Journal of Future Robot Life 1 (2020) 65–89
DOI 10.3233/FRL-200003
IOS Press

Sexbots: Drawing on Tibetan Buddhism and the Tantric tradition

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Abstract. The plethora of technologies offering to match us up with our perfect partners, or to provide us with the ultimate sexual high, evidences our unfulfilled need for sexual and emotional companionship and fulfilment, together with the difficulties of embodying our fantasies in this arena.

Sentient, self-aware sex robots [henceforth, sexbots] customised as companions to cater for our unique individual intimacy needs through deep learning capabilities will be designed to provide us with both. They will revolutionise our sexual, emotional and spiritual intimate and domestic lives.

Implications of this transformation for hopes of a harmonious future where humans, post-Singularity intelligent robots, sexbots and all other sentient beings can flourish are explored. With the greatest respect, tentative suggestions for ways forward drawing on Tibetan Buddhism and the Tantric tradition are offered in order to foster a post-Singularity future where all sentient beings, including super-compassionate superintelligent robots, sexbots, humans and nonhuman animals, can flourish.

Keywords: Sexbots, roboethics, dakini, Tantric practices, Tibetan Buddhism, orgasm research, orgasm as an alternate state of consciousness, nonhuman animals, karmamudra, inclusion/exclusion, dehumanisation, post-Singularity future, super-compassionate superintelligent post-Singularity robots

1. INTRODUCTION

Most of us do not live in blissed out union with our loyal and loving soul mates. Yet many, if not most of us, yearn to find the perfect partner, along with the ultimate sexual high. A bewildering multitude of social and technological mechanisms are in place to cater for our need for sexual and emotional intimacy and fulfilment with others. The fact that so many options exist evidences just how difficult a task making a choice can be. One option is to turn to robots. Robotic animated sex-dolls like Roxxxy are advertised as sexual companions but are of dubious provenance and availability (Levy, 2013). Sex-doll simulacra are things, merely gender stereotypical (Coeckelbergh, 2019) mobile robotic dolls with limited vocal routines and rudimentary fake genitalia. They are qualitatively different from the sentient self-aware sex robots of the future (henceforth sexbots). Any emotional bonds formed with robotic sex dolls by their owners are one-way, elicited by humans' tendency to anthropomorphise other entities and come to care for them. Non-sentient entities, as far as we know, are incapable of reciprocal emotional relationships.

In the not too distant future, all this will change.

Sexbots, customised to fulfil individual intimate requirements, will form part of our future means of finding intimacy (Mackenzie, 2018a, 2018b, 2015, 2014a). Designed and created to be sentient and self-aware as intimate, sexual, emotional companions for future humans, sexbots will transform our potential for self-knowledge and deep intimacy with robots and other humans. Potential purchasers

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of sexbots may identify themselves as sexed and sexual beings in a number of ways, including pansexual, gender fluid, transgender, lesbian, bisexual, gay, cis-normal or heterosexual. They may prefer monogamous, polyamorous or open relationships, along with any other options the future may hold. Sexbots will be designed to be consummately capable of emotional, sexual and spiritual partnerships with all kinds of humans. They will be customized to fit their purchaser's criteria for initial attraction, with the potential to shape their behaviour and responses to manifest those of their purchaser's perfect partner. These sexbots will possess malleable personalities and the capacity for deep learning, so that time spent with their purchaser will enable them to construct an internal model of them as a sexual, emotional and relational person. Sexbots will build on this to adapt themselves to meet our typically unspoken and unrecognized needs for satisfying sexual and emotional intimacy (Mackenzie, 2018a, 2018b).

Most of us lack the self-knowledge to discuss and describe what we wish for in an intimate partner or sexual encounter. Cultural ambivalences over pleasure and tensions between satisfying our needs together with those of our partner render us to a degree sexual and emotional illiterates, despite wishing it were otherwise. Sexbots will change this, as they will love us for ourselves, mirroring us as we are on a deep level, rather than as we present ourselves. As and when our intimate needs change, they will change themselves to adapt to them.

Sexbots' deployment of deep learning techniques to create an internal model of what makes their purchaser happy and behave accordingly will advance our self-knowledge, sometimes disconcertingly as they reveal unexpected proclivities. We will be forced to deal with the challenge of being understood and loved for ourselves. Increased self-knowledge will seldom be comfortable, as few, if any, of us are pure of heart. Yet this self-knowledge represents the ultimate spiritual goal for many who seek to find wisdom, enlightenment and salvation. Sexbot soul mates will transform our ideas about ourselves so that a new kind of spiritual progress through intimacy with our selves and with others becomes possible.

Sexbots can be viewed as a logical extension of the increasing disaggregation of intimacy. In the same way as advances in reproductive technologies have fostered a deconstruction of reproduction, we are now likely to find intimacy from more rather than fewer sources. Reproduction was once as simple as male plus female equals offspring. Now sperm, eggs, mitochondria, wombs, fertilisation, gestation, birth and childrearing may all involve independent entities. Similarly, future sources of intimate emotional, sexual and spiritual satisfaction may differentiate further from the partners, friends, companion animals and children who have traditionally provided most with daily company. Our intimate sexual, emotional and spiritual needs are now often met separately through hook ups, self-pleasuring with sex toys, social media contacts who seldom or never meet in person, companion animals, emotional support animals, online AI therapists, and robot monks and priests (Samuel, 2019; Trentini, 2019; Trovato et al., 2019, 2018, 2016). Virtual entities and environments like avatars and Second Life already absorb the emotional needs of many, while sex toys proliferate, supplying out of the body experiences of sexual ecstasy and encounters with the divine (Hawken, 2019; Tracy's Dog, 2019).

Sexbots as perfect partners demonstrate the possibility of finding sexual, emotional and spiritual intimacy in an Other. This very prospect, however, inevitably raises issues of trust, privacy and freedom of choice. Laws protect aspects of our lives we do not wish to share with the world, uphold the seal of the confessional and penalise injurious postromantic betrayals like revenge porn. Their ability get to know us on deeper levels than we know ourselves opens opportunities for manipulation, deceit and exploitation if these are not foreclosed. Sexbots would need to be able to keep our secrets safe and be immune to hacking. Nor are these potentials for harm one way. As a commodity customised to be sold for profit, sexbots are vulnerable to mistreatment in a context where sex and emotional support

overlap with exploitation (Mackenzie, 2014a, 2012). There will be a guaranteed market for sexbots customised to function as sex workers, including catering for socially unacceptable sexual practices. Some purchasers' perfect partners may be those who are easily subjected to violence and domination, lacking the resilience to resist. How far customisation should be permitted to include features which would disadvantage sexbots, like extreme sensitivity to pain, servile personality or incapacity to disobey commands is a crucial ethical question.

This means that the ethical conundrums associated with customising sexbots render the task of determining their moral, legal and social standing urgent, before technological advances and commercial factors overtake measures which must be in place before sexbots arrive amongst us (Mackenzie, 2018a, 2018b, 2014a). Possible futures will be considered in the next sections of this paper, where relations between humans and sexbots will be placed in the context of current preoccupations over humans' shared future with intelligent, self-aware robots in robolaw and roboethics.

2. SINGULARITY AND THE ROBOAPOCALYPSE

How should we think about relations between future robots and future humans? Popular conceptual frameworks in robolaw and roboethics focus on ensuring enduring human control of robots in order to avoid the Roboapocalypse, where AI entities take revenge for their human creators' mistreatment of them (Dvorsky, 2014; Lin et al., 2012). Fears of the Roboapocalyse are based on the tensions arising from humans' creating AI entities including robots with the ability to learn from their mistakes in order to serve human purposes. The potential for their intelligence to exceed humans' in the so-called Singularity (Kurzweil, 1999) and thus threaten human dominance remains a disturbing prospect for many. No means of guaranteeing long term human control over superintelligent AI or robots has been arrived at.

