'For the sake of others': The 'personal' ethics of human-android interaction

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Abstract

As human beings come to live in an increasingly technologized world, one potentially populated with humanlike androids, one ethical concern is the extent to which the human self changes as a consequence of his or her treatment toward androids. It is argued that android science needs to recognize that there is *a reciprocal relationship of selves for the sake of others that serves as the basis for all forms of social behavior and cognition in human beings*. A failure to do so will lead to a discipline devoid of the humanness it so diligently builds into the appearance of its androids, thus undercutting the enterprise from the outset. To treat humanlike android *others* as dispensable *objects* is to dehumanize the *self* and ignore the inherently ethical relationship among humans in which these androids enter.

An Unexpected Ethical Dilemma for Android Science

An android is defined as "an artificial system that has humanlike behavior and appearance and is capable of sustaining natural relationships with people" (http://www.androidscience.com; Ishiguro, 2005-AS[1]; MacDorman, Minato, Shimada, Itakura, Cowley, & Ishiguro, 2005). There are a number of stimulating topics in this definition inter alia the notion of artificial versus natural life, the concept of humanlike-ness and its embodiment, and the distinction between appearance and reality. However, I will focus on the ethical considerations of androids in *natural relationships with people*.

Human beings are living in an increasingly technologized world, one in which interactions with humanlike androids may come to be routine. One ethical concern is the extent to which a human being is affected by android members of this complex heterogeneous society.[2] According to Olafson (1998), we are *for the sake of others*.[3] The question for android science is whether or not such an ontological statement can be extended to a society populated with androids, as well. If that is so, and irrespective of any responsibility to an android because of its humanlike-ness, does the human *self* change as a consequence of our treatment of androids such that our own identity as human beings hinges on our conception of natural social relationships?

Thus, I am not concerned whether or not "robots are becoming more humanlike…eventually lead[ing] to robots to which we will want to extend the same inalienable rights that humans enjoy" (Brooks, 2000, p. 86; see also Calverley, 2005-AS). Instead, I am concerned with the ethical effect of android social interaction upon a given human's sense of his or her own being. (This would extend to humans generally.)

Androids, though one may a priori grant they are not human per se, are capable of performing valuable functions in people's lives. Androids are potential tools in scientific investigations into behavior and cognition, insofar as androids can be constructed to controlled specifications demanded in experimental procedures; androids can be used instead of humans due to budgetary, attrition-related, or ethical limitations with the latter; and androids can act as models for theories of cognitive and social development (e.g., Adams, Breazeal, Brooks, & Scassellati, 2000; Asada, MacDorman, Ishiguro, & Kuniyoshi, 2000; Thomaz, Berlin, & Breazeal, 2005-AS; for limitations of androids science, see Lindblom & Ziemke, 2005-AS).

I believe, however, that it is important to discuss how androids may be able to function as the most powerful external aid to a human – an intelligent *other* for the *self* – in just such a way as a human can. It is ultimately through some other that the self expands its world and conceptual horizons. Sharing a language and learning of some other world through this *other*'s words is surely one of the great advances of the human mind. It is important to note that this Workshop underscores the fact that creating an android is more than a technological question. It is about the dynamic interactions people may have with androids. This will require an evaluation of the concepts of *self* and *other* and the relation in which they stand.

Does anything *occur* to our mode of being when we deny 'humanlike' androids a place in social relationships? Olafson (1998) pointed out succinctly that with human-human interaction – "To the extent that we do withhold recognition, we deny ourselves the possibility of being so recognized by others" (p. 59). I believe that this generalizes to human-android interaction. I do not claim to know what we are *to them* (e.g., would they feel bad that we ignored them or debated their contribution to a social exchange?).

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[1] The date, 2005-AS, refers to a paper presented at the *Toward Social Mechanisms of Android Science* workshop.

[2] Another ethical concern is a technological schism between the haves and have-nots in such a world. That is, if androids serve some beneficial purpose, are people differentially affected by their access? This is not pursued at present, though see Clark's (2003) discussion of cyborg haves and have-nots. Specific concerns with respect to implementing morality into an android are addressed in Wallach and Allen (2005-AS).

[3] Although Olafson is a Heideggerian scholar, his work goes beyond Heidegger. It is also important to note that the former's writings are less reliant on the infamous neologisms of the latter.

However, I do not believe it a necessity to decide this issue for us to nonetheless be in a position to deny *ourselves* recognition from an equal android partner – however human-*like* they may be – by the way *we* act.

It is argued that android science needs to recognize that there is *a reciprocal relationship of selves for the sake of others that serves as the basis for all forms of social behavior and cognition in human beings*. A failure by android scientists to do so will lead to a discipline devoid of the humanness it so diligently builds into the appearance of androids, thus undercutting the enterprise from the outset. Cartesian metatheoretical assumptions within cognitive science propagate a distance and de-personalization between and among people that is disingenuous to the reality of human-human relationships, as will be argued below. Consider Descartes' (1641/1996) famous observation –

> But then if I look out the window and see men crossing the square…I normally say that I see the men themselves…Yet do I see any more than hats and coats which could conceal automatons? I *judge* that they are men. And so something which I thought I was seeing with my eyes is in fact grasped solely by the faculty of judgment which is in my mind. [italics in original] (2nd *Med.*; AT, p. 32; 1996, p. 21).[4]

In a sense, Descartes located an understanding of other people and the social aspects of interaction *within* a function of the mind. An android designed with these premises would be like a permanent detective questioning the reality of that which it encounters, rather than acknowledging the social milieu of which it would be a part (as, in fact, humanlike). The fruits of the labor in android science lie in the a priori framework of these implicit assumptions.

