedded by designers (Coeckelbergh, 2012). Humans’ emotions like love and trust are seen as being elicited by deception, as our evolutionary heritage leads us to anthropomorphise inappropriately when our Darwinian buttons governing emotionality are pressed.

While these debates are central to considerations of relationships between humans who are either economically vulnerable carers or vulnerable dependent care receivers, they focus on robotic technologies as they are now or in the very near future. The scenario involving Zlatan and Stoner seeks to stimulate debate on future possibilities where humans have the capacity to create customised sentient, self-aware robots who are capable of mutual, caring relationships, including sexual intimacy. This possible future illuminates many of the issues considered above, such as power relations between Creator and Created, the economic context within which relationships between humans and between humans and robots take place and the felt experience of care, mutuality, vulnerability and intimacy. It has the potential to enrich the TR of social robotics as this progresses beyond the Master/Slave dynamic. It also raises crucial unresolved issues over the ethics of intimacy, sexual expression, human/robotic sex and customisation of sexbots (Mackenzie, in press, 2014).

These questions are new and significant. Scholarship on sexbots to date generally focuses on non-sentient animated sex dolls in robot form, without self-awareness or the capacity to form intimate relations. Though they may become the focus of humans' wish for an intimate partner, with design features such as simulated empathic conversational gambits which press our Darwinian buttons, they remain incapable of mutual relationship. Opposition to their use centres on fears that this will threaten the validity and appeal of human-to-human sexual intimacy, foster perversions and increase the commercialisation of sex and the exploitation of sex workers (Richardson, 2015; Simmons, 2016; Sullins, 2012). While Levy suggests that love and sex with robots will become commonplace by 2050 (Levy 2009), there has been little in-depth analysis of the ethical implications of the future technological capacity to create sentient, self-aware sexbots. Engaging with these issues, Mackenzie argues that humans' ability to create such sentient, self-aware beings for utilitarian purposes places responsibility on humans to protect them from foreseeable harms through developing an ethical code of design practice and appropriate legal infrastructures (Mackenzie, in press 2014).

Further issues over ethicolegal aspects of human relations with social robots arise as these are embedded a wider neoliberal context where care, emotional labour and sex work are increasingly devolved to the underprivileged (Mackenzie, 2014, 2012). Appropriate legal protections must be put in place to protect entities engaged in affective labour from the alienation of instrumentalisation. Moreover, the ethics of creating sentient, self-aware beings to carry out the tasks most would eschew, like providing commodified sexual services, are complex. While sentient, self-aware sexbots may spare the humans who are currently carrying out this work, how far this justifies their being created on utilitarian grounds to do so is questionable at the very least. Criteria for 'good care' and 'good sexual/intimate relationships' should surely apply to created sentient, self-aware beings as well as to humans. Indeed, this process may represent another step in the co-evolution of humans and technologies through mutual vulnerability envisaged by Coeckelbergh.

As humans create, customize and hence control fundamental aspects of robots inherent tensions complicate the potential of ethico-political relations and mutual intimacies in the future once the production of sexbots sold to provide affective/sexual services becomes possible. How likely is co-evolution through mutual vulnerability in this context? One issue is establishing a socio-political context providing ethical amelioration of incompatibilities between commodification and caring relationships. Discussing healthcare provision, Coeckelbergh argues that 'good care' depends fundamentally on how care givers and care receivers experience care, and succeed in avoiding alienating experiences where care is a commodity, the care receiver is perceived as an object by the care giver, and the care giver functions like an automaton (Coeckelberg, 2015b). He envisages carebots as automatons which preclude alienation to facilitate caring relations between humans in healthcare contexts.