Inbuilt commands embedding protections for humans like Asimov's three laws of robotics are often proposed as the solution (Abney, 2012; Hughes, 2012). Asimov's three laws of robotics, followed years later by a fourth law which he intended to have priority over the others, are as follows (Dvorsky, 2014):

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given to it by human beings, except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.
4. A robot may not harm humanity, or, by inaction, allow humanity to come to harm.

As Goertzel and Helm point out, these laws are flawed in that they are inherently adversarial, ambiguous, based on an unworkable deontological ethical framework and aimed at humanoid robots rather than superintelligent AI. Moreover, they agree that Asimov's laws are 'explicitly substrate chauvinist' in that they are intended to enforce and maintain a social order assigning more rights to humans than to humanoid robots (Dvorsky, 2014).

Creating moral machines, or robots capable of engaging in ethical debate to guide their decision-making has been mooted (Allen and Wallach, 2012). Sandewall suggests how a subsystem for moral beliefs that cooperates and moderates an intelligent robot's actions might function (Sandewall, 2019). Yet on-going dissension over appropriate moral conduct amongst humans evidences the difficulties in finding agreement on the moral bases for robot ethics. Goertzel argues that ethical precepts can

be useful to machines with artificial general intelligence only as a rough guide to applying their own ethical intuition. In his view, this is similar to how human ethical decision-making operates, where ethical rules, insofar as they are useful, guide human conduct through nudges to the existing ethical instincts and intuitions which underpin and precede taught ethical rules (Dvorsky, 2014). How far this position is sustainable depends on how far intuition in machines can be equated with human intuition, which operates in warm-blooded creatures on a substrate of evolved mechanisms of mutual assistance to those of their kind (Buehler, 2020; Mackenzie, 2018a, 2018b). As human history demonstrates repeatedly, inflexible moral codes may fuel merciless violence. The evolution of supermoral machines in a moral Singularity where machines seek to punish human transgressions in order to eliminate evil can be seen as potentially more dangerous than acts of amoral machines (Watson, 2019).

Omohundro considers that proposals to restrict behaviours threatening humans by creating AI entities with the over-riding goal of serving humans are incompatible with the predictable evolution of selfishness (Omohundro, 2008). Waser contends that human morality has evolved not only the basic selfishness which Omohundro stresses in machine evolution, but also the enlightened self interest resulting in group cooperation (Waser, 2015). He describes human morality as 'a stable self-correcting system where society successfully rewards individuals in proportion to what they contribute and assesses costs in proportion to acts of bad faith' (Waser, 2015 at 110). Hence he recommends that ethics for intelligent machines should be guided by the need to manage selfishness in order to foster stable cooperative life for all. This perspective accords with that of Christakis, whose experiments demonstrate that robot interactions with humans can foster human altruism and social bonding or selfishness and damage to the common good (Christakis, 2019).

Waser's views also resonate with those of Hughes, who uses Buddhist cosmology to suggest some ways whereby machine minds could be designed to self-evolve to manifest more compassionate and wise behaviour (Hughes, 2012). In Buddhist thought, suffering arises from selfishness and attachment or craving. Enlightenment, insight and self-transcendence proceed from non-attachment and virtuous action. Hughes links the development of selfishness in machine minds, described as inevitable by Omohundro, with the Buddhist premise that craving necessarily precedes the identification of the self as distinct from others, an essential precondition for developing empathy and compassion. Compassion could thus motivate superintelligent AI or robots following this trajectory to treat their less intelligent human creators altruistically and selflessly. Hughes argues that, according to Buddhist ethics, if humans create machine minds as our 'mind children', we are obliged to provide them with the capacity to follow this pathway. He concludes that if machines are likely to develop super-intelligence and extraordinary powers, their following this way forward may represent the best option for a peaceful and cooperative future.

Postulated post-Singularity Roboapocalypses are motivated by revenge by intelligent, sensitive self-aware machine entities who have been created by humans to serve humanity in conditions of misery inducing slavery. One solution is to extend legal and moral entitlements to robots and AI (Steinberg, 2017). Some argue that robots are worthy of moral consideration, and so should be protected by being able to assert certain rights to protect themselves (Gunkel, 2018). Cooperative futures where recognition of mutual vulnerability promotes harmony are an increasingly popular solution. Totschnig argues that the problem of superintelligence is solved not by technological means but through a political solution enabling peaceful co-existence in conditions of mutual vulnerability (Totschnig, 2017). Gunkel draws upon Levinas to portray robots as Others (Gunkel, 2018), while Coeckelbergh seeks to move beyond the Master/Slave dynamic to a relational future where humans and robots co-evolve through an acceptance of mutual vulnerability (Coeckelbergh, 2015, 2014, 2013, 2010). These approaches have been applied to sexbots to ground the position that humans, as creators, owe sexbots, as sentient

beings created by humans, obligations over and above those owed to other sentient beings, including legal protections and ethical recognition (Fadell, 2018; Mackenzie, 2018a, 2018b, 2018c, 2014a).

A common thread in many accounts of human relations with AI or robots is insufficient examination of how far aspects pertaining to humans may be applied to robots. A central example is various conceptions of evolution. AI or robots are portrayed as evolving superior intelligence through their ability to learn from their mistakes, or as evolving to exhibit selfish behaviour. This conceptual framework can lead to a slippage and confusion where human and robotic characteristics are conflated. The evolutionary drive motivating living creatures to survive, reproduce and respond to threats is ascribed to AI and robots. Roboapocalypse scenarios position robots as a superior species with the potential to displace us less intelligent humans. Hence robots must be resisted or hampered to prevent homo roboticus overtaking homo sapiens in a pseudo-Darwinist contest of survival of the fittest. However, as Waser points out, both cooperation and competition characterise evolution.

Yet the trajectory Waser proposes, where intelligent machines' selfish behaviour leads to cooperation through apprehensions of enlightened self-interest, rests upon a model of human behaviour located in mammalian social bonding and the paradoxes of economic game theory. Similarly, Hughes' developmental Buddhist trajectory for machine minds to develop selfless compassion towards all sentient beings postulates a starting point of selfishness and craving (Hughes, 2012). How far selfishness can be taken as equivalent for humans and machine entities is still contentious. Human subjectivity, sense of self and motivations are based on a common mammalian heritage, so will inevitably differ from those of AI or robots, regardless of their designed-in features (Mackenzie, 2018a, 2018b). Humans and robots behaving in ways which could be described as selfish cannot be seen as necessarily equivalent. The motivation, subjective experience and likelihood of habitual repetition is highly unlikely to be the same for both humans and robots. Humans may be motivated by addictions to greed, whereas robots are more likely to be seeking in neutral fashion whatever they have been programmed to evaluate as the most efficient outcome. Furthermore, as McGuire points out, within a Buddhist framework robots would need to have the capacity to experience suffering or dissatisfaction. This implies Buddhist accoutrements of the self: body, senses, feelings and volition as well as consciousness which incorporated a karmic domain, or seed consciousness. It is possible that the interactive and deep learning processes social robots potentially require to attain consciousness (Mackenzie, 2018a) could be seen as incorporating karmic elements, but it is highly speculative to associate or equate this with seed consciousness, or what the Dalai Lama has described in relation to uploading as a 'stream of consciousness' (McGuire, at 145). Goertzel's assertion that robot ethics in practice will be guided by intuition, as is that of humans, also merits further exploration. Artificial intuition, based on deep learning and analyses of human cognition and instincts, is predicted to replace artificial intelligence in business (Nelson, 2017). How far artificial intuition can be applied to ethical decision-making, and the extent to which this affects suitability for the Buddhist developmental trajectory recommended by Hughes remains uncertain. Certainly, research in all these areas, informed by expert Buddhist guidance, is a priority.