In the following sections, I argue that (a) the mind-body dichotomy alludes to a limitation of the natural scientific approach; (b) there is an increasing awareness that the 'inner' mind and 'external' world are coupled to such an extent that the mind can be regarded as extending outward as much as the world is leaking in; and (c) it is necessary to propose an alternative framework to the natural sciences in which a human and android social interaction can be appreciated. This paper provides a sketch as to this ethical ontology in which the denial of an android *other* in interaction is to deny one's *self* its natural mode of being.

Mind-Body and the Natural Sciences

Cognitive science is largely dominated by a cognitivist metaphor in which an *internal* mind is necessary for an understanding of the *external* world. In complementary fashion, *external* behavior is interpreted with respect to *internal* mental processes necessary for its manifestation in the world. It is as if "there is an absolute barrier separating the mind as a zone of privacy from what is in the public domain" (Olafson, 1998, p. 16). Thus, the problem for an intelligent, social *self* is inferring the reality of an *other*'s mind, that is, "the reality of something that is supposed to be so effectively secluded from public view" (p. 16). Any *barrier* or *mediation* implies a distance, whether a physical or metaphorical space.[5]

The concept of theory of mind (ToM) is commonly invoked to bridge this inner-outer schism in which a hidden mind is inferred to explain an outer observable behavior (see Baron-Cohen, 1997; Leudar & Costall, 2004; Scholl & Leslie, 1999). Insofar as android science seeks to learn about android and human selves through the iterative testing of models by a dialectic of human and android (other; see Asada et al., 2000), it is important to examine the consequences of ToMs. It follows that from a ToM position that an android may require specific programming for the identification of facial displays, eye contact, posture, or shared attention, etc. (cf. Minato et al., 2004; Thomaz, et al., 2005-AS) needed to infer probable action. An android without such abilities would be effectively autistic by this account. This conclusion, however, relies on a notion of mind that can be challenged.[6]

We might nonetheless regard certain beliefs we hold or motivations as private and even in a different universe, as it were, than the actions we take and that can be witnessed by public, third parties. However, as Olafson (1998) noted, "in a great many situations it is possible to read off the only motive that really concerns other people from the action itself, the situation in which it is performed, and the effects it produces" (p. 34). This is an echo of Merleau-Ponty (1945/1962) who asked one to embrace "the anger or the pain which [one]… read[s] in a face, the religion whose essence [one] seize[s] in some hesitation or reticence, the city whose temper [one] recognize[s] in the attitude of a policeman or the style of a public building" (pp. 23-24). One might contend, nevertheless, that if there is at least one instance in which a propositional attitude is not to be perceived directly and immediately from an action, then there *must* be a qualitatively different mental life, a mental substance in contrast to the physical substance of the body that explains the action (for a discussion of Descartes' obverse vocabulary of the physical and mental, see Ryle, 1949). However, consider a magician who fails every time to pick your card or make a rabbit disappear but one. Does that one instance necessarily invite a paranormal world of

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[4] The citation indicates a particular *Meditation* – (# *Med.*); page numbering referring to the translation of the Latin text of the standard edition of Descartes, Vol. 7, C. Adam and P. Tannery's (Eds.), *Oeuvres de Descartes* – (AT, p. #); and the page number referring to the 1996 edition consulted by the author – (1996, p. #).

[5] The terms *body* and *embodiment* in phenomenology are ontological and are conceived quite differently. That is, a body is not a boundary of inner and outer, but the active condition of experiencing the world in a particular way in the first place (see Lindblom and Ziemke [2005-AS] for a discussion of active embodiment.

[6] An extended critique of ToM is beyond the scope of the present paper (see Leudar and Costall's [2004] special issue on the topic). The question, however, remains as to whether or not there is a more apt metaphor, or meta-theory than one of inter-personal and inter-mental separation between beings, in which there is a cognitive *judgment* required to realize entry into the social milieu of humans. Phenomenology, for example, does not assume this distance a priori.

magic into one's worldview? (No more so than the *inner mental life* of the mind, mutatis mutandis.) I should hasten to add that I am a cognitive psychologist by profession. The argument at issue is not a *mind* per se as the conception of it as an inner-mental as part of a dichotomy with the outer-physical. I believe that phenomenology offers a social conception of *mind* that is a valuable alternative for android science.

Various solutions to the mind-body problem and union of in- and outside have been offered from within the cognitive scientific meta-framework. Mind-body is a problem insofar as the natural sciences only allow for entities within the framework; the immaterial mind would be an anomaly requiring redress. There is, however, a reliance on a faith in the natural sciences. If android science is to explore real human social relationships, it cannot succeed by following the natural science model, as argued below.