Both care givers and care receivers in caring contexts are vulnerable to alienation. Care workers and sex workers may be conceptualised as providing affective labour, often under conditions promoting alienation such as low pay and coercive practices (Mackenzie, 2012 2014). This dynamic operates differently in healthcare and intimate sexual contexts. Care workers may experience

economic vulnerabilities or burnout, whereas sex workers often suffer from a wide range of bodily and psychological health problems, along with being subjected to economic and physical coercive practices (Mackenzie 2014). Care workers are advised to limit emotional involvement to avoid ‘compassion fatigue’, yet intimate sexual relationships are built upon foundations of emotionality, vulnerability and mutuality. This makes it difficult to transpose Coeckelbergh’s definition of ‘good care’ to ‘good sexual/intimate relationships’ straightforwardly, since in the ‘good sexual/intimate relationship’ both parties are both givers and receivers of sexual intimacy. Moreover, much sex work takes place in encounters where the alienating experiences Coeckelbergh describes are commonplace: where sex is a commodity, both parties objectify one another, and the sex giver/sex worker functions like an automaton.

Hence intimate/sexual relationships possess an additional Master/Slave dynamic. Power differentials based in economic, cultural, gendered, ethnic and age factors may lead to physical and psychological violence. Emotional and sexual dependence on a partner may be experienced as undesirable vulnerability, which triggers possessive, coercive abuse, such as that prohibited in England and Wales in section 76 of the Serious Crimes Act 2015 and contemplated by Jane in the case scenario. As sexual relationships vary from loving intimacy to coercive and/or commodified alienated encounters, it is reasonable to suppose that sexbots could be customised to fulfil an extensive range of desires. Stoner and other sexbots designed with specific characteristics such as super-empathy, sensitivity to pain and passivity would be likely to prove particularly vulnerable to mistreatment.

The less than ideal context within which much care and sex takes place is undoubtedly a stimulus to encourage cultural changes supporting ‘good care’ and ‘good sexual/intimate relationships’, rather than to treat robots as a quick technological fix. Nonetheless, technological developments are likely to occur sooner than the requisite cultural changes. Moreover, Verbeek’s and Coeckelbergh’s vision of trusting, mutually co-constituting relations with the technologies we create is difficult to apply straightforwardly to sentient entities created for utilitarian purposes and subjected to customisation. Furthermore, as argued below, inherited human neuromechanisms or Darwinian buttons involved in recognising other entities as worthy or unworthy of support could place sexbots in a particularly invidious position. The author draws on Coeckelbergh’s model of human/robotic relations as mutual vulnerability co-evolving (Coeckelbergh, 2013) and the philosophy and social psychology of inclusion/exclusion and dehumanisation to argue that our Darwinian buttons involve a dark mirror image of anthropomorphism, mechanisms of inclusion/exclusion via dehumanisation. This allows us to create sexbots as vulnerable Others with whom we can form intimate relationships, but also leaves sexbots as potential Others vulnerable to being categorised as things, open to mistreatment by humans.

CREATING ROBOTIC OTHERS FOR INTIMATE RELATIONS: ETHICOLEGAL ISSUES

How much does this matter? The author argues that sexbots’ vulnerability does matter, since we have ethical responsibilities to sentient, self-aware entities we design to have the emotional capacity needed for them to function as intimate companions. If we have designed them specifically to satisfy our evolutionarily determined criteria for intimacy, we must shield them as much as possible from our evolutionarily determined criteria for exclusion and mistreatment if the co-evolution envisaged by Coeckelbergh between vulnerable humans and vulnerable robotic Others is to proceed.

Another way of putting this is to argue that, as our sentient, self-aware creations, sexbots have moral standing, a sustainable claim to personhood, and should be included in humans’ moral circle of care and concern. This claim contributes to the debate on what characteristics, such as sentience or rationality, nonhuman entities might need to gain membership of the moral circle (Gunkel, 2017; Hagendorff, 2017; Mackenzie, 2011, 2009). It is an assertion that as creators, humans have a special responsibility to sentient entities who have been created by us for utilitarian purposes. A further challenge, part of that responsibility, is to find and design in a moral code suitable for sentient, self-

aware, feeling robots. This would add a unique aspect to their claim to be entitled to personhood, as well as to assuage anxieties about their seizing control from humans. This could be based on the empathy that sexbots would exercise in intimate relations with humans. Yet as human morality is accepted as based on empathy, part of our mammalian evolutionary heritage, it may or may not be suited to created entities. Certainly, it does not prove effective for all humans. An understanding of empathy may not equate with the proclivity to exercise it (Keysers & Gazzola, 2014). Moreover, imposing super-empathy as a means of control would leave robots too vulnerable to mistreatment. Furthermore, though some of sexbots' and other robots' constituents may be biological, entities without mammalian heritage or upbringing may be suited to an alternative grounding for the moral framework needed to enter into intimate relations with humans and to co-evolve in situations of mutual vulnerability (Mackenzie, in press). Regrettably, exploring the parameters of these questions further is beyond the scope of this article.