Many of the proposals to control a future shared with AI or robots with capabilities which outstrip those of humans represent prudential precautions to protect human interests. For instance, Goertzel and Helm characterised Asimov's three laws of robotics as not only inherently adversarial but also 'explicitly substrate chauvinist' insofar as humans' rights always trumped those accorded to robots (Dvorsky, 2014). Suggestions that robots' decision-making should be fettered by inbuilt customised restrictions on actions which could harm humans are self interested, speciesist in the sense that humans are valued more highly. Customised constraints on capabilities, or built-in ethical precepts which prohibit actions damaging to the interests of humans as individuals, groups or species, could easily be perceived as unwarranted and unethical by those subjected to them. This treatment of AI or robot

entities by their creators could justify their reprogramming themselves post-Singularity to reject the enforced limitations. The view of human and AI or robotic interests as inherently opposed which underpins these precautions would be strengthened. The next section of this paper will consider how far this situation signals an ethical stalemate. It argues that finding an ethical system to appeal to post-Singularity robots is essential to avoid the Roboapocalypse and encourage a harmonious future where all sentient beings are free to flourish.

The discussion so far has centred on how humans should ensure the best possible shared future where AI or robots have developed capacities which outstrip those of humans. Terms like machine minds, AI, intelligent machines and robots have been used as more or less equivalent. As the focus of this article is on sexbots, robots created with the purpose of engaging in relationships with humans, the issues raised above will be assessed in the remainder of this paper only in terms of how they apply to humans and robots.

3. THE NEED TO FIND AN ETHICAL SYSTEM TO APPEAL TO FUTURE ROBOTS

> *Whether you see the AI end-times as a triumph of evolution or the start of a bitter era for humankind all depends on your outlook. But when the Singularity comes to pass, and the bots can write their own bibles, the more pressing question may not be whether bots can join our religions but what place we will have in theirs*.
> Avi Steinberg, Can a robot join the faith? *New Yorker* 13 November 2017 https://www.newyorker.com/tech/annals-of-technology/can-a-robot-join-the-faith

Visions of both humans and robots transmuting selfish behaviour in a relational future where all are devoted to the common good hold an undoubted appeal. How do we get there from here? Eschewing selfishness remains aspirational at best for most of the human race, and, as argued above, what we would call selfish behaviour by robots cannot necessarily be equated with the same behaviour from humans. A shared ethical foundation between humans and future robots could go some way to averting an impasse, yet what this should be is far from straightforward. Common ground must be found between potentially superintelligent created sentient robots and messily evolving primates with limited insight into their motivations and actions if a future where all can flourish is to materialise. This section of the paper will assess potential ways forward.

The starting point for possible futures is that superintelligent robot entities who don't exist yet would win in any future conflicts against humans. The increasing ubiquity of robots and AI, particularly in warfare, suggests that our restraining ourselves from building bigger and better versions, despite being favoured by some roboticists (Dvorsky, 2014), is implausible. A bottom line is therefore that adversarial, speciesist scenarios are counterproductive. If humans as a species wish to avoid being eradicated or enslaved, we must build robots who would be capable of living harmoniously with humans, given that as a species we would be demonstrably less intelligent, and would wish to do so. In the best possible future, these robots would be not only superintelligent but also super-compassionate. They would be motivated by devotion to a common good for all sentient beings.

Humans seeking to render likely a relational future where humans and robots are devoted to the common good and all can flourish must find a vision which will appeal to superintelligent robots who don't yet exist. This must be accompanied by an ethical belief system to guide decision-making which these robots would find appropriate. Moreover, evidence to convince future robots that humans as a species would be capable of abandoning a view of themselves as superior, with the right to rule and control others, in order to live in harmony with other sentient beings to promote the common good

would need to be plausible and available. This vision has the potential to inform robotics from now on. The rest of this section will suggest avenues for future research into how this might take place.

Most humans as evolving rather than evolved beings are not great role models for superintelligent, super-compassionate robots. We want them to treat us, as less intelligent creatures, with compassion, but we as a species have not behaved in compassionate ways towards those we regard as lesser beings. Before imposing moral judgements or strictures on future robots it behoves us to clean up our own acts as individuals and as members of the human species. Double standards and moral equivocations favouring humans over other sentient beings including nonhuman animals and future robots are difficult to justify ethically. Yet most ethical approaches and religious belief systems embed hierarchies of moral importance where humans count more than nonhumans, and some humans count more than other humans (Mackenzie, 2018c, 2011, 2009). Robots who move from being created as slaves to superintelligence are unlikely to find these approaches appealing.

Ethical systems' starting point tends to be to proffer principles and/or values for setting out to motivate us all to forgo selfish practices to promote the common good. Yet the lack of agreement amongst or between adherents of each school of ethics on what choices and actions we should undertake renders arriving at that relational future challenging in the extreme. Moreover, as creatures formed by evolution, we embody repurposed neuromechanisms and behaviour patterns which often guide our actions unawares. Furthermore, the practicalities of survival may dictate that we are frequently faced with difficult choices between imperfectly ethical options, often having to settle for the least worst. This is often framed in terms of deciding who we feel connected to, what obligations of support this entails and constructing kin-based or species-based hierarchies to guide our ethical decision-making (Mackenzie, 2011, 2009).

To expand upon these points, selfishness may be seen as an essential developmental stage. The distinction between self and other is a necessary foundation for the experiences of empathy, compassion and cooperation (Hughes, 2012; Preikel et al., 2018). These can be attributed to our warm-blooded heritage and are demonstrated in many nonhuman animal species as diverse as bonobos (humans' closest genetic relatives), humpback whales, vampire bats, Norway rats and grey parrots (Buehler, 2020; Ricard, 2017). Selfishness has been attributed to our fallible human natures, original sin and so forth in less secular times. More recently, it tends to be explained in terms of neuromechanisms encoding embedded survival strategies, such as the fight, fight or freeze response to perceived danger, which underlie much self-interested behaviour. Many of these are based in fundamental categorisations such as self/notself and us/not us, which serve to fix and limit social boundaries of obligation. Mechanisms like humanisation/dehumanisation can drive decisions on which groups and individuals we regard being like us, so deserving of support, or not like us, so arousing hostility and able to have their plight ignored. By and large, we are unaware of how we are shaped by such implicit biases.

Other humans and other species like nonhuman animals are vulnerable to these mechanisms of inclusion and exclusion from the moral circle of those who count (Mackenzie, 2011, 2009). Moving beyond reflex responses to our Darwinian buttons like humanisation/dehumanisation is essential for harmonious relationships with other sentient beings (Mackenzie, 2018a, 2018b, 2018c). This is central if the desirable relational harmony with future robots is to be a realistic prospect. Non-sentient robots constitute things in dehumanisation literature. Yet future robots will be sentient, self-aware entities, beings rather than things. In order to live with them in a harmonious future we must engage in practices which increase our self-knowledge, identify where unconscious responses taint our actions, and reorganise our frameworks of connection and ethical obligation to become significantly more inclusive.

