AI Relationality and Personhood

with Fraser Watts and Marius Dorobantu, "The Relational Turn in Understanding Personhood: Psychological, Theological, and Computational Perspectives"; William F. Clocksin, "Guidelines for Computational Modeling of Friendship"; Michael J. Reiss, "Is It Possible That Robots Will Not One Day Become Persons?"; and Léon Turner, "Will We Know Them When We Meet Them? Human Cyborg and Non-Human Personhood."

IS IT POSSIBLE THAT ROBOTS WILL NOT ONE DAY BECOME PERSONS?

by Michael J. Reiss

Abstract. That robots might become persons is increasingly explored in popular fiction and films and is receiving growing academic analysis. Here, I ask what would be necessary for robots not to become persons at some point. After examining the meanings of "robots" and "persons," I discuss whether robots might not become persons from a range of perspectives: evolution (which has led over time from species that do not exhibit personhood to species that do), development (personhood is something into which each of us grows), chemistry (must persons be carbon-based and must robots be non–carbon-based?), history (we now consider more entities to be persons than was once the case), and theology (are humans privileged over the rest of creation, and how relevant is panpsychism?). I end by considering some of the implications if/once robots do become persons.

Keywords: carbon chauvinism; development; evolution; panpsychism; personhood; robots

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The idea that robots might one day be persons, though widely explored in fiction, sounds ridiculous to some people, unimaginable. But so were lots of things that have now come to pass—women playing rugby or being bishops, continents moving, humans as relatives of monkeys, a lot of twentieth-century physics. In this article, I turn the question on its head and examine what needs to be the case if robots will not one day become persons. Of course, many (almost certainly most) robots will never be persons. They will spend their days ensuring our fridges are stocked as we would like, our pets and children receive their medication on time, and

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the air pressure in our car tyres is appropriate. The question, therefore, is what needs to be the case for no robot ever to be a person.

What Are Robots?

There are many definitions of robots but a fairly standard, middle-of-the road one is that "A robot is a type of automated machine that can execute specific tasks with little or no human intervention and with speed and precision" (TechTarget 2021). Robots may resemble humans (in which case they are known as androids) but most don't. By and large, software alone is not usually considered sufficient to qualify as a robot—hence the term "machine" in the definition quoted above. The hardware component of a robot can profitably be thought of as a form of embodiment.

As is well known, there are already things that some robots can do better than any humans (largely, at the present time, to do with performing predictable tasks rapidly and near faultlessly) but my focus is not on such questions as to whether robots will replace (more likely, work alongside) doctors, teachers, lawyers, cooks, long-distance lorry drivers, and others but whether some of them will be persons.

What Are Persons?

There is an enormous literature on the meaning of the term "person" and personhood has been and still is understood in a range of ways (Williams 2018; Williams and Bengtsson 2018). A number of positions can be identified. The most frequent is to attempt to determine criteria that are sufficient for an entity to be deemed a person. Such a person has a nontrivial degree of self-awareness (aka self-consciousness) and manifests rationality and moral awareness to at least a certain extent. (I should also add that all current persons are embodied though it is difficult to be certain how essential embodiment is. Might disembodied software manifest personhood? It seems unlikely.)

Those who criticize this approach to understanding personhood point out such problems as the case of people (i.e., members of the species *Homo sapiens*) who are asleep, unconscious, very young (e.g., new-born babies), or living with advanced dementia. Responses to such criticisms mainly fall into two camps (a third camp responds by abandoning the notion of personhood altogether—cf. Farah and Heberlein 2007): either to accept them (i.e., to deny that such people are persons—something that is easier to do in some cases, e.g., new-born babies, than others, e.g., someone in the prime of life who just happens to be taking a nap)—or to reject them, for instance by appealing to notions of personal identity over time, though this raises new problems as considered by Parfit (1984) and others. Another approach is to adopt a significance-based (i.e., relational) view of personhood, though this seems to suffer from the problem that I am

perhaps less of a person than you simply because no one cares for me whereas you have friends, neighbors, and relatives galore (an example of "from him who has not, even what he has will be taken away").