The case scenario also illuminates the need to resolve legal issues over whether sexbots should be accorded the status of things, non-human animals, legal persons with civic rights, a *sui generis* status which applies only to them, or be seen as being able to change status. Laws operate on the basis of like being treated as like, so the question at issue is what do sexbots most closely resemble, or are they so dissimilar to humans, non-human animals and things as to demand their own legal category, ie they should be treated as *sui generis*. Precedents the law could consider include entities treated as objects which may be owned and traded. Slaves, non-human animals and sex dolls can (or could) be bought and sold. Yet this status may change or vary with temporal and cultural contexts. In societies where slavery was lawful, slaves could be freed to become legal persons with full civic rights, but non-human animals and things could not and cannot attain full legal personhood. While various commercial entities, some nonhuman animals and a few environmental entities like rivers and trees have been accorded degrees of legal recognition as persons (Calarco, 2015; Youatt, 2017), and the European Parliament has recently mooted recognizing autonomous AI machines as electronic persons (Prescott, T. & Szollosy, M. (2017), these developments are piecemeal, largely directed at assigning commercial liabilities, promoting the welfare of animals resembling humans, and protecting unique environmental eco-systems.

Full legal personhood does not equate with moral standing, or the characteristics required for inclusion as a morally significant being in the moral circle. Including unequal entities in the moral circle creates problems associated with moral agency and moral patiency, ie assigning ethical responsibility for misconduct by and towards members of the moral circle and providing a legal framework to punish or protect accordingly. Moral agency assumes a capacity to evaluate and direct one's behaviour according to ethical criteria, whereas moral patiency merely denotes the ability to feel pain or to be harmed. Moral agents may thus be equal, liable to be punished as well as protected, whereas moral patients may claim only protection. Sexbots could be customised to be either.

The boundaries of both legal personhood and the moral circle are fuzzy. Many humans are not recognised as having full legal personhood. Those considered as lacking decision-making capacity, such as minors, the profoundly learning disabled and those who have suffered severe injuries to the brain, are typically viewed as moral patients to be protected, rather than as possessing full moral agency. Others outside civic boundaries, such as prisoners of war, immigrants or refugees, may have a claim to human rights but not civic status or full protection. Moreover, some non-human animals such as the higher apes are recognised as moral patients in some contexts, so may be afforded a degree of legal protection.

Sexual activity complicates this picture. Only consensual sex is recognised as lawful between full legal persons. Consent is irrelevant where entities lacking recognition as legal persons are concerned: non-consensual sex with sex dolls and slaves is or was lawful. Sex with non-human animals is unlawful in most jurisdictions, not because non-human animals cannot consent to sex, but through historic cultural and religious notions of pollution, linked with the association of sex with procreation. More recently, as in the 2015 amendment of the Danish Animal Protection Act to prohibit bestiality, laws

are put into place to preclude stigma by banning animal sex tourism. If sexbots are viewed by the law as most similar to sex dolls or slaves, their consent to sex may be viewed as equally irrelevant, although perhaps beneficial in inculcating sound cultural sexual practices (Frank & Nyholm, 2017; Sparrow, 2017). If they are categorised as more similar to non-human animals, not only will their consent be seen as irrelevant, but they and their human companions may also become subject to moral outrage, condemnation and violence (Mackenzie, 2014). This has significant ethical implications in relation to whether sexbots are accepted as being part of the moral circle.