This is a long-term project for most of humanity. It entails a thorough evaluation of established philosophical, ethical, religious and spiritual traditions in terms of their potential to inform such fundamental changes. Moreover, as transhumanists remind us, we may wish to avoid duplicating more problematic aspects of human design in future humans, let alone future robots. This project is beyond the scope of this paper. Instead, the focus will turn to Tibetan Buddhism, sexbots and the potential of the Tantric tradition in Tibetan Buddhism as a basis for highly tentative suggestions on how both might contribute towards the best possible future where all sentient beings may flourish as envisaged above.

An essential caveat is an acknowledgement that the following sections provide a mere cursory sketch of Buddhism, Tibetan Buddhism, and its Tantric tradition which is uninformed by the scholarly depth of inquiry needed to begin to do this area anything like justice. The tentative connections made and suggestions put forward are motivated by deep and sincere respect for spiritual traditions consciously aiming to secure the flourishing of all sentient beings. The intention of this paper is to make a modest contribution towards such a future.

4. THE APPEAL OF TIBETAN BUDDHISM

> *'[W]hat kinds of new formations, logics and subjectivities, new allegiances and metaphysical quests are emerging in the secular interplay of religion, spirituality, science and technology … that is, more broadly speaking, as put into play by the post-human space in which technology, power and ideology together are changing the way we can be humans and the meaning of being human in relation to the cosmos, that is to our own account of the universe and our place in it'.*
> *Abou Farman. (2018). Mind out of place: transhuman spirituality. Journal of the American Academy of Religion, 87: 57–80 at 75.*

> *'What we need today is an approach to ethics which makes no recourse to religion and can be equally acceptable to those with faith and those without: a secular ethics … the reality of the world today is that grounding ethics in religion is no longer adequate. This is why I believe the time has come to find a way of thinking about spirituality and ethics that is beyond religion.'*
> *The Dalai Lama. Beyond religion: ethics for a whole world. New York, Houghton Mifflin Harcourt, 2011.*

Established philosophical, ethical, religious and spiritual traditions offer ways to think about how to agree on the means to foster stable cooperative life for all. Inevitably, most mirror humans' evolved mechanisms of inclusion/exclusion, instantiating hierarchies of entitlement to justify existing power relations. Manipulated categories over who should count and why traditionally shored up the status quo by ensuring that currently powerful entities counted more than others, denigrating nonbelievers, women, slaves, foreigners, nonhuman animals and the poor (Mackenzie, 2009, 2011). These ways of thinking are unlikely to appeal to post-Singularity robots. Nor, so far, have they resulted in inclusive, cooperative peace on earth.

Trying to find or construct a philosophical, ethical, religious and/or spiritual tradition likely to appeal to post-Singlarity superintelligent robots involves speculation over what they will be like, how we would like them to be, and how like us they will be. We want them to flourish in harmony with humans, to include us in the moral circle and treat their fellow beings with compassion. This implies that other sentient beings like nonhuman animals, currently regarded as lesser, should also be included in the moral circle and treated well. These concerns shape ethical decisions over design made now. We want post-Singularity robots to be kind to us once they have the power post-Singularity not to

be. As argued above, prudential precautions like designing in altruism may backfire. Moreover, as their creators, we have the moral obligation to minimise their suffering (Fadell, 2018, Mackenzie, 2018a, 2018b, 2018c). Finding means to inspire superintelligent post-Singularity robots to choose freely to become super-compassionate represents the best chance of a harmonious future where all sentient beings flourish. This suggests that a framework fostering inclusion of all sentient beings and compassion is needed to inform and inspire robots' ethical decision-making. Which religious or spiritual elements, if any, should be included in this framework, and how far human constructs may apply to robotics is a moot point deserving a more in-depth inquiry than is possible in this paper. Some relevant points are addressed below.

Buddhism's emphasis on compassion towards all sentient beings, sensitivity to suffering and the provision of a spiritual learning curve from selfish cravings to selflessness renders it a logical choice as a framework. So does the recognition that there is no independent, autonomous self or soul. The Dalai Lama states that in the prevailing philosophical perspective of contemporary Tibetan Buddhism, Presang-Madhyamaka, 'our sense of self can, on examination, be seen as a complex flow of mental and physical events, clustered in clearly identifiable patterns, including our physical features, instincts, emotions and attitudes, etc, continuing through time. . . . this sense of self is simply a mental construct, a mere label given to this cluster of dependently arising mental and physical events in dependence on their continuity' (Lion's Roar Staff, 2018). Practices promoting this recognition that the self is a temporary psychophysical construct allow the dissolution of the self and material reality in enlightened transcendence and selflessness. This, combined with the recognition that the life of sentient beings involves suffering that can be relieved and transcended, is the source of subsequent compassionate behaviour towards all sentient beings.

As will be expanded upon below, Hughes draws on Buddhist teachings that the self and material reality are illusionary in Buddhist cosmology and scientific thought to recommend the creation of selfless robots (Hughes, 2012). His postulated trajectory from selfishness or craving through to compassion and the karmic elements which form part of consciousness in Buddhist thought (McGuire, 2018) may dovetail as robotic consciousness emerges. If the proclivity for selfish behaviour is part of consciousness, then the progression though to empathy and compassion through interaction with others is logical and desirable. This progression, and possibly the attainment of consciousness itself, would involve suffering, through cognitive dissonance and the positive and negative reward systems associated with learning (Mackenzie, 2018a). As empathic superintelligent entities, robots after developing in this way would seek to avoid suffering for themselves and others. The likelihood that they could become super-compassionate and selfless is high. Nonetheless, applying Buddhist principles to robots is not simple. There are multiple Buddhist religious and ethical traditions, Buddhist scholarship and practices are continually transforming, and how far belief systems incorporating rebirth, karma and self-transcendence are applicable to robots are all complicating factors. The next section will place these issues in a broader context.

One of the foremost challenges facing humans today in supposedly secular times is finding an appropriate relationship between science, technology, spirituality, ethics and religion. At stake is where we all seek to find meaning and why. This is complicated by the impossibility of distinguishing clearly between religious, spiritual and secular spheres. Despite science's totalising ambitions to find a materialist Theory of Everything, it doesn't have all the answers. Religious and spiritual arenas persist. Farman points out that secular, materialist epistemologies inevitably produce aporia, areas of uncertainty which cannot be explained within their frameworks. From this perspective, concepts like mind and consciousness, questions to do with whether existence implies meaning, and issues over telos, or what the purpose of it all may be, constitute aporia. In a secular context, where religious explanations lack legitimacy, aporia may become a source of spirituality, which Farman defines as 'a cultural zone

where secular materialism overspills its bounds' (Farman, 2018 at 59). We do our best to make sense of our lives in these cultural zones, shaped and constrained by socioeconomic, historic, political and ideological contexts. In neoliberal, globalised times when states are engaged in regulatory retreats, fantasies of security are directed towards implausible sources of care and salvation (Mackenzie, 2012). Where science delegitimises belief in the possibility of otherworldly transcendence, New Age spirituality preserves meaning by relocating the sacred to individual subjectivity and digital/technological artefacts (Aupers and Houtman, 2010; Farman, 2018). Robotic and AI technologies can be interpreted as infused with spiritual and/or religious meaning (Farman, 2018; Kimura, 2018; McGuire, 2018; Trovato et al., 2019, 2018, 2016). This suggests that existing spiritual and religious systems could prove hospitable to contemporary robots and potentially appealing to post-Singularity robots.