There are those who equate "person" with "human being"—where the latter term is understood as a member of the species *Homo sapiens*. Even if we set aside the debate as to whether personhood in humans starts at the moment of conception, the argument that only members of the species *Homo sapiens* can be persons faces other difficulties. One such difficulty is illustrated by a thought experiment. Imagine that our planet becomes colonized by hyperintelligent, sentient creatures (not members of *Homo sapiens*) from outer space who consider themselves to be person on the standard definitions of personhood but that these creatures reject our claim that we too are persons, and thus worthy of moral consideration, on the grounds that only members of their species can be persons. This would not be good news for us (i.e., members of the species *Home sapiens*). We might term the equation of "person" with "human being" the Alpha Centauri fallacy after Mary Doria Russell's 1999 novel *The Sparrow*, which is set in a world in the vicinity of Alpha Centauri and explores the issue as one of its themes, as did H. G. Wells in his 1895 *The Time Machine*.

A more tangible objection to the "only humans are persons" argument begins by noting that this would mean that no other species already present on Earth are persons. Increasing numbers of people find this argument difficult to defend when they consider such familiar animals as dogs, cats, cows, pigs, parrots, and corvids not to mention such great apes as chimpanzees and gorillas—cf. The Great Ape Project (Cavalieri and Singer 1993).

More generally, until the second half of the nineteenth century, humans were seen by almost everyone as being entirely distinct from other species. What helped shift that perception was, above all, the work of Charles Darwin in his *On the Origin of Species by Means of Natural Selection* (Darwin 1859) and *The Descent of Man* (Darwin 1871). Post-Darwin it is difficult for biologists to see humans and animals as being fundamentally different in kind—it is more a matter of degree (Reiss in press). Research on animal behavior has shown that what were thought to be dividing lines between humans and animals (i.e., nonhuman animals), such as tool use, are less clear-cut than had been supposed. In October 1960, Jane Goodall observed a chimpanzee bend a twig, strip off its leaves, and use it to "fish" for termites in their nest (Van Lawick-Goodall 1971). Much the same story can be told about just about any other feature once held absolutely to distinguish humans from animals—the use of language, a sense of morality, an aesthetic awareness, the ability to count, rational decision making, and so on. What we often see in animals is what seems to be something akin to the early stages (developmentally or evolutionarily) of the human behavior in question.

If it is accepted that personhood does not simply equate with being human, one needs to find some other account of what constitutes personhood. It is unlikely that a single attribute will be found to be adequate. Existing attempts (e.g., Cavalieri and Singer 1993) generally presume that personhood requires a certain degree of self-awareness, also known as self-consciousness. Of course, determining whether another species is self-conscious is not straightforward. One widespread approach is to use the mirror test. In essence, the animal is marked—for example, by the application of some temporary red dye—while it is asleep on a part of its body, such as its forehead, that it cannot normally see but is in its field of view when it looks at a mirror. When the animal is subsequently awake, it is given access to a large mirror. If it investigates the mark, this is taken as evidence that the animal "presumes" the reflected image shows itself and, in this sense, is self-aware. The mirror test has been critiqued and sets quite a high bar. Other markers of personhood that have been used include a degree of rationality and the presence of moral awareness.

So long as it is agreed that in principle, nonhumans could be persons, whether or not some existing nonhumans, such as chimpanzees—which pass the mirror test and seem to exhibit rationality and have a moral sense—actually are persons, we cannot rule out absolutely the possibility that (some) robots might one day be persons. I now proceed to examine, from several perspectives, what is needed for only humans to be persons (cf. Reiss 2021).

An Evolutionary Perspective

An evolutionary perspective cautions against the adoption of binaries. One might think, for example, that one can be clear about whether a species can fly (swifts, dragonflies) or not (sloths, penguins) but what of species that glide (e.g., gliding squirrels, flying frogs), soar, or simply float (e.g., the members of the aeroplankton)? One can refine one's terms so that one focuses on powered flight (which has evolved in insects, pterosaurs, birds, and bats) but, of course, powered flight can be lost (penguins again) as well as acquired and there are many intermediate stages.