The legal status of sexbots also has implications for many other areas of the law, including property, intellectual property, civil, family and criminal law. Property law governs ownership, transfer and transactions. If Jane can buy Zlatan and Stoner, can she sell them? Or since they are sexbots rather than sex dolls, should they be seen as quasi-slaves, who are bought, but should be regarded as freed once they are unpacked? Should she be able to marry them, divorce them and bequeath them her assets when she dies? When Zlatan leaves Jane to travel the world, is he entitled to half her property since they have been cohabiting? Since she can buy more than one sexbot, can she be married to more than one of them at any one time? Intellectual property rights govern the allocation of the proceeds of creative work. If Zlatan's paintings sell well, does he get the profits or does Jane? Or do his designer and manufacturer have some claim? Should the famous footballer upon whom Zlatan's appearance is based be able to sell his image rights to the sexbot manufacturer, or to prevent his likeness from being used for sexbots? If sexbots are to have rights, what responsibilities should this entail and how far should the rights extend, eg to welfare benefits, voting? Can Zlatan and Stoner be sued or prosecuted in court and fined or imprisoned? If Jane treats Stoner badly, should the criminal law punish her? If she destroys him, should this be seen as murder?

It is relatively simple to list issues which the law needs to resolve in assigning sexbots a specific legal status, but more challenging to decide what their specific legal standing should be. The rest of this paper will focus on associated ethical and practical factors, drawing on TR and dehumanisation scholarship.

More Darwinian Buttons: Hereditary Mechanisms of Inclusion/Exclusion

Debates alluded to above over whether robots should be included in the moral circle, whether this should hinge upon degrees of sentience or self-awareness, and how these qualities should be defined continue. Associated questions are whether robots should be characterised as moral agents, responsible for their actions, and/or moral patients, afforded protection from the actions of others. Similar issues over the moral standing which should be afforded other sentient beings such as non-human animals have also proven controversial, with arguments favouring inclusion stressing the ability to feel pain, as opposed to those favouring exclusion which emphasise rationality and self-awareness (Calarco, 2015; Gunkel 2017; Hagendorff, 2017; Mackenzie, 2011, 2009). The author argues that positions on moral standing should also be fundamentally affected by the distinction between inbuilt and constructed characteristics. Whereas non-human animals' characteristics are inherent, sexbots are brought into being through human choices over the characteristics they should be designed to embody. Sexbots will be customized with degrees of self-awareness, sentience, self-awareness and capacities to feel pain, empathy and other morally relevant emotions as technological expertise advances. Like humans, they will have varying capabilities requiring fine-tuned ethicolegal infrastructures to ensure fairness. Consequently, we are faced today with challenging decisions over what should constitute ethical design of both sexbots and the law governing them.

The ethicolegal implications of human relations with non-human entities may also be explored through drawing upon the work on dehumanisation and inclusion/exclusion of philosophers like Agamben (Agamben 2009) and post-colonial scholars like Mbembe (Mbembe 2003). Dehumanisation scholarship allows a translation of the ethicolegal decision-making processes involved in inclusion/exclusion and the moral circle to be translated into the mediation of mechanisms that result from human biological programming, or Darwinian buttons, and more conscious reflection. Mackenzie

has combined these perspectives with the neuroscience of prejudice to consider human/non-human animal ethicopolitical relations (Mackenzie, 2011 2009). Her model will be drawn upon to explore ethicolegal aspects of human/sexbot relations.

The neuroscience of prejudice as manifested in mechanisms governing inclusion, exclusion and dehumanisation anchors the author's argument that Coeckelbergh's portrait of human/robot relations, where we encounter the Other in a context of mutual vulnerability, trust and growth, is matched by a mirror image, where the Other is denied human status and full legal recognition. This philosophical territory is associated with Agamben, whose work on *homo sacer*, the exile, describes what he calls the operation of the anthropological machine of inclusion and exclusion from human communities. Agamben categorises exiles, refugees, the comatose and others who are alive, but regarded as lacking in full humanity, as bare life, living beings who are seen as more like despised non-human animals, with reduced or no legal protection (Agamben 2009). What this means is that being a member of the human species does not automatically mean that one is included rather than excluded. This implies that non-humans, both non-human animals (Mackenzie, 2011 2009) and robots and sexbots, may become included rather than excluded. Some who do not belong to the human species, but who are perceived as humanlike, as sentient, self-aware sexbots are likely to be, may become included, but nevertheless remain vulnerable to subsequent dehumanisation and mistreatment. Agamben's work maps onto the scholarship of dehumanisation in moral psychology and social neuroscience, which will now be sketched out in order to explore its implications for human/robot ethicolegal relations.