For computationalist thinkers, the mind is merely a symbol-manipulating device like a computer governed by rules of an operating syntax (Fodor, 1983; Pinker, 1997) and this software program, as it were, works *in principle* without regard to a specific hardware system. Accordingly, a brain and a computer are both potentially suitable systems on which a *thinking program*, or mind, can occur because there is no principled difference between how the hardware of a computer and how the body of a human function.

Another solution is to deny the dichotomy on conceptual grounds. For example, Chomsky (2000) argues that the concept of the mental was set in opposition to the physical, but the latter's extension has changed over time, making the dichotomy incoherent. As scientists have learned more about the *physical*, they have expanded the concept to include things that are not visible and things that do not have permanent existence, etc. Thus, for Chomsky, to regard language and other mental phenomena as expressions of the physical is merely to indicate that what one regards as language and other mental phenomena are representatives of the concept *physical* at some level of abstraction. This is evident in the adoption of the hyphenated "mind-brain."

These positions demonstrate a general displeasure for that which does not fall neatly into the *natural sciences*. The requirement to resolve the seemingly supernatural mind with the natural universe of physical objects even leads McGinn (1989/1997) simply to concede that the natural sciences holds an explanation to this psychophysical nexus, but that humans are cognitively incapable by design to do more than formulate the question, thus resorting to an in principle faith in science, or *scientism*.

Scientism operates with the metaphor HUMANS ARE NOTHING BUT PHYSICAL OBJECTS, equating human beings with physical objects (cf. Lakoff & Johnson, 1999). Thus, humans are subject to the same explanatory set of naturalistic laws as all physical objects (e.g., rocks) and humans are devoid of a unique *human orientation to the world* that qualitatively differentiates them from physical objects (see Olafson, 1995; 2001). Science, thus formulated, operates from a God's eye point of view in which the natural universe is populated by objects standing in external relations to one another, a kind of *side-by-side-ness*. Science is the accumulation of knowledge, and this is putatively regarded as objective facts of the universe awaiting discovery by the enterprising scientist with proper instrumentation, methodology, and time. The scientist, interestingly, operates ideally from the third-person, thus taking great pains not to infect observations with his or her very subjectivity. Over time, the scientist is to gather facts from journals and experiments as a person gathers berries in the field.

It is important to note, however, that people do not interact with facts; they interact with people. Likewise, scientists do not lose their humanity merely by adopting a discipline that professes an equal treatment under the physical laws. This social community of scientists interacting and relying upon one another hints at the irony that *natural science is based upon that which it denies* – the unique social relationships of human beings that is qualitatively different than the relation of one piece of furniture with another.

An android science built upon a foundation of scientism would regard humans as equivalent to objects and in equivalent relations with one another as objects to other objects. Thus, an android designed to be *humanlike* from within this model is only an aesthetic exercise, for a *human* is *only* a more complicated *object* – different quantitatively, though not qualitatively from any other object (see Lindblom & Ziemke, 2005-AS). I neither believe that this should be how android science operates nor believe that this is how android scientists implicitly proceed. (Then, one may ask, where is the issue?) The challenge in espousing a phenomenological perspective is to convince the ardent natural scientist of something he or she already knows, though denied within their *scientism*. Although most android scientists work within certain tenets of scientism (e.g., the scientific method), there is a subtle allegiance to an opposing discipline – phenomenology.

Phenomenology, in contrast to scientism, reminds us that we must take great care not to deny the nature of our being, a unique kind of being in which we *stand out* (ek-sist[7]) among the objects with which we deal. Although we may doubt the uniqueness of human being (ek-sistence) in the scientific worldview dominated by the natural sciences (see also Ramey & Chrysikou, in press), the creation of humanlike androids is a chance to revisit that which is presupposed and later denied by all scientific inquiry – the asymmetric relationship of self to object and the reciprocal relationship of self to other selves.[8] Thus, we do not stand

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[7] I retain the use of the perhaps unaesthetic "ek-sist" in order to stress its technical sense in phenomenology. The more familiar "exist" would seem to apply too broadly for present purposes.

[8] Examples of investigations into the possible asymmetric relations humans have with 'objects' include Walters et al. (2005-AS) and Taggert, Turkle, and Kidd (2005-AS), which investigate the naturalness of interpersonal distance and the evocativeness of artifact interaction, respectively.

side-by-side as objects do in an uninhabited room, externally related as if by some abstract coordinate system of space. We must not forget our *selves* while making *others* in our own image. That is, to deny a role for androids in our lives, though deeming them (in principle) humanlike, is to threaten the very manner in which we understand what it is to be a human being for the sake of others.

Mind Extending Outward, World Leaking In, and Self Incorporating Other

Scientism is dominated by a Cartesian conception of *body*, that is, "whatever has a determinable shape and a definable location and can occupy a space in such a way as to exclude any other body" (2nd *Med*.; AT, p. 26; 1996, p. 17). Phenomenology, in contrast, regards the body as a mode of ek-sistence, wherein there is no inner and outer dichotomy, no mind-body problem.[9] This is not a trivial distinction, and android science is not immune to its consequences. How an android is to have a body in order to participate naturally in social relationships (or interact with objects) is a major concern for the discipline (for a discussion of different kinds of embodiment, see Ziemke, 2003). The construction of the body of an android is more than an engineering problem involving degrees of freedom. Fundamentally, it is an ontological question of the kinds of relations beings and objects have, as well as beings and other beings – to include androids – have (see also Lindblom & Ziemke, 2005-AS; Turkle, 2005-AS).