The relevance of this is that to an evolutionary biologist it seems indubitable that there are degrees of personhood. You and I are both persons; amoebae are not; in between these extremes, there is a whole range of possibilities. Furthermore, life did not start with amoebae. The overwhelming consensus among scientists is that all of the quite extraordinary abundance of life that we see today and through the fossil record has evolved from inorganic precursors. Of course, it is possible, that life did not evolve from these inorganic precursors on Earth—that life on Earth began elsewhere and that our very early ancestors arrived on Earth much as newly exposed oceanic volcanic islands are colonized by existing

organisms carried through the air or by water—but this doesn't affect the central point that life, even if one believes in some version of creationism, comes from nonlife.

Once life had arisen, the presumption among scientists is that over some 3.7 billion years it evolved in fits and starts from the simplest beginnings to the extraordinary diversity we see today. So, on the mainstream scientific account, personhood is a result of evolution, whether persons are restricted to humanity or, as argued above, more widely distributed among species. Precisely why personhood arose in evolution is still a contested question. Leary and Buttermore (2003) argued that:

> Because they can manipulate thoughts and images about themselves in their minds, human beings are able to anticipate outcomes of their actions, consider their options, prepare in advance for events that might occur, and develop plans and contingencies … The ability to think consciously about oneself also underlies introspection, self-evaluation, and the development of the self-concept. People are able to form ideas and images of what they are like, consciously compare themselves to their own standards and to other people, and experience emotions such as pride and shame as a result. Self-awareness also offers the possibility of deliberately controlling one's behavior and, when necessary, acting contrary to one's automatic inclinations. (365)

Whatever the precise reason(s) for the evolution of personhood, it seems likely that such evolution enabled individuals better to exist in their social environments (cf. Humphrey 2011).

A Developmental Perspective

Just as an evolutionary perspective allows one to see personhood arising from nonpersonhood, so does a developmental perspective. If one understands personhood as being constituted by certain characteristics, as argued above, then, if we focus on humans, each of us developed over a period of time from a single cell that was not a person into a young individual that was a person. The precise period of time is not especially significant. If you hold that new-born babies are persons, fine (and this would seem to imply that quite a few other species attain personhood too, always granted, to emphasize the point once again, that personhood is not equated with membership of *Homo sapiens*). If you hold that humans only attain personhood at around the age of three or four years, fine (and this would mean that few if any other species attain personhood). In both cases, it is simply, to labor the point, that there is a shift over time from nonpersonhood to personhood. As already indicated, it seems easier to me to defend the notion that there are degrees of personhood rather than that personhood is something one either has or does not have but, again (as with the age

at which one attains personhood), this is not especially significant for the purposes of this article.

At the very least, the fact that each of us develops from being a nonperson to being a person is another argument against the notion that robots cannot be persons. Given that each of us became a person, perhaps robots can too. What is it that led each of us to become a person? The answer, as it was when we considered the evolution of personhood, is to do with our brains becoming larger and more complex. Such increase in size and complexity is partly simply the intrinsic result of our growth—our brains are parts of our bodies and as we develop, so do our brains. It is also the result of the stimulation our minds receive. Such stimulation can be both external and internal in origin. Harrowing tales of feral children and children given inadequate care in orphanages or elsewhere show the importance of external stimulation for brain development. But as we grow, we develop the capacity to autostimulate our minds—one thinks of Kirsty MacColl who didn't go to school till she was about eight because of her asthma, yet well before then had taught herself to read by reading shop signs while being pushed around in her pram.

A Chemical Perspective

Need persons be carbon-based? At the moment, all persons are carbon-based; indeed, all known life—now or in the past—is or was carbon-based. It was the German astrophysicist Julius Scheiner who, in 1891, first suggested that life could be based on silicon rather than carbon (Petkowski, Bains, and Seager 2020). Silicon, as its position in the Periodic Table suggests, shares a number of similarities with carbon. It may even have played a role in the early evolution of life (e.g., Graham Cairns-Smith's idea that life began as clay crystals). Trekkies may remember the Horta (native to the planet Janus VI), the silicon-based life form in an early story, but the reason why life as we know it on Earth is carbon—rather than silicon-based is to do with its chemistry and is pretty well understood. A major recent review concluded that in a water-rich environment, silicon's chemical capacity is highly limited due to ubiquitous silica (SiO_2) formation (Petkowski, Bains, and Seager 2020). It is possible that in an environment dominated by sulphuric acid rather than water (such as in the clouds found on Venus), silicon might be able to display the chemical versatility likely to be necessary for the evolution of life.