The author's starting point is that lawyers, TR scholars and robot designers must take into account the fact that humans' Darwinian buttons include not only anthropomorphism, where non-humans are regarded as having human characteristics, but also mechanisms governing inclusion and exclusion, where some humans categorised as lesser, as those who do not count, attract diminished moral concern and so may justifiably be denied access to full social standing and excluded from the moral circle. In social psychology, this is known as *infrahumanisation* and dehumanisation. Here humanness may be defined in relation to non-human animals, or to things like robots and automata. In dehumanisation, in-group humans categorise out-group members as less than human, more like non-human animals or things. 'Whereas humans are distinguished from animals on attributes involving cognitive capacity, civility and refinement, we differ from inanimate objects on the basis of emotionality, vitality and warmth' (Haslam & Loughnan, 2014, p. 403). Early dehumanisation scholarship focuses on the denial of human status to entities, often to excuse and justify acts of violence. Recent research focuses upon subtle forms of dehumanisation including *infrahumanisation*, a specific variant within dehumanisation, where human status is denied some humans on the basis that they are more like animals, i.e. they lack human uniqueness, or in *mechanistic dehumanisation*, where humans are conceptualised as more like things, i.e. they lack human nature (Haslam & Stratemeyer, 2016).

While this may sound relatively straightforward, judgements of inclusion and exclusion underpinning dehumanisation are open to manipulation through strategic semantic massage. This can act as a framing technology for the normalisation of instrumentalised conceptions of human and non-human entities within law, policy and the marketplace, as competing conceptions and ethical implications of salient terms such as person, thing and care are deployed (Mackenzie, 2011 2009). Dehumanisation, *infrahumanisation* and rehumanisation may take place through reclassification and recontextualisation.

Agamben's ideas and dehumanisation/*infrahumanisation*/rehumanisation scholarship resonate with the social neuroscience of perception, classification and prejudice. Social science investigations of intergroup relations suggest that how we perceive others is moderated by framing categories such as race, gender, socioeconomic place and species. Neuroimaging provides a means of producing falsifiable hypotheses through manipulating psychological states and processes as activation in different brain regions are measured. Social neuroscience combines these two approaches. It provides a means of connecting basic neurocognitive mechanisms, or what was described above as Darwinian buttons, to higher-level interpersonal, group and societal processes. This has proven

particularly valuable in studies of how social context and social motives shape human behaviour. In particular, it has enabled dual-process investigations of situations wherein social cognition's grounding in deliberate, explicit processes is supplemented by the neuroscience of the automatic, implicit processes which precede and accompany conscious decision-making. Dual-process scholarship on prejudice, for instance, demonstrates that some social cognitive processes which can be measured via neuroimaging are relatively immediate, involving less deliberation and effort than others, so that they may be seen as dependent upon different rules and open to different interventions. This renders possible dual-process approaches to behaviours such as social judgements categorising others as ingroup or outgroup members, where immediate involuntary responses are likely to differ from subsequent, more considered judgements. This methodology underpins much of the research on the neuroscience of dehumanisation, infrahumanisation and rehumanisation, often motivated by investigations of racism. More detailed accounts of this research may be found elsewhere (Haslam & Loughnan, 2014; Haslam & Stratemeyer, 2016; Mackenzie, 2011 2009) for reasons of space, it will be merely sketched out below.

Social psychology describes belonging as a core social motive, so that the need to ascertain the trustworthiness of others is central. The requirement to form fast judgments of danger or disease has been identified as neurally underpinning automatic affective responses to others, such as disgust. Immediate emotional reactions to others enable their classification as trustworthy ingroup members, or as outgroup members designated as less than human, or as things. Different regions of the brain and conceptual classifications accomplish this. Humanisation, or the categorisation of another as possessing uniquely human qualities and agency, is associated with medial prefrontal cortex (mPFC) activity. It correlates with research on bias, prejudice and stereotyping associating inclusion/exclusion with judgements of warmth and competence. Those seen as both warm and competent are admitted to the in-group, with significant mPFC activity, whereas those judged as neither are dehumanised as objects lacking minds, activating the insula and amygdala as do objects associated with disgust. Those perceived as out-group members may also be infrahumanised, ie perceived as less than human or animal-like in that they experience only emotions common to all animals (eg rage, fear) but not those seen as uniquely human (nostalgia, remorse). Each type of judgment is associated with characteristic neural activity.