Descartes (1641/1996) divided the physical and the mental as opposing substances with different properties that in some way interacted in every human. Behaviorism attempted to establish a more legitimate empirical discipline of psychology by banishing the mental. The goal was to focus on the observable behavior of organisms. Other dichotomies include inter alia inner-outer, mind-body, subject-object, subjective-objective, and organism-environment (see Lewontin, 1991). To echo Dennett (1991), cognitive science is to be a third-person science, "for *all* science is constructed from that perspective" [italics in original] (p. 71).

In phenomenology, there is a denial of these dichotomies, and there is a concomitant abandonment of the natural scientific perspective as the ultimate court of appeal for understanding what it means to be a human being. This is neither to demonize the discipline or its disciples, nor to challenge its contributions to intellectual history. It is, however, meant to question its validity for certain subjects (indeed, the applicability to *subjects* is what is at issue). What validity is there in an approach that denies the subject matter in question a priori; and why rush in so quickly and willingly as scientists? Consider Olafson (1998) –

It is still not as widely understood as it should be how closely the claim of the natural sciences to be 'the theory of everything' is bound up with the validity of…the subjective/objective contrast…Without that initial act of abstraction from 'the world as we know it' and the availability of the mind…for all the subjective debris that had been denied a place in the order of nature, the claim of the natural sciences to be *the* complete and authoritative account of what there is would seem feeble indeed. [italics in original] (n. 7, p. 44)

A dissolving of these dichotomies will necessitate a reappraisal of formulations of social interaction in human beings that has a direct consequence on android science.

There is an emerging complementarity in which the mind can be regarded as extending into the 'external real world' (Clark & Chalmers, 1998) and the world can be regarded as leaking into the 'inner mind' (Dartnall, 2005).[10] Although it may not be obvious to some, people's minds are augmented with external aids like notebooks, personal digital assistants, cell phones, and laptops to such an extent that it can be argued that people are already walking biological and technological hybrids. In fact, Clark (2003) describes humans as *natural-born cyborgs*, designed with the ability to incorporate[11] external aids and live a kind of augmented life *through* and *because of* these scaffolding props with which we interact. These 'technical' appendages are no different the 'organic' appendages of the automatic systems in the brain (Gazzaniga, 1998). We carry around our brain most reliably of all objects because it is attached to us. The convenience of portability and transparency in use often masks how we have incorporated things into our lives. The brain was the first attaché case! Written language in the service of memory is perhaps the most powerful and ubiquitous of these aids (Clark, 1998).

Clark and Chalmers (1998) proposed that the mind extends into the world, a kind of *active externalism*.[12] Thus, a faithfully consulted and reliable planner in which one stores phone numbers and addresses is just as much a part of one's mind as the memory of those items in the traditional sense. Whether one consults an external aid or an internal log is irrelevant. They are functionally equivalent. That is, there is nothing magical about the top layer of skin that substantiates a dichotomy of inside mind and outside world.

An example from biology may help to elucidate this point. Lewontin (1991) criticized what might be considered

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[9] There is also no mind-mind dichotomy in phenomenology (see Overton, 1994). Thus, cognition, affect, and conation must be considered holistically (see Damasio, 1999; Thomaz, et al., 2005-AS)

[10] It is interesting to note that there is no claim that the world is leaking into the world. That is, it is the peculiar kind of human mind that we possess that allows for extension and incorporation. It is the mind of an ek-sisting being that necessitates phenomenology and the abandonment of scientism as an account of human beings.

[11] Consider that when one incorporates an object, one admits it into the concept of body (Latin *in-* + *corpus*, body).

[12] The term is unfortunate as it propagates a dichotomy of inner-outer, akin to Behaviorism adopting the Cartesian dichotomy while denying one half. Dartnall has coined the complementary position of the world leaking in as "internalism." I believe this term suffers similarly.

a *battleground* metaphor of genes, organism, and environment. According to this position, the organism is merely the line at which internal genetic forces are selected out by external natural selection. But evolution is not unidirectional. As Lewontin noted, "An organism's genes, to the extent that they influence what that organism does in its behavior, physiology, and morphology, are at the same time helping to construct an environment. So, if genes change in evolution, the environment of the organism will change too" (p. 112). Thus, experience must be considered an active, continual interaction between a whole organism and environment as it involves a continual reorganization of the organism's circumstances (Lewontin, 1991; Overton, 2002; Todes, 2001). An insignificant human footprint fills with rain and becomes the breeding ground for mosquitoes which can spread malaria. The fitness of genes relative to malaria is irrelevant to the *organism's* choice to take a step, not take a step, or build a paved walkway.

A complement to the extending mind is the leaking in of the external world. One can make a discovery or solve a problem about the 'external' world in the 'inner' world of the mind by using analog codes, or mental simulations (Dartnall, 2005). As Dartnall has pointed out, one can make *empirical* discoveries *in the head* by performing mental operations (e.g., rotation) on objects no longer physically in view or otherwise perceived by the senses. Thus, facts are not just for discovery *in nature*.