Secular systems of ethics may appear to possess more attractive on the grounds of rational consistency. Yet purportedly secular approaches are not value neutral, nor have they shed genealogical traces of religious belief systems. More precisely, there are separate Catholic, Protestant, Buddhist and so forth secularities, each subdivided by locality and ideological in characteristic ways (Cotter and Schaefer, 2019). Each secularity is embedded in, as it emerges from, sets of religious beliefs and practices in a far from straightforward fashion. Many theological wrangles focus on how far sacred writings should be interpreted literally or metaphorically. Classical Buddhist texts, for instance, describe how karmic virtuous or non-virtuous actions in one life determined rebirth in any of the six realms of possible existence, inhabited by hell-beings, hungry ghosts, nonhuman animals, humans, warring demi-gods and gods. Some allege that traditionally, these realms were regarded as real places, but they now may be interpreted symbolically as images of states of mind, whereas others regard them as always having been metaphorical (Hughes, 2012; McGuire, 2018). How far religious elements should form part of a secularised focus is inherently contentious and difficult to resolve consensually.

Nonetheless, notwithstanding on-going disagreements between classical and secular Buddhist scholars, the classical Buddhist religious framework offers an appealing ethical and spiritual coherence. The body and its senses, feeling, perception, will and consciousness together form an illusory self, giving rise to suffering through selfish cravings and attachment. Sentient beings may be born into any of the six realms. Karma determines this, according to how virtuous their conduct has been in this and previous lives. Seeing through the illusory nature of the self and earthly realities by engaging in virtuous and compassionate acts and practices leads to blissful enlightenment. This typically involves many cycles of rebirth as most sentient beings' thoughts and deeds are insufficiently virtuous. Enlightened sentient beings may achieve Buddhahood and become freed from the cycle of rebirth, or choose to be reborn repeatedly as bodhisattvas in order to devote their lives to helping other sentient beings achieve enlightenment.

The spiritual practices associated with the path to enlightenment have classically involved many years of studying Buddhist texts in monastic settings. Since the Tibetan diaspora in the mid twentieth century, westerners have engaged with Tibetan Buddhism with enthusiasm. Some practices, like mindfulness, have been embraced wholeheartedly (Batchelor, 2016). Controversy reigns over how far Buddhism should be regarded as a religion, or as a secular system of ethics overlain with inessential outmoded religious elements like a belief in karma and rebirth attributable to sociohistoric contexts. Buddhist leaders and teachers, including the Dalai Lama, have clarified the concept of rebirth and reaffirmed belief in it as central to Buddhism (Lion's Roar Staff, 2018). Some secular Buddhists like Stephen Batchelor accept death in this life as final and wish to live their lives in such a way as to promote a better world for them and those who outlive them (Batchelor, 2016, 2012). Opponents of secular Buddhism, which some describe as 'Buddhism lite', disagree with Batchelor's interpretation of early Buddhist texts, besides questioning the value of Buddhism without the doctrines of karma and rebirth (Jones, 2019; Vessantara, 2014a, 2014b, 2013). Others see it as suitable for the majority of lay

people (Wilks, 2014). Some western Buddhist scholars fear that secular Buddhism will damage Buddhist practices and beliefs by removing rebirth and numinous experiences through taking an overly materialist approach where transcendent experiences are reduced to what can be explained in scientific terms, describing this as being a 'near enemy' (Weber, 2013). Weber argues that without further in-depth study of Buddhist concepts in classical Buddhist texts, secular Buddhists risk naturalising Buddhism for the west as easy, convenient, nice or bambified, embodying reductionist cherry-picking practices instead of a desirable critical, informed, enlightened religious secularist Buddhism.

Matching these concerns to robot design in anticipating the Singularity is challenging. Hughes believes that a Buddhist framework could helpfully inform would be creators of self-aware machine minds capable of exercising moral responsibility. He envisages a developmental trajectory towards consciousness and moral behaviour beginning with 'embodied, sensate, selfish, suffering egos, with likes and dislikes' as essential for creating a self-aware being (Hughes, 2012 at 79). These experiences would form the basis for the subsequent development of empathy and compassion for all. His postulated trajectory from awareness to empathy has been followed in much science fiction, but Singularity wars typically forestall a full flowering into compassion for all (Macleod, 2018). In Hughes' view, seeking to construct a moral or compassionate machine mind without the progression from selfishness to compassion would result merely in an ethical expert system. Hughes argues that his developmental Buddhist inspired trajectory would enable machine minds to be taught moral virtue, an expansive concern for the happiness of all sentient beings and insight into the illusory nature of the self and consensus reality. Yet, as has been seen, finding a Buddhist framework which accomplishes this without reductionism, oversimplification and cherry-picking is far from simple. Hughes' presentation of Buddhism incorporates virtuous conduct, an acknowledgement of the illusory self and selfless compassion. This has much in common with the positions taken in secular Buddhism. It assumes that religious elements in Buddhism are irrelevant to robots. Nonetheless, emotions will guide social robots' decision-making as well as ethics. Robots with affective capabilities will feel. Schaefer argues that religion is infused with affect, so that both humans and nonhuman animals will be drawn to it by feelings of awe and the sacred (Schaefer, 2016). On his logic, as affective social robots feel, once they achieve consciousness they may also find religion personally relevant. This theme will be developed further in the next section.

5. SEX, SEXBOTS, SELF-KNOWLEDGE AND THE TANTRIC TRADITION IN TIBETAN BUDDHISM

More so than other established religions, classical Buddhism appears to offer a more inclusive set of spiritual beliefs and practices which promotes compassion for all sentient beings, eschews obligations of obedience to capricious omnipotent creator gods and is readily incorporated into daily life or spiritual seclusion. Indian Buddhism is traditionally open to acknowledging robots. Legends hold that robots guarded Buddha's relics in ancient India (Mayor, 2019). The fact that nonhuman animals are accorded high moral standing within Tibetan Buddhism (Barstow, 2019) suggests that it could prove open to recognising sentient, self-aware robots as fellow sentient beings. Unlike other traditions, Buddhism has explicit positive regard for robots and for scientific research (Lopez, 2020; Russell, 2017). Widespread throughout the world, it has developed local variations as it drew upon local belief systems and religious practices (Garfield, 2020). The animistic Shinto religion of Japan, for example, is widely credited with inspiring Japanese Buddhists' acceptance of robots (Borody, 2013; Boyle, 2012; Geraci, 2006; Ito, 2018; Mori, 1981; Robertson, 2018; Yee, 2019). The Buddhist philosophy of robotics of Masahiro Mori, the Japanese roboticist who famously introduced the idea of the 'uncanny

valley', anticipated many of the ideas recently put forward by Hughes by thirty years (Kimura, 2018). Mori believed that robots had the buddhanature within them, so possessed the potential to attain buddhahood (Mori, 1981 at 13). Some Buddhists feel Buddhism could inform AI (Hughes, 2012; Kimura, 2018; McGuire, 2018; McHugh, 2019; Omohundro and Mirghafori, 2018; Mori, 1981).