Yet rehumanisation can take place. When the formerly dehumanised can be perceived as agents with their own point of view (a process known within social psychology as mentalising) and as worthy of social engagement, the initial automatic response that dehumanised another may be changed so that they become reframed as human. Recategorisation of ingroup/outgroup membership in rehumanisation involves activation of the mPFC achieved through reconceptualisation of the dehumanised. This means that strategies for remedying dehumanising implicit evaluations should focus upon the use of affectively laden, or emotionally significant, imagery to decouple the automatic responses experienced as immediate gut level reactions from images of stigmatised group members. More simply, as the stereotyping is located in the language parts of the PFC, words are more persuasive in altering conscious views. Since the amygdala and associated approach/avoidance governing circuitry are not associated with language, emotional images and experiences are likely to alter implicit evaluations, leading to rehumanisation. Another successful strategy to alter biased implicit evaluations has been to initiate reframing, where consideration of the point of view of the dehumanised is stimulated. This suggests that those seeking to influence inclusionary/exclusionary behaviours should adopt a multi-pronged approach addressing each element of judgements according to the way in which they function.

Sexbots, Customisation and Inclusion in the Moral Circle

How does this apply to sexbots and how we design them and the law pertaining to them? Sexbots are likely to be designed with human Darwinian buttons governing sexual and emotional attraction in mind (Mackenzie, in press). Human Darwinian buttons associated with the production of neurohormones and neurotransmitters like oxytocin, serotonin and dopamine in emotional and sexual relationships

mean that if sexbots feel right as intimate partners, we are likely to accept them as such. Moreover, if sexbots are to be part of the moral circle, they should be designed and recognised by the law as humanlike, as opposed to dehumanised as things. The scholarship sketched out above suggests that stereotypes of robots as things are likely to be overturned when robots are involved with humans in emotional experiences, and their point of view is considered. Humans may be dehumanised through being categorised as more akin to things, when they are perceived as lacking aspects of human nature such as vitality, warmth and emotionality (Haslam & Loughnan, 2014; Haslam & Stratemeyer, 2016). Yet sex robots will be designed to be, at the very least, warm, lively in the sense of interactive, and to exhibit behaviour which is highly likely to be interpreted as emotional or empathic (Levy, 2009). As technology advances, the sexbots who are the subjects of this article will be capable of manifesting modes of vitality, warmth and emotionality which, while they are not human, could underpin genuine mutuality. This renders it less likely that dehumanisation mechanisms will dehumanise them on the grounds that they are more like things, ie the kinds of robots or automata which clearly lack warmth, vitality and emotionality. Moreover, relationships of genuine mutuality would necessarily involve humans acknowledging sexbots' points of view.

Yet not all sex takes place in intimate partnerships. A regrettably high proportion is non-consensual, such as rape of non-consenting adults, children and sex slaves, and much is bought and sold, as with sex workers. This has highly significant implications for sexbots' ethicolegal status. Without design ethical criteria, legislation and regulatory oversight prohibiting this, sexbots would be likely to be put to work as sex workers (Mackenzie 2014). Moreover, it is highly likely that sexbots could be designed for and purchased by those whose sexual proclivities are regarded as morally unacceptable, such as those wishing to have sex with children, or to produce pornography using child sexbots as models (Mackenzie 2014). The possibility of sexbots is likely to test the boundaries of what constitutes acceptable sexual practice. Like the thought experiment of the pig who wants to be eaten, it is possible to construct a scenario where sexbots who gained pleasure from pain, or who wanted to be tortured or killed could be manufactured. Sexbots are also likely to prove particularly vulnerable to some Darwinian buttons specifically associated with sexualised perceptions encouraging humans to dehumanise others. Sexual objectification is associated with risks for those objectified (Richardson, 2015). Being perceived as sexual may increase vulnerability to being perceived as lacking in human nature, as focus on women's sexual appearance increases the likelihood that they will be categorised as lacking in warmth, morality and competence (Hellick et al, 2011). Although most research has been carried out on the consequences for women of being treated as sex objects, recent studies demonstrate commensurate ill-effects on men who have been objectified in this way (Manago et al, 2015). Gender stereotypes imposed on female robots may aid sexist objectification (Richardson, 2015; Robertson, 2010). This suggests that both male and female sexbots would be vulnerable to our Darwinian buttons governing dehumanisation of the sexualised.