There is something alluded to in these theories that is not explored fully, however. External objects are to count as aids of the mind (i.e., part of the mind) if they are coupled with the organism, that is, "for coupled systems to be relevant to the core of cognition, *reliable* coupling is required" and as Clark and Chalmers note, "[i]t happens that [the] most reliable coupling takes place within the brain" (1998, p. 11). The something hinted at here is what may be called intersubjectivity. There are always people in one's life; this condition is a constant. These people are the same kind of beings as oneself, as well. We, as human beings, are born into a social milieu. Likewise, androids must be *born* and *develop* in such a world. Humans do not, for example, acquire a natural human language alone.

All language is a reflection of the person's interdependence with a world through which it experiences that *given* social relationship itself. Each use of language implicates a whole community of language users in a potential world of similar experiences. We share an understanding of an *other* that is a *self* from a different perspective in a reciprocal relationship. My actions and statements hold the same value as the others'. We stand in relief to a process of mutually reinforcing recognition of our language and our*selves*. That there is the capacity for deception or a denial of a request reinforces the understanding that the *others* have their own ek-sistence. An android communicating through a language cannot be regarded as a vertex in a triangle relation of android-human-referent object, in which it is the referent in the 'external' world that guarantees factual communication. Reality and facticity are not external to a human (or android), rather they are immanent to the embodied social activity of a human (or android).

As Merleau-Ponty (1945/1962) noted, speakers of a language are "collaborators for each other in consummate reciprocity" and as their "perspectives merge into each other, [they] co-exist through a common world" (p. 354). Language must be regarded as something used, and humans must be considered as competent *beings* in speech and perception, not just *things* and *parts of other things* in the natural world. Language is a cultural object of unfolding experiences. This bond can be regarded as a *Mitsein* (from *Miteinandersein*, essentially *intersubjectivity*; Olafson, 1998, n. 2, pp. 1-2).

Much as memory extends into the world to include notebooks and laptops, Clark and Chalmers (1998) presciently asked, "What about socially extended cognition? Could my mental states be partly constituted by the states of other thinkers?" (p. 17). Their question hinges on mental *states*. The position of cognitive science is that humans are somehow physical receptacles with mental states that cause bodies to move and it is the *mental states* that interact, transport, and extend themselves! The *whole* human being seems to have been lost.[13] The extended mind appears to apply only to props for consultation, whether external physical object (e.g., a notebook) or internal mental object (e.g., a propositional attitude of another thinker).

According to Clark and Chalmers, they grant that "[i]n an unusually interdependent couple, it is entirely possible that one partner's beliefs will play the same sort of role for the other" (p. 17) as one's own. There are two ideas here that require comment. First, it is important to note that even in their more extreme *unusually interdependent couple*, it is the *beliefs* that are in question. Does one's mental state extend to include the loved one's *beliefs*? Second, if it is true that what counts as part of an extended mind or self – or any coupled system – is "a high degree of trust, reliance, and accessibility" (p. 17), then surely this would include the presence of other people in general, not just the unusually interdependent couple. *People* are more predictably present in people's lives than a particular *propositional attitude* like a belief. Thus, there seems to be a reasonable argument that the whole being itself, not just the mind or its 'inner' contents, is extending such that it is incorporating objects and even *people* (not just their beliefs).

According to Merleau-Ponty (1945/1962), "science is the second order expression" (p. viii) of a person's phenomenal experiences of the world – a world through which he or she moves and implicates through interaction (Todes, 2001). Failure to recognize this unity – a co-implication between a person and world through experience – would lessen the import of ordinary phenomenal experience such that "the perceiving subject [would approach] the world as the scientist approaches his experiments" (Merleau-Ponty,

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[13] One can compare this with Lewontin's (1991) criticism of the battleground metaphor of evolution in which it is merely the survival from generation to generation of the fittest genes, irrespective of the organism-receptacles themselves.

1945/1962, p. 24). But a person's experiences are not a sterile world of empirical facts, but a deeply meaningful dialectic – a co-implicative experience of world and person. Person and world are not separable. Importantly, this personal world is populated with other people with whom one must interact. Android scientists must approach their research with this orientation. A humanlike android cannot regard an apple or set of blocks in the same way it confronts another android or human being.

One need not be troubled by whether the notion of *self* will become more alienated in an increasingly technologized world populated by strange cyborgs and futuristic androids because there is no faithfully isolated and inner self in the first place from which a loss could be appreciated as such. Android science must prioritize the *self* as a part of a reciprocal relationship with an other(s), a self from a different perspective in this relationship built on an uneasy tension that the inherent trust could be broken. These selves ek-sist, or stand out, and incorporate objects for their worlds by acting upon their worlds, though objects *do* nothing in response. Android science (indeed, science generally) must also rescue the *self's* agency from physicalist and reductionist approaches. An organism *acts*. A self *acts*. A brain *does* as much as a rock. For an android to be a *self* in a natural social relationship, it cannot have the 'orientation' of a rock. The self is not an internal mind set in opposition to a body as external object, with mind full of propositional contents, like memory. Memory is not an inner container; memory is a reminder that one is walking forward, incorporating new experiences and new people into a personal body of knowledge. The memories of an android cannot be *objects* in an *inner* receptacle bank.