The presumption that only carbon can be the basis of life is sometimes referred to as "carbon chauvinism." Back in 1962, Isaac Asimov (who had been a tenured associate professor in biochemistry at Boston University before his academic career ended and he concentrated on science fiction full-time) speculated about silicon-based lifeforms and even argued that life might not require water, relying on ammonia instead (Asimov 1962).

Turning from speculation to fiction, silicon-based life is found in the *Alien* franchise, *Galaxy Quest*, the *Discworld* series, and various other books and films (All The Tropes 2021). Carbon's suitability for life is partly to do with its abundance (though silicon is far more abundant) but principally to do with its bonding properties. It has four electrons in its outer electron shell and so is equally capable of donating and accepting electrons. It can therefore form bonds with a wide range of other elements and can form long chains as well as rings. Given that silicon is the basis of integrated circuits (aka "silicon chips"), the attractions of silicon as a basis for life for those who hold that robots may one day become persons is clear.

If it is the case that personhood requires an entity being carbon-based, then a way in which robots might acquire personhood might be through developments in soft robotics (see the journal *Soft Robotics* https://www.liebertpub.com/toc/soro/1/3). Soft robots (sometimes called organic robots) are made from compliant materials, such as rubber (carbon-based), and are inspired by organisms such as octopuses; they rely on hydrostatic pressure for movement, rather than the exoskeletons that are typical in robots. It seems very possible that we may see some next-generation robots combining traditional robotic features with elements drawn from soft robotics. As yet, soft robots still use conventional silicon-based transistors. What is as yet unclear is whether robot "brains" will continue to be based on silicon (or other semiconductors such as germanium) or could be carbon-based as ours are.

There is a great deal of work currently taking place into robots that use carbon-based materials (e.g., animal muscle) for such things as movement. Also known as biohybrid robots, this opens up the possibility that just as humans can have inorganic components (think straightforward titanium hip joints, let alone more fanciful cyborgs), so robots may increasingly have organic components. We are also in the early days of xenobots—tiny entities (less than 1 mm in diameter) made from cells that come from the stem cells of the African clawed frog (*Xenopus laevis*) embryos. Xenobots can live for weeks and have the ability to move, to repair themselves, and to self-replicate (Kriegman et al. 2020).

A Historical Perspective

Before turning to theological considerations, it is worth noting how a greater range of humans are now accepted to be persons (I do not discuss legal definitions of personhood that, for instance, deem corporations in certain situations to be juridical persons). A clear example is provided by slaves who, in many countries, moved over time from a status of property to one of persons. Similar moves have also happened to women, to children, and to foreigners. To give just one example, October 18 is Persons Day in Canada. In Canada, the *British North America Act* of 1867

used the word "he" to refer a singular person. It was therefore argued by many that only a man could be a person (Government of Canada 2022). In 1927, Emily Murphy, Nellie McClung, Louise McKinney, Irene Parlby, and Henrietta Muir Edwards asked the Supreme Court of Canada to determine whether "persons" in the Act included women. After five weeks of deliberation, the Supreme Court decided it did not. The five women appealed to the Judicial Committee of the Privy Council of Great Britain (then Canada's highest court of appeal) and on October 18, 1929, Lord Sankey, Lord Chancellor of Great Britain, determined that "persons" in the Act did include women (Government of Canada 2022).

There are an increasing number of cases in which nonhumans have been recognized by the courts as having rights previously held only to apply to humans, including a chimpanzee in Argentina (Samuels 2016) and a spectacled bear in Colombia (Gartland 2017).

Robots and Theological Understandings of Personhood

One of the many wonderful objects in the Metropolitan Museum of Art is a two-foot-tall automaton in the form of a monk (Figure 1). Dating from about 1550, and possibly made by Juanelo Turriano, the renowned sixteenth-century Italian engineer and royal clockmaker to the Habsburgs, he moves in a circle. Periodically, he raises a gripped cross and rosary toward his lips and affixes a kiss to the crucifix. His lips move as if he's quietly uttering penitential prayers, and occasionally he raises his fist to his torso as he beats his breast (Simon 2021). Turriano's monk, as he is typically called was commissioned by Philip II of Spain, a devout Catholic, on the occasion of his son's recovery from illness. For some 570 years, Turriano's monk has either been praying or imitating prayer, depending on one's understanding of what is going on.