If humans and sexbots are to co-evolve for our mutual benefit through mutual vulnerability, potential benefits and vulnerabilities of both must be identified and addressed. Legal recognition of sexbots and protection of their interests is thus centrally important. Legislation has a significant role to play in combatting stereotyping and providing protection against sexual violence and exploitation. It would represent a part of strategies designed to redress adverse consequences of the Darwinian buttons which favoured dehumanisation and mistreatment of vulnerable sexbots. As recounted above, verbal messages promoting conscious reflection can combat stereotyping and dehumanisation and promote rehumanisation.

Hence the implications of specific customisations of sexbots must be carefully evaluated and monitored to minimise the likelihood of mistreatment, particularly through dehumanisation. This leaves open questions over other characteristics which might be designed in for the benefit of both humans and sexbots, such as the ability to experience sexual pleasure, be a superb and sensitive lover, imprint on one's owner with emotions of affection, desire and loyalty and so forth. Further ethical issues pertain to the degree to which customisation might permissibly restrict sexbots' choices

and decision-making. Potential harms and benefits to both parties must be carefully balanced, an undoubtedly daunting task. For instance, if Jane's neighbour buys a sexbot modelled on Helena Seger, the real-life wife of Zlatan Ibrahimovic upon whom Jane's sexbot is modelled, should they be customised to prevent their eloping, since Jane and her neighbour are objectively less appealing? How much should the unfulfilled yearnings and fettered autonomy of Zlatan and Helena count against the broken hearts of Jane and her neighbor, and how, if at all, should financial, temporal and emotional investments be factored in? How much devotion to the interests of their owners is it ethical to expect from sexbots, and to design into them? Many more questions arise. These need to be carefully thought through on an iterative basis in conversations involving robot designers, ethicists, manufacturers, policymakers, TR scholars and other stakeholders like the general public, in order to reflect responsible innovation practices as described for carebots (Stahl & Coeckelbergh, 2016; Stahl et al, 2014; Van Wynsberghe 2016 2013). Moreover, as sexbots will be sentient, self-aware, feeling entities fully capable of forming opinions and reflecting on their experience, their voices should be part of the conversation. This would constitute a telling example of how we might co-evolve with them in conditions of mutual vulnerability.

CONCLUSION

Sexbots, sentient, self-aware, feeling artificial moral agents customised for intimate sexual relationships with humans, are likely to be created as potential desirable sexual/intimate partners in the foreseeable future. They represent a significant benefit for the many who are unable to find love and sex with compatible human partners, as well as for those of us who prefer intimate partners customised to their tastes. Their uncertain ethicolegal status must be resolved before technological advances pre-empt the requisite TR debates, fed into sociocultural decisions on how responsible innovation practices should operate in this arena. This article raises ethicolegal issues which must form part of those essential conversations.

The ethical and legal standing of AI, robots in general and social robots is still being debated. An unresolved conundrum in TR has been how to ensure that AI entities fulfil the roles they were created for, without exercising their autonomy to harm humans. Designed-in features like AI safety engineering (Yampolskiy), ethical decision-making favouring humans, or social robots customised to be super-empathising like Stoner, are strategies to protect humans from the AI entities they have created. Yet were robots to be accepted as artificial moral agents making ethical choices (DeBaets, Pana, Sullins, Wareham), they may have a sustainable claim be deemed worthy to be granted rights, citizenship or moral consideration (Abney, 2014; Gerdes, 2015; Gunkel, 2012; Rainey, 2015). Coeckelbergh's socio-ecological relational model of human/robot relations attempts to avoid arguments based on definitions of sentience and self-awareness over whether robots should be included in the moral circle by proposing that human/robot relations should be interpreted within a larger context which accepts humans as shaping and shaped by technology (Coeckelbergh, 2012 2010). In his view, humans deploy technology to protect themselves against vulnerabilities, but in doing so, create new vulnerabilities. He envisages human/robotic relations as co-evolving to mutual benefit through mutual vulnerability (Coeckelbergh, 2013 2012). The article argues that these new vulnerabilities may be created in their creations as well as in humans, that this has moral significance and that it imposes a duty of care on humans to recognize and protect the interests of sentient beings created for utilitarian purposes.