Android science must take great care with the underlying metaphors it implicitly adopts through its parent disciplines. It does not need to seek out some *new stuff* of the natural science universe of *things* for explanation of life (Brooks, 2001). Android science has the potential to guide cognitive science to an understanding of the uniquely personal and human ways in which we act as social *beings* in certain relations to one another. These relationships are not of the external relation variety, as a chair might sit to the side of a table, rather these relationships are reciprocal relationships in which each member is opened up to another by their very nature as ek-sisting human beings. To afford an android humanlike being is to grant them this respect.

Reciprocity and A 'Personal' Ethics of Human-Android Interaction

The natural sciences propose an external relation for all objects, humans among them. This is unlike the reciprocal relationship in phenomenology in which selves incorporate others and the asymmetric relation in which an object is that which is for a being and a being is that to which an object is. What is the basis, then, of an ethical relationship of selves and others in both of these frameworks?[14] One need not appeal to a higher power or otherwise external source of authority, and one need not feel helpless to some form of cultural relativism. The natural sciences would vehemently deny these two options much as phenomenology, though certainly for different reasons.

One may appeal to neurobiological substrates of social behavior, granting that ethical behavior is inherently social. For example, Amaral (2005) has explored the role or non-role of the amygdalae in the social behavior of rhesus macaques. One can also investigate the neurochemistry of natural social relationships. Carter (2005) has examined the role of oxytocin as a mediator to bonding in prairie voles. What is important in these natural scientific approaches is to realize that the individual is not the best level of analysis for social behavior, even when the investigation is neurobiological (Cacioppo, 2005; Carter). Appeals to neuroscience (mutatis mutandis pure engineering in android science) always run the risk of reducing social phenomena to biological correlates, a practice which does not explain the phenomena. Molecular analysis for a molar phenomenon is inappropriate. Thus, one may very well find that mirror neurons are involved with imitation and that a deficit in this system is present in patients with autism or motor deficits (e.g., Ramachandran, 2005), but this only implies that the brain is necessary for social and ethical behavior. Phenomenology would not dispute this, generally or specifically. Mirror neurons do not explain social behavior any more than the discovery of the visual cortex explains the *phenomenal experience* of vision. The concern for phenomenology is to where these discoveries lead (e.g., what is the ontological import of neuroscientific or engineering successes?)

Natural scientific approaches need not be exclusively biological. Another example of the natural science approach is the innate ethics modules of Haidt and Joseph (2004). (Modules may take many forms, for example, informational.) Modules would have been selected for in evolution for appreciating suffering-compassion, reciprocity-fairness, purity, and hierarchy/respect (cf. ToM mechanism, Scholl & Leslie, 1999). There is an interesting parallel with Chomsky here. Language (the language acquisition device or faculty of language) is putatively regarded as *growing* insofar as it is an organ of the mind. One must be born with the knowledge of all permissible human languages because there is a poverty of the environmental language stimulus. Similarly, regarding ethics, Haidt and Joseph reason that children are born with ethics modules that, for example, allow for "an innate preparedness to feel flashes of approval or disapproval toward certain patterns of events involving other human beings" (p. 56).

But this explanation assumes a priori that children are merely thrown into the world, separate from its objects and

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[14] Pinker (2005) has recently stressed again the interaction of one's scientific metatheoretical stance and one's personal ethics (see also Gazzaniga, 2005).

people and, therefore, human beings must be born with innate knowledge of ethics (cf. language). Humans must be born with such to account for an ethics of *human* behavior, as there is no such ethics of bananas and strawberries. Note that humans are not beyond the bounds of natural science here because this module would be the result of evolution and biology in some underspecified manner. But human beings do not stand apart from the world, rather they stand out, or ek-sist. Both human and android would thus need to appreciate the nature of their social ek-sistence in order to understand whether they are acting ethically or not.

In addition, Haidt and Joseph (2004) account for seemingly unethical behavior toward others as the result of an environmental trigger moderating innate parameters of the ethics modules (cf. universal grammar and the setting of word order as verb-object or object-verb). For example, Haidt and Joseph even postulate an ethical 'ingroup' module. This can be usurped by a taught racism. By this account, discriminating against a person because of a superficial characteristic like race or not doing so is as equivocal as an English speaker's subject-verb-object sentence and a Japanese speaker's subject-object-verb sentence. It is also odd to note that racism, thus, would be a legitimate outgrowth of an 'ethics' module.

Phenomenology offers a different basis for ethical relationships that does not equivocate on what is ethical or not. It involves the appreciation of the unique relationship beings have with one another *as beings*. Android scientist or not, a human being must realize that "the happiness of each one of us stands in a relation of interdependence to that of others" (Olafson, 1998, p. 82). An android cannot truly be humanlike until it is regarded as part of a reciprocal relationship in which one's well-being is tied to the maintenance of this Mitsein. An android cannot merely stand side-by-side with a human; that is a physical, external relation. To be in a social relationship, both android and human must be regarded as more than physical entities. This 'more' is not meant in a supernatural sense, as that terminology is dependent on the metatheoretical appeal to the natural sciences alone as ultimate arbiter of truth (see also Carman and Hansen [2005] for Merleau-Ponty's view of 'nature').