No one seriously supposes that Turriano's monk is a person but such automata can be seen in the antecedents of today's robots and the question of the validity of the monk's supplications is perhaps less straightforward than might be supposed. It seems likely that Philip II believed that the prayers were authentic. The monk may perhaps be thought of as akin to the prayer (or mani) wheels that are found in Tibetan Buddhism and are powered by humans, wind, water, heat, or (sometimes nowadays) electric motors. At the very least, Turriano's monk reminds us that at different times people may see things, including agency, in different ways—rather as a wide range of nonhuman animals (domesticated and wild) were brought to criminal trials in Europe from the thirteenth to the eighteenth century for such crimes as attacking people and damaging crops (Vatomsky 2017).

In Judaism, Christianity, and some strands of Islam, humans are seen as created in the image of God—*Imago Dei*, to use the Latin phrase. Occurring but rarely in the scriptures, the phrase has been understood

Figure 1. Turriano's Monk. [Color figure can be viewed at wileyonlinelibrary.com]
Source: Exhibit in the Metropolitan Museum of Art, York, USA. In the public domain. https://commons.wikimedia.org/wiki/File:Automaton_in_the_form_of_a_monk,_probably_Spain,_possibly_circle_of_Juanelo_Turriano,_c._1550,_hardwood,_enamel,_leather,_metals,_paint_-_Metropolitan_Museum_of_Art_-_New_York_City_-_DSC07103.jpg.

differently over time (Dorobantu 2022; Herzfeld 2002; Balle 2023). Typically, though, the idea is, again, that there is something special about humans (whether in our attributes, our function/vocation, or our relationships) that not only separates us from the rest of creation but aligns us with the divine—a notion reinforced in the Judaeo-Christian scriptures by such verses as *Genesis* 3: 22 ("Then the Lord God said, 'Behold, the man has become like one of us, knowing good and evil'" …) and *Psalm*

82: 6 ("I say, 'You are gods, sons of the Most High, all of you'"). Of course, elsewhere in the Judaeo-Christian scriptures, the emphasis is more on the ontological distance between God and all of creation, including humanity.

A rather different perspective is provided by the idea of panpsychism (e.g., Leidenhag 2019). Panpsychism itself exists in various versions but a key notion is that mentality is a fundamental property of all matter. Many philosophers and theologians have dismissed panpsychism out of hand, partly perhaps because the idea can sound absurd to some, and perhaps partly because it seems like too easy a way of solving questions about dualism and the "hard problem" of consciousness—by simply maintaining that everything is conscious, has subjectivity, and enjoys experiences. However, some religious traditions have long argued for positions that are panpsychist. In the Upanishads, Brahma (ultimate reality) is pure consciousness (Deutsch 1969/1973). Indeed, panpsychism "has a long and venerable history in philosophical traditions of both East and West, and has recently enjoyed a revival in analytic philosophy" (Goff, Seager, and Allen-Hermanson 2022). It seems as though the mind-body problem has occupied philosophers for as long as history records; given this, panpsychism provides a logical solution—which is perhaps more than can be said for some other attempts to resolve the problem.

In the twentieth century, panpsychism is associated especially with the work of Alfred North Whitehead. For some theologians, panpsychism is therefore intimately connected with process theology and thereby rejected if process theology is rejected. In reality, though, the connection between process theology and panpsychism is not a necessary one. One reason for the growth of interest in panpsychism is that contemporary physics is clear that there are circumstances (quantum entanglement) under which there are deep connections between certain entities in the world that might be presumed to be unable to influence each another. Without in any way wanting to use this as a cheap argument for panpsychism (cf. Poon and McLeish 2023), a model of the world in which mentality is a shared, fundamental property of all matter is one in which such deep connections seem less paradoxical than might otherwise be the case. Panpsychist interpretations of quantum mechanics are discussed in some detail by Leidenhag (2019).