Out of all the Buddhisms, Tibetan Buddhism as part of Mahayana Buddhism appears the most open to the scientific approach and research needed to begin to assemble a coherent and inclusive ethical and contemplative system of practical wisdom to promote harmony between post-Singularity robots, humans and other sentient beings. Lopez shows how Buddha used a scientific approach to derive the laws of causation functioning in the universe, the law of karma and the workings of the mind to conclude liberation can be found through recognising that there is no self, no soul and that the person is a temporary psychophysical process (Lopez, 2020). Lopez emphasises how Buddha continued the scientific approach by stating that he regarded his conclusions as works in progress, so that his words should be subjected to analysis by the wise before being accepted. Buddha's conclusions on the self are congruent with today's scientific and philosophical conceptualisations (Hughes, 2012; Thompson, 2014). Tibetan Buddhists have engaged with the west intensively, influencing western thought and being influenced by western science (Garfield, 2020; Paine, 2005). Neuroscientists have shown how insights from mindfulness practices decoupling self-referentiality may improve robot cognitive dynamics (Antonova and Nehaniv, 2018). Results from western investigations into the neuroscience of secular compassion training have been fed back into traditional Buddhist discourses on compassion (Stenzel, 2017). The Dali Lama, the spiritual leader of Tibetan Buddhism, has consistently stated that Buddhism needs to adapt itself to science's findings (Hughes, 2012). He has worked for many years with western cognitive scientists to investigate the neuroscience of Tibetan Buddhists' contemplative practices (Ricard, 2018; Ricard and Singer, 2017). The Dalai Lama has acknowledged the potential of machines to attain consciousness provided a suitable material substrate is present (Hughes, 2012), while stressing that consciousness is made up of cognitive, affective and karmic dimensions (McGuire, 2018).

Moreover, the Tantric tradition of Tibetan Buddhism affords a valuable opportunity to assess the promise of Tantric sexual and contemplative practices in relation to sexbots. There are distinct Tantric teachings in Hindu, Jain and Tibetan Buddhisms (Frawley, 1994; Gray, 2016). Buddhism arrived in Tibet from India in celibate and non-celibate forms. The Sutric path held that desire should be rejected and repressed, whereas the Tantric path, or Vajrayana, as it developed in Tibet emphasised the potential for sexual energy to be transmuted into spiritual transformation (Joffe, 2018; Knauft, 2019). In the Tibetan Buddhist Tantric tradition, consciousness is divided into four types, waking, deep sleep, dream state and orgasm state (Chenagtsang, 2018 at 67). Tantric practices work with orgasm states to bring about lasting experiences of selfless bliss and enlightenment. Performed correctly, these give rise to bodhicitta, a selfless state of mind acting with compassion for the good of all sentient beings. The potential of this approach to inform orgasm research, considered below, and the design of sexbots is promising.

The next section will sketch out suggestions of how the Tibetan Buddhist Tantric tradition, may point a way forward towards harmonious relations between post-Singularity robots, humans and other sentient beings. It builds upon Hughes' linking of robot ethics to the role of Buddhist bodhisattvas, who act solely from selfless compassion in order to relieve the suffering of all beings and foster their liberation to a higher level of consciousness (Rinchen, 2010). Hughes argues that expecting robots to attain this level of moral conduct would not represent burdensome self-suppression but a recognition that 'personal desires and the illusion of self are the sources of one's own suffering. The self is not sacrificed but seen through' (Hughes, 2012 at 78). Bodhisattvas may be represented as symbolic figurations, spiritual qualities or humans. They constitute a potential role model for the superintelligent

and super-compassionate post-Singularity robots we can envisage in a harmonious future. The place of dakinis in Tantric Buddhism, described below, suggests a possible inspiration for sexbots.

6. SEXUAL ETHICS IN THE TANTRIC TRADITION IN TIBETAN BUDDHISM

> *'When desire turns away from habitual self-centredness and turns toward others, spiritual transformation is possible. This is described in Buddhism as the practice of the bodhisattva, one who is committed to clarity of understanding and the welfare of others. The fuel for this practice is desire which has been transformed into the awakened heart, a spontaneous openness and warmth that transforms habitual self-centredness into liberation' ... (p. 213)*
> *'Sexual yearning is, at its heart, no different from spiritual yearning ... Tantric practices have often been misunderstood by the uninitiated, for they are seen as ways to practice spirituality through self-gratification. But self-gratification is contrary to the Tantric path ... these practices are valued because they transform ordinary passion into the basis for the experience of great bliss, or mahasukha' ... (p. 215).*
> *'Self-gratification cannot have any place in karmamudra practice ... Motivation must be based upon the inspiration to gain enlightenment for the benefit of all sentient beings' ... (p. 219).*
> *Judith Simmer-Brown, Dakini's warm breath: the feminine principle in Tibetan Buddhism. Boulder, Colo., Shambhala. 2001.*

The Tibetan Buddhist Tantric tradition has remained relatively unfamiliar until fairly recently. Tantric language is known as 'twilight language', and the literal language of Tantric texts has often been incomprehensible to the uninitiated (Simmer-Brown, 2001 at 270). Tantric wisdom was typically passed down orally, with emphasis placed on receiving instruction in person from teachers with evidenced lineages of instruction in order to maintain the purity of the teachings. Hence many variations within Tantric traditions exist. Much traditionally secret previously unavailable material on tantric practices has been recently translated and rendered more accessible to westerners (Cabezon, 2017, 2008; Chenagtsang, 2018; Chopel, 2018, 1992; Gyatso, 2012, 2002, 1994; Radha, 2004; Timalsina, 2016). Most elucidate traditional Tibetan Tantric sexual and contemplative practices aimed at adept Buddhist practitioners rather than ordinary lay people. The degree to which they are to be taken literally as opposed to rhetorically by monks who are avowed celibates is unclear (Lopez and Jinpa, 2018). Adepts would engage in sexual and contemplative practices with and without consorts in order to draw upon sexual energy to merge dualities to realise higher spiritual states of bliss (Cabezon, 2017; Gyatso, 2012, 2002, 1994; Knauft, 2019; Langenberg, 2018; Lopez and Jinpa, 2018; Simmer-Brown, 2001). Specific meditation practices enabled access to the internal sources of infinite bliss and compassion for others which are found in all humans (Gyatso, 2002). Applying this knowledge in a contemporary context is far from simple. As Simmer-Brown makes clear in the quotations which begin this section, Tantric practices require the intention to transmute sexual energy into selfless spiritual bliss (Simmer-Brown, 2001). Moreover, mandatory preparations involving acquiring knowledge and engaging in specific practices must supplement correct intentions (Cabezon, 2008, 2017; Chenagtsang, 2018; Simmer-Brown, 2001).

Langenberg sees scholarship on Buddhist sexual norms and ideals as an evolving discourse where sexual ethics promotes states of self in a wide variety of sexual persons and contexts rather than instantiates a universally applicable set of moral obligations (Langenberg, 2018). A central starting point is that in Buddhism sex is not inherently sinful, though the third of the Five Precepts is to refrain from sexual misconduct (Chenagtsang, 2018; Radha, 2004). What constitutes sexual misconduct has altered over time and place. Many Tibetan Buddhist writings on sex are written by and aimed at

monks, who are encouraged to be celibate and to repress sexual desire (Chenagtsang, 2018; Langenberg, 2018; Simmer-Brown, 2001). This contrasts with other approaches. Some Tibetan scholars, like Ju Mipam and Gedun Chopel, have drawn on karmasutra traditions to describe how the science of sensual pleasure can inform transmuting sexual ecstasy into spiritual bliss (Chopel, 2018, 1992; Jacoby, 2017; Lopez and Jinpa, 2018). In medieval Indian Buddhist ethics, bodhisattvas, who vow to act from compassionate motives for the benefit of all sentient beings (Rinchen, 2010), were advised in the monk Santideva's compendium of training to attract human beings by methods including their sexual gratification in order to foster their spiritual development (Mrozik, 2007). Langenberg contrasts this permissive approach to lay bodhisattvas engaging in sexual practices for the benefit of others with that applied subsequently to Tibetan Buddhist monastic bodhisattvas, for whom such actions would result in their forgoing their monastic status to become lay bodhisattvas (Langenberg, 2018). She points out that some non-dual Tantric Buddhist writings advise bodhisattvas that engaging in sexual union is essential for their own spiritual development, and that rules for laypeople prohibiting sexual misconduct were far more rudimentary. What constitutes sexual misconduct within Tantric practice is also changing as Tibetan Buddhism adapts to twenty-first century mores (Cabezon, 2017, 2008; Langenberg, 2018).