We are judged and held responsible by our *selves* and other *selves*. We are confused and disappointed. We are held triumphantly. It is this inherently ethical social milieu in which we are born that gives us a conscience in times of crisis. We have a *conscience* to remind us when our reciprocal relationship with others has been threatened or compromised (Olafson, 1998). We do not pass by a crying baby on a doorstep and feel indifferent. (Has android science yet considered it necessary for an android to possess a conscience as a legitimate and paramount ontological primitive?)

Two beings are two sides of one coin whose existence is defined by each side intimating the other and itself. To treat an android as human is to bind oneself and one's humanity to the conduct toward that android other. A human and android in a normal social relationship must equally regard each other as capable of disclosing a new world through each other's perspective, though understanding that they may both be thwarted in their goals, for each is capable of acting as *selves*.[15] If an android does not act, it need not be broken. If a human does not act, we regard him or her as lazy; we do not look for a programming fault or power surge. A 'broken' android is an object and, identified as such, indicates that the relation was not a genuine example of Mitsein.

Android science is not the study of humans playing with toys; it is about a social interaction of consequence. A human and android must share a world of possible actions and inactions, as well as their consequences. This world is not a shared physical geography, rather a world of interaction and incorporation. As Olafson (1998) noted, "actions take place in the world and not in nature" (n. 9, p. 24). For the natural sciences, there is only one nature; there are no human or android worlds. In phenomenology, a human and humanlike android must both stand out (ek-sist) as beings for whom the world is meaningful. Each must understand that one's *self* is defined by a paradoxical identity with difference – the *other* to which one is opposed and with which one can cooperate (or choose to ignore) is a *self* capable of treating one the same or different. This uneasy reciprocity is different than the asymmetrical manner in which one relates to purely physical entities – a chair is there for my sitting, but I am nothing from the perspective of a chair (something incoherent even to attempt to formulate). It is this kind of paradoxical sense of self that needs to be the heart of a truly humanlike android. It is not possible within the doctrine of scientism.

Once one admits androids into one's interpersonal realm, however, one cannot turn back. It is here that one's human mode of ek-sistence can be threatened. To treat androids as humans is not to make androids actually human, but it is to make oneself an expanded self. For example, if a person adopted a child, there is an understanding that the child is not biological family, but that parent is fundamentally changed as a person by the adoption of that child into his or her world (mutatis mutandis a person who treats an android as part of their world, though never granting that an android is actually human, nevertheless is enriched by that adopted perspective). A person who should happen to return an adopted child effectively *changes their mind* in more ways

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[15] This argument is different than an argument in favor of reciprocal altruism (de Waal, 1996) insofar as it is ontological. Premack (2005) has noted that before the establishment of an agrarian society, humans were hunter-gatherers who foraged and shared. There was a priority of equality in the sharing of meat and other goods between haves and have-nots (also present in various primates). Once society became settled, however, inequities in intelligence and success due to work in agriculture became manifest and exerted their influence through competitive behavior. For phenomenology, a *human* is equal to another and demands respect for this position from some *other* because of his or her ontological status as a non-object, not because of a societal strategy for survival.

than one. Abandoning an android once it has been functioning as and recognized as humanlike in social interactions is losing the *presence* of an entity not *in* one's world, but one *through* which one experiences a whole new world of possibilities.

According to Olafson (1998), "to recognize someone as a human being is, in any real life context, to see him as being not only the same as ourselves in the relevant respects but also as someone in whose disclosure of the world we ourselves have a place as he does in ours" (p. 58). We see ourselves through an android, through our conduct. We do not think ourselves as vicious to kick a stone, but our evaluation changes for a dog (likely) and a human (definitely; see Calverley, 2005-AS). And what of pictures and effigies; those in the shape of androids? We can incorporate the world differently, contingent on its appearance and appeal. Our *selves* are constituted in these relationships, ones taken for granted in the natural sciences, ones returned to us by phenomenology

A humanlike android does not require a specially designed cognitive mechanism, or theory of mind module, in order for it to function in a normal social relationship. Android science will learn little about genuine human social relationships by implementing these research programs of cognitive science into their engineering. An android requires what makes a human being stand out; it requires an asymmetrical orientation to the world of objects and a reciprocal orientation to the world of ek-sisting others (human and android). Androids must also recognize the tension that trust in another can lead to betrayal, the threatening of the social fabric of the human mode of being (see also the embodied computational model of social referencing[16])

As Merleau-Ponty (1945/1962) noted, "The social is already there when we come to know or judge it" (p. 362) and this knowledge is from the bodily, perceptual experiences through this inherently social world. Knowledge is derivative of perception, and perception is the phenomenal activity of the organism. Organisms, however, do not exist in a vacuum. Thus, meaning, or knowledge, must be considered an inherently social process that implicates certain structures (e.g., a person) with others (e.g., objects and other people). *One* does not exist independently of an *other*. Individual meaning is only social meaning stressed from another perspective in a holistic relationship.

Without a phenomenological correction to the metatheoretical assumptions of cognitive science that guide android science, neither one can address the basic study of being human and merely both deceive themselves of their own subject matters. What is most pressing for android science is a return to the basic experiences of ordinary life –

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[16] "The robot's direct experience with the objects in its environment may also offer the opportunity for the robot to reflect upon the quality of the human's guidance" (Thomaz, et al., 2005-AS, *Future Work*, paragraph 2). This *understanding* is akin to trust in another social agent.

to an ecological science of personal experience made meaningful by embodied, tangible activity. And the activity of one is always with respect to the activity or inactivity of some other(s). As Lindblom and Ziemke (2005-AS) note, it is perhaps time to build *infant androids* because "having a human-like bodily shape is not the same as human-like embodiment" (*Conclusion*, paragraph 3). These androids will acquire knowledge with their interactions with objects and through their interactions with people and other androids and these interactions are a function of the androids changing phenomenological embodiment.