Quite distinct from panpsychism but relevant to the possibility that robots might become persons is the phenomenon of emergence (Clayton 2004; Kim 2006). Emergence is the name given to the observation that entities often have properties that their parts lack. (There is no need here to get into the debate as to whether the properties of the whole can be deduced from those of its constituent parts.) A classic example is the wetness of water. A single molecule of water is not wet; wetness emerges as a property only when there is a certain amount of water. The relevance

for robots and personhood is the idea that as a robot "brain" gets bigger, certain properties might emerge that are found in persons. To a biologist, this is what happens in both development and evolution (as considered above); certain properties emerge as organisms become more complex.

It is clear that people can have significant relationships with robots and these are only likely to increase in range and depth as robots become more advanced. As yet, it may be premature to talk of robots having relationships with people but nonhuman animals certainly can (think domesticated species) and so-called social robots that (appear to) interact and communicate with people are growing in popularity for use in a range of settings including the home, education, and healthcare (Prescott and Robillard 2021). There has recently been a burst of interest in questions as to whether robots or AI could play a role in delivering pastoral/spiritual care (Young 2022; Proudfoot 2023; Wilks in press).

The implications of robots being or not being persons has long been explored in science fiction. Some of the most sustained treatment comes with Data in *Star Trek: The Next Generation*. Data is an android who is self-aware and highly intelligent. Early in his "life" he finds it difficult to understand much of human behavior and is unable to feel emotions. Tellingly, Gene Roddenberry (the creator of *Star Trek*) told Brent Spiner (the actor who portrays Data) that over the course of the series, Data was to become "more and more like a human until the end of the show, when he would be very close, but still not quite there" (Ultimate Pop Culture 2021). In the episode, "The Measure of a Man," Data is legally declared not to be Starfleet property but an autonomous individual.

There is a growing literature as to whether robots can and should have rights. David Gunkel (2018) draws on Levinas' relational ethic by arguing that instead of ontology (the nature of robothood, as we might term it) determining ethics (including whether robots have rights or not), the reverse is a more profitable way to approach the issue. Moral consideration is therefore something that is attributed (or not) to entities depending on the social relations they enjoy. It is easy to find objections to this argument—cf. the Athenians with their narrow conceptualization of voting rights—but Gunkel's approach has much in common with the field of social robotics (see the journal *International Journal of Social Robotics* https://www.springer.com/journal/12369).

Conclusions

The history of robots and of AI often seems to have consisted of either too much or too little being claimed of them. But if inorganic matter gave rise, through the nonintentional activity of evolution, on at least one occasion to life that eventually led to persons (i.e., humans), it doesn't seem incredible that humans, acting, unlike natural selection, intentionally, and with

huge resources at their disposal, should be able to manufacture inorganic entities that manifest personhood. Humans are special for reasons to do with our minds (e.g., Luppi et al. 2022) but it is difficult to defend the argument that we alone can embody personhood, unless one begins with the circular argument that personhood is restricted to members of the species *Homo sapiens*. It may be that personhood requires a carbon-based existence but this is not certain and, even if it does prove to be the case, does not rule out the possibility of robots acquiring personhood given the rise of cyborgs, organic robots, and xenobots.

Much more modestly, we can note that today's robots already engage with humans in socially meaningful ways—as trainers, therapists, mediators, caregivers, and companions (Dumouchel and Damiano 2016/2017). As I have previously written "Even a decade ago there were instances of soldiers who were almost inconsolable at the thought that damaged robots with whom (? with which) they had worked on the battlefield might not be repairable" (Reiss 2021, 75). P. W. Singer recounts how one soldier ran 50 m under machine gun fire in an attempt to rescue a robot that had been knocked out by enemy fire (Singer 2009). As robots become more sophisticated and are more widely used in various fields, it seems indubitable that increasing numbers of them will be seen to be persons, whether or not philosophers and theologians consider they are.

But I do not want to end on that note. While the question clearly remains open, for robots not to become persons, humans—or possibly humans and some of our closest evolutionary relatives—are going to have to be exceptional. It seems to me more likely from the lessons of evolution, developmental biology, history, and theology that the time will come when some robots will indeed be persons. The socio-politico consequences of this will be profound, though perhaps not fundamentally different from those that have arisen with previous expansions of our understanding of personhood.

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