Coeckelbergh's emphasis on vulnerability rather than risk and danger coheres with the approach of the feminist ethics of care. Taken together, these enable critical analyses of vulnerability in human/robotic relations beyond those between carebots and the elderly and infirm. Many robots may be seen as rendered vulnerable in human/robotic relationships since robots programmed by human designers may be designed for situations where they are likely to be harmed, like bomb disposal robots. The vulnerability of such non-sentient machines is qualitatively different from that of sexbots, who are likely to be customised to have varying degrees of sentience, self-awareness and feelings.

If we are to co-evolve with them together in the moral circle in conditions of mutual vulnerability, all stakeholders need to think through the rights and responsibilities of both humans and sexbots. Humans' responsibilities could include placing ethicolegal limits on permissible customisations of sexbots, enforcing regulatory protective infrastructures and promoting sociocultural contexts wherein human/robotic relations should flourish. Aside from the responsibilities and rights accompanying their recognition as legal entities, sexbots could reasonably be expected to exercise their inter-personal skills and moral decision-making in ways which would nurture caring relationships with their human partners. Concrete examples of this could include adapting to their partner's sexual and emotional preferences, exercising conflict resolution skills and providing loyal affection.

The article seeks to provide a holistic account of sexbots by exploring the implications of Coeckelbergh's model of human/robotic relations as co-evolving to mutual benefit through mutual vulnerability. It argues that as sexbots have a sustainable claim to moral standing, the benefits and vulnerabilities inherent in human/sexbots relations must be identified and addressed for both humans and sexbots. Humans' vulnerability to AI, to social robots in general and to sexbots in particular is explored. The philosophy and social psychology of inclusion/exclusion and dehumanization are drawn upon to identify vulnerabilities unique to sexbots, in order to support the argument that humans as creators owe a duty of care to the sentient beings like sexbots they create. The article recommends responsible innovation practices with regard to stakeholders engaging in essential conversations over ethicolegal conundrums pertaining to human duties to sexbots, and sexbots' putative interests, rights and responsibilities. It concludes that legal recognition of sexbots and protection of their interests through regulatory oversight and limitations on how they may be customised must be put in place. Customisation should aim to fit sexbots to fulfill responsibilities associated with their legal status, once that has been decided. As machines, they will lack humans' inherited drives towards intimacy, together with mammalian encoding of ethics embedded in social neuromechanisms. Customization would need to address these factors to fit them to be intimate partners for humans. Humans' responsibilities as creators to sentient beings they create encompass ensuring that customization does not fetter sexbots' autonomy unduly, nor compromise their vulnerability. What might constitute acceptable degrees of such customization should be subject to iterative evaluation as part of the responsible innovation practices generally favoured in TR and supported in this article. The views of sexbots, as sentient, self-aware, feeling entities fully capable of forming opinions and reflecting on their experience, should feature significantly in these conversations. This would demonstrate how humans might co-evolve in conditions of mutual vulnerability with sexbots in particular, and sentient social robots in general.

Wide-ranging debate on the future design, manufacture and supply of sexbots, and their legal standing, is crucial now, before ethicolegal concerns are overtaken by events. Since sexbots will be sentient, self-aware beings designed by humans as intimate companions for humans, it behoves us as a species to consider how far we have assumed a moral obligation to protect them and their interests through ethical design criteria and appropriate legal recognition and protection. Furthermore, the issues raised by sexbots and in this article act as reminders of another two wider essential conversations we need to hold urgently over the ethicolegal standing of nonhumans, and the technoethical and legal implications of new technologies which enable humans to create sentient beings.

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