It very well might not matter to most people if a plant recognizes them as human beings. We are deeply affected, however, by a human who so disregards us or threatens our own space or well-being. This is because we ek-sist as beings whose envelopes of influence are so willing to allow other people incorporation that we become unnerved when that trust is betrayed. An android in a real social relationship with a human must be capable of understanding this orientation and its inherent responsibility to others (as selves) and the possibility for disappointment in another's actions of inactions. Likewise, a human being must not deny its own mode of being by expelling a *humanlike* android from a Mitsein.

In the natural sciences, the Earth lost its centrality and uniqueness with the heliocentric model of the solar system; there was a parallel depersonalization in scientific perspective and measurement, etc. To adopt a phenomenological perspective for android science is not to repudiate the natural sciences' understanding of the natural universe of objects and somehow return to superstition or spiritualism, but it *is* to refocus science unabashedly on the self and the differential relationships it has with objects and other selves.

Conclusion

Mary Shelley's *Frankenstein* is not about the creation of a monster that stalks its victims as movies might depict. It is fundamentally about the ethical lesson of science's responsibility to its creations and – perhaps more important – the responsibility of scientists' to their selves. Robots, though not as sophisticated as the humanlike androids of which we dream, already permeate much of our lives (e.g., Brooks, 2004; see also Goldberg, 2000; Gray, 1995).

Android science may yet force us to acknowledge that the success in the kinds of relationships we wish to have with robots is contingent on recognizing the natural dependency we have on other people to share our lives, whether as aid or obstacle. Android science holds perhaps the most potential of the newest sciences to stress this reciprocity insofar as it aims to create humanlike interaction with artificial beings. It is an opportunity to transform a de-humanized psychology and cognitive science.

This paper has necessarily been metatheoretical. To argue for a phenomenological approach to the interdisciplinary field of android science – in general and with respect to ethics – requires that (a) one introduce concepts which may

be quite different from one's natural field and (2) argue for why conceptually they are appealing. Because of this approach, one may regard it as non-empirical and, thus, unimportant to science. (Indeed, to some it may prove *weird* or *annoying*.) One may, indeed, argue that it is antithetical to an android science insofar as phenomenology is anti-science. Phenomenology is anti-scientism, but not anti-science as a manner of pursing knowledge through experience. Thus, in a peculiar fashion, phenomenology is both non-empirical from the perspective of scientism, while also empirical from the perspective of active embodiment. It is apparent, I believe, that it would be difficult simply to present data from one metatheoretical perspective and argue against another perspective on the basis of those data, just as it would be difficult to reinterpret data independently of explicit identification of the metatheoretical arguments at hand in any debate. There is a tremendous difference between a behavior analyst and cognitive psychologist observing a conversation – is one watching verbal behavior or language; is one emitting or speaking?

Nevertheless, an android science informed by phenomenology holds promise for exciting and informative studies. For example, if humans interact in reciprocal relationships with one another and asymmetric relations with objects, then one could investigate a kind of indirect Turing test. That is, people learn about the world of objects and beings through interactions with other active beings, but they do not learn about the world so with static objects. A human (X) can socially learn about another being (Z) or object (O) through a being (Y). One can manipulate the situation and investigate whether person X can differentiate through the behaviors of person Y (e.g., video recordings of Y's eye gaze or emotional display) whether person Y was interacting with person Z, object O, or android A. These data would complement the analysis of differential eye gaze behavior of people knowingly interacting with humans or androids.

Additionally, if, as has been argued, the treatment of humanlike androids bears on ethical consideration of the symmetric relationship of humans to humans and the asymmetric relation of humans to objects, then it is possible to study what it means to be human, as opposed to an object, by the reactions we have to humanlike androids in care situations. One could investigate this possibility with a hospice android. A hospice android could be constructed to appear to be an older adult, relatively immobile, save for slight animation in the face or hand, in a hospital bed. This would involve minimal engineering and aesthetic concerns, relative to current androids. Indeed, having cables visible would not make the situation any less real. Participants could be interviewed before, during, and after interaction with the android, some informed that the android was artificial, some not. Participants could be told subsequently the opposite and changes in reaction could be measured qualitatively (e.g., verbal protocol analysis) and quantitatively (e.g., neurophysiological responses). Some participants could be sacrificed midway through the study

and told the opposite story. This would also have benefits for training of caregivers. Is it enough that something humanlike is in need of care – whether the entity is an android of an infirmed human bordering on the uncanny valley – for one to offer? Phenomenology is not anti-scientific, but it may orient itself to different questions.

Android science presents the many subdisciplines of cognitive science with an ethical research program – what is the place of robot *others* in whose eyes one sees oneself and in whose touch one feels a sense of belonging, and to what extent is one's *self* changed by these admissions into a body of inquiry?

Acknowledgments

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