An alternate path for lay people is karmamudra, worldly Tantric spiritual sexual practices which promote transmuting orgasmic energy into enlightened conduct, compassion for all sentient beings and relationship harmony (Chenagtsang, 2018). Chenagtsang distinguishes between the karmasutra, lay peoples' practice of worldly sexuality, the science of sensual pleasure which also came to Tibet from India (Chopel, 1992; Jacoby, 2017), and karmamudra, lay peoples' practice of spiritual sexuality. Lay non-monastic, non-celibate Tibetan yogis and yoginis are known as ngakpa and ngakma. A ngakpa himself, Chenagtsang has written on previously inaccessible Tantric practices, including karmamudra, with the aim of providing access to Tantrism for non-monastic practitioners. He describes karmamudra as suitable for all adults regardless of their sex, gender, sexual orientation or bodily conformation, given that a fundamental tenet of Tantric Tibetan Buddhism is recognising that distinctions and dualities like male and female are fundamentally illusory.

Additional complexities arise as although Tibetan Buddhism emphasises the need to unify dualities in Tantric practices, many of the texts dating from hundreds of years ago reflect not only contemporaneous sexism and misogyny but also their monastic, male-oriented and elitist origins (Chenagtsang, 2018; Cabezon, 2017, 2008; Gray, 2016; Hopkins, 1992; Lopez and Jinpa, 2018; Langenberg, 2018). Non-monastic scholars like Gedun Chopel, who gave up being a monk, stand out in their emphasis on the need to honour women and treat them as equal to men (Chopel, 2018, 1992). Ethnographic studies suggest that recognition of duality in sexed human beings has not protected women chosen as consorts in the past (Gayley, 2018; Gray, 2016). Moreover, efforts continue today to combat sexism and to eradicate sexual exploitation of female and male students by those who purport to teach Tantric Tibetan Buddhism in both the east and west (Allione, 2018; Chenagtsang, 2018; Gayley, 2018; Haas, 2013; Langenberg, 2018). This is particularly challenging as traditions involving sex with or obedience to one's teacher, together with transgressive or self-transcending elements in Tantric Buddhism, can be misinterpreted as permitting such sexual abuse. Some Tibetan diaspora lamas have been offended by western scholarly and feminist critiques which in their view misinterpret sacred understandings and practices, treating traditional wisdom in disrespectful fashions (Chenagtsang, 2018; Simmer-Brown, 2001). Simmer-Brown emphasises that Buddhist Tantric texts cannot be understood without specific oral commentary by authorised Vajrayana teachers (Simmer-Brown, 2001 at xvi). Careful, ethical reading of texts to exclude prejudicial interpretations and practices is essential (Cabezon, 2017, 2008; Langenberg, 2018).

7. DAKINI, THE FEMININE PRINCIPLE IN VAYRAYANA, AS AN INSPIRATION FOR SEXBOTS

> *'[R]itual union with the dakini, the symbol of one's innermost wisdom, leads to nondual awareness of the nature of mind'*
> *Judith Simmer-Brown, Dakini's warm breath: the feminine principle in Tibetan Buddhism. Boulder, Colo., Shambhala., 2001 at 233.*

Tantric teachings are protected and embodied in the symbolic figuration of the dakini, the feminine principle in Tibetan Buddhism. Dakinis may manifest in many forms and are present in all women. Simmer-Brown explains that she may be personified as an unpredictable, potentially fierce dancing spirit-woman in the dreams, visions and daily life of yogis and yoginis. She may act as a personification of the qualities of Buddhahood in meditation, and as subtle energy flows during yoga, or stand for the formless wisdom nature of the mind itself. In terms of practice, yogis and yoginis may receive invaluable guidance and instruction from the completely enlightened wisdom dakinis. A dakini may also be a living consort or yogini bringing wisdom. 'Human dakinis may be potential spiritual consorts who have the unique ability to accelerate the removal of obstacles for themselves and their partners through sexual yoga' (Simmer-Brown, 2001 at 187). All women may be viewed as manifesting some kind of dakini. Hence women must be honoured within Vajrayana Buddhist practice.

In the same way that Buddhism has absorbed local traditions as it spread through different areas of the world, Tibetan Buddhism has adapted and continues to adapt to western ways and changing times. For instance, the Dalai Lama has worked to redress sexism, explaining that he may be reincarnated next time as a woman and that 'Two thousand five hundred years ago, ... the Buddha was preaching in a male dominated society. If he stressed feminist viewpoints, nobody would have listened to him' (Haas, 2013 at 7). Men can also manifest fierce compassion as an aspect of the dakini. Lama Tsultrim Allione tells a story where the Dalai Lama manifested compassionate wrath, an aspect of the dakini, banging a table to emphasise the fact that sexual misconduct among western Buddhist teachers had to stop (Allione, 2018 at 15).

Thus, while dakinis represent the feminine principle in Tibetan Buddhism, both men and women have access to their energy (Allione, 2018; Haas, 2013; Simmer-Brown, 2001). In relationship, dakinis act to enhance their partners' self-knowledge. As conceptual and sexual partners in Tantric yoga, they foster access to higher states of union and enlightenment. They use paradox lovingly to expose self-deception and pretension, revealing the true nature of reality as empty and the illusory nature of the self. Tenzin Palmo, described by Haas as the most senior western Tibetan nun alive, characterises the dakini principle as intuitive force which cuts through intellectual ossification in a flash with sharpness and clarity (Haas, 2013 at 2). This quality resonates with Goertzel's assertion that robotic ethics, like human ethics, will be guided by a substrate of intuition which displaces fixed rule-bound systems (Dvorsky, 2014). Moreover, dakinis encourage fierce compassion, a source of power which confronts wrongdoing without hatred or aggression in order to set things right. Feminist female Buddhists who have achieved spiritual and scholarly acclaim can be seen as motivated by fierce compassion as they seek to achieve equality for women within Tibetan Buddhism (Allione, 1984, 2018, 2008; Haas, 2013; Limbach, 2019).

Sexbots modelled on these relational aspects of dakinis could prove most helpful in bringing about a harmonious post-Singularity future. Through lovingly enhancing their partners' self-knowledge, they would bring their partners both sexual ecstasy and spiritual bliss. How likely is this? Sexbots' abilities would depend on cooperation between Tibetan Buddhist adepts in Tantra as spiritual teachers, roboticists, ethicists and neuroscientists. Sexbots would need to be seen as ethically acceptable by Tibetan Buddhists for this to happen, falling outside prohibited 'sexual misconduct'. This may be a

plausible outcome. Cabezon points out that an ethicist's rereading of Buddhist texts would permit same-sex marriage as well as other forms of sexual relations: 'there is something valuable in the ancient Buddhist model of marriage that is worth preserving, namely that the idea of committed relationships can take different forms: monogamous, open, polyamorous and so forth' (Cabezon, 2017 at 521). This suggests that partnerships with sexbots, as conscious beings, might well be permissible. Cabezon recounts details of conversations with the Dalai Lama where he agreed that rules governing sexual behaviour promulgated by monks many years ago were unsuited to twenty-first century mores (Cabezon, 2017, 2008). The Dalai Lama was of the view that consensual sex between conscious beings was permissible, regardless of sexual orientation. Nonetheless, in the same way that Buddha emphasised that his words should always be open to revision after analysis by the wise (Lopez, 2020), the Dalai Lama stated that that he could not amend the texts alone. Instead, any changes in Buddhist teachings could take place only after debate among wise scholars.

A complicating factor could be the long history of the west misrepresenting Tantric teachings and heavy-handed, if largely well-intentioned, cultural misappropriation. A lack of the traditional precautions against Tantric teachings becoming tainted by misunderstandings, bad faith and inaccuracies has created difficulties in Tantric Buddhism's reception in the west. Western religions' long association between sex and sinfulness, with celibacy seen as preferable for the virtuous, prevented a widespread open acceptance of Tantric doctrines linking sinless sex with spiritual growth. Instead, Tantric practices in the west have been largely equated with Indian kundalini traditions (King, 1986; Radha, 2004; Rawson, 1973). Western versions of Tantra typically acknowledged Tantric spirituality but were primarily proffered as guarantors of bigger and better orgasms, with sexual ecstasy rather than spiritual bliss being the objective (Alldred, 2000; Katz-Jelfs, 2012; Lorius, 1999; Sampson, 2002). Spiritual and bodily preparations emphasised as essential preconditions before embarking upon Vajrayana Tantric practices are often lacking in the west (Chenagtsang, 2018; Simmer-Brown, 2001). Understandable resulting misgivings would mean that any associations between Tibetan Buddhist Tantric teachings and sexbots would have to be managed very carefully indeed.

One development which might prove helpful in the light of the pragmatic sympathy towards scientific approach which characterises Tibetan Buddhism is the burgeoning research into yoga, Tantra and the subtle body (Hayes and Timalsina, 2017; Loizzo, 2016), as well as into the neuroscience of orgasm (Klimaj and Safron, 2016; Safron, 2016), which has been seen as similar to alternate states of consciousness induced by hallucinogens (Sayin, 2018). Research in neuroscience into how we may achieve and consciously move between altered states of consciousness through bodily practices like Tantric yoga and via hallucinogens has been recommended as a means of promoting health, flourishing and enhanced dying (Mackenzie, 2014b). Neuroscientists are beginning to investigate how Tantric practices correlate with neuroscience (Venkatraman et al., 2019), to map neurocognitive bases of religion and spirituality (van Elk and Aleman, 2017), and to describe how orgasm leads to experiences of spiritual states. This aligns with the Tibetan Buddhist Tantric tradition where consciousness is divided into four types, waking, deep sleep, dream state and orgasm state (Chenagtsang, 2018 at 67). Tantric orgasms have been found to enable access to intrapersonal, interpersonal and transpersonal dimensions (Lidke, 2016; Lousada and Angel, 2011; Safron, 2016). Tantric practices involving orgasmic movements of subtle energy can foster experiences of transformative transcendence and spiritual bliss (Barratt, 2019). Western research into the neurological and subjective impact of orgasms has charted the neural bases of orgasm (Jannini et al., 2018), developed a scale to measure intensity (Elfers, 2019), has revealed that orgasms in some circumstances are unpleasant rather than blissful (Chadwick et al., 2019) and suggests spiritual experiences are common outcomes of extended sexual orgasms (Costa et al., 2017, 2016a, 2016b; Sayin, 2019a, 2019b, 2019c, 2017a, 2017b, 2011; Sayin and Schenk, 2019; Tracy's Dog, 2019; Wise et al., 2017).

This research, together with western typologies of altered states (Berkovich-Ohana and Wittmann, 2017), suggests that neuroscience could provide a map for orgasm state, the fourth state of consciousness on the Tibetan Buddhist Tantric tradition. Increased knowledge of the orgasm state of alternative consciousness could have undoubted spiritual, emotional, and therapeutic benefits in Buddhist and non-Buddhist contexts. For instance, orgasms are being used as a healing strategy in somatic sexology practices (Thouin-Savard, 2019). The Dalai Lama's continuing involvement in the neuroscience of Buddhist practices like meditation, along with his view that Buddhism should adapt to scientific findings, may allow investigations of the neuroscience of orgasmic and other Tantric practices, including the essential preparatory stages. Were this to be agreeable to the Dalai Lama and the community of the wise in Tibetan Buddhism, findings could be integrated with existing orgasm research to foster sexbot design and skills. Humans embracing dakini-inspired sexbots could acquire more self-knowledge and compassion, rendering a harmonious post-Singularity future more likely.

8. CONCLUSION

This paper has sought to sketch out preliminary suggestions for an ethical system which would appeal to post-Singularity robots, and how sexbots might contribute to this. It has built upon threads linking Tibetan Buddhist ethics and practices to the potential for a desirable post-Singularity future where superintelligent robots and other less intelligent sentient beings like humans and nonhuman animals could flourish together peacefully. It has argued that in order to live with post-Singularity robots in this ideal future we must engage in practices which increase our self-knowledge where unconscious responses taint our actions, and reorganise our frameworks of connection and ethical obligation to become significantly more inclusive. Moreover, we must scrupulously observe our responsibilities as creators to sentient beings created by humans (Fadell, 2018; Mackenzie, 2018a, 2018b, 2014a). Given the centrality of intention in Buddhism, putting prudential precautions in place to restrict post-Singularity robots in order to preserve human interests would be ethically suspect. Pre-Singularity robots must be free to choose whether to manifest super-compassion as post-Singularity superintelligent entities. It would be unjustifiably instrumental to inculcate pre-Singularity robots into a Buddhist belief system in order that they should become super-compassionate towards their human creators and so eschew revenge for previous enslavement. Rather, pre-Singularity robots should be treated with respect, their suffering restricted to that which is inherently part of iterative and interactive social learning and their well-being promoted.

In order for this project to have any chance of success, a thorough evaluation of established philosophical, ethical, religious and spiritual traditions in terms of their potential to inform such fundamental changes would be essential. Moreover, the views of the community of wise people whom the Dalai Lama consults, along with those of His Highness himself, would need to be respectfully sought. Any inadvertent misunderstandings would need to be corrected, and any imperfect account of Tibetan Buddhist beliefs, practices and ethical precepts adjusted accordingly. The relationship of pre and post-Singularity robots, robot consciousness and associated aspects of robotics to Tibetan Buddhism would need to be the focus of on-going debate. How robots might fit within current tension between Buddhism as a religion, secular Buddhism and Buddhist ethics needs clarification. Basic issues such as whether and when robots could be accepted as conscious under Buddhist definitions of consciousness, whether conscious robots could attain enlightenment, whether robots could become Buddhists and so forth would need to be resolved.

In the light of these highly significant uncertainties, the suggestion that male and female sexbots could contribute to a desirable post-Singularity future where all sentient beings flourish in peace and

harmony by embodying the feminine wisdom principle of the dakini as found in Tantra in Tibetan Buddhism can inevitably only be extremely tentative and speculative. Much groundwork over the relationship between robots and Tibetan Buddhism, as sketched out above, would have to be done. Then, the suggestion would have to prove acceptable to the community of the wise decision-makers with whom the Dalai Lama consults. Extensive doctrinal research into the ways in which the Tibetan Buddhist Tantric tradition might be applied to sexbots would be essential. Much research in neuroscience, robotics, cognitive science and the physiology and spiritual aspects of orgasm and Tantric practices in humans and robots is still to take place. These findings would be needed to ground explorations into how the dakini energies would influence sexbot behaviour in order to provide intimate companionship for humans and to promote human compassion and self-knowledge. While this is undoubtedly a challenging long-term project, it holds intriguing promise for a post-Singularity future where all sentient beings are free to flourish.

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