The Myth of the Standard Body Revisited: Epistemology and Ethics in Questions of Therapy Versus Enhancement

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On June 7, 2006, MSNBC, along with most other major news outlets, reported that doctors had removed the third arm of a child born in China. Chief Surgeon Dr. Chen Bochang was quoted as saying, "The surgery really went much better and smoother than expected because we found the nerves and blood vessels for the arm were formed just as they would be for a normal arm."\(^1\) The article continues, "Chen said no reliable figures exist on the frequency of such cases, partly because many fetuses with more than four limbs are aborted or miscarried. In most cases where the fetus survives, it's clear which limb is less developed and should be amputated. Junjie's [the baby's] case was especially rare because both left arms were almost equally well developed."\(^2\)

In March of 2012, Umar Farooq was born in Pakistan with six legs. After surgery to “correct” the condition, the head of the National Institute of Child Health in Pakistan

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\(^1\) <http://www.msnbc.msn.com/id/13158089/> accessed February 5, 2007

said, “It was strange that an apparently abnormal baby with six legs was as normal as other children.” Similar reports are found almost inevitably accompanying media reports of these medical conditions.

On May 22, 1982, Australian performance artist Stelarc successfully performed a piece called "Handwriting," in which he wrote the word "evolution" with 3 hands at once. Two of those hands were part of his "natural" body, but the third was a robotic arm that he had invented and attached to his body via electrode stimulation in his thigh – an entirely external prosthesis of which his body eventually took up intentional control. Stelarc has reported that in spite of the fact that he was unable to wear the hand permanently as originally intended, he is “able to operate the third hand intuitively and immediately, without effort and not needing to consciously focus. It is possible not only to complete a full motion, but also operate it with incremental precision”⁴. Writing on Stelarc’s integration with the machine, cognitive scientist Andy Clark has described it as “an occasional but fully paid-up member of his real body”⁵.

The late neuroscientist Paul Bach-y-Rita once said of the process of vision, “We see with our brains, not our eyes.”⁶ By way of evidence, he invented a device that one wears on the tongue, which translates information that would normally be processed visually into tactile information. Designed so that a blind individual might still be able to navigate the environment using a kind of sensory substitution, the device itself, now called the Brainport, has passed clinical testing as is now available in the US. Users have

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⁵ ibid.
reported that the experience is one of “pictures that are painted on the tongue with champagne bubbles,” indicating what sounds like an altogether pleasant experience.

There is at least one major assumption that we bring to these illustrations, and that those doctors and Stelarc and everyone brought to their respective works: the assumption is that there is a standard body that we all share in some universal sense. We marvel at the robotic arm and correct the mutant because we instinctively feel that there is a certain sort of body that it is appropriate for a human being to have. Philosophically speaking, we have long hypothesized that there is something we, as humans, share and that we can identify as the source of our shared humanity. Philosophers and theologists have historically pointed to our minds as that shared human universal substance, ensuring we are all part of the same ethical and epistemological community. A human mind signified both an ethical agent and an individual capable of sharing a common world. However, as various sciences have progressed and gained precision, the concept of "mind" has been recognized as entirely too vague. Increasingly, our bodies have begun to take on a large part of the philosophic (and scientific) role that the mind used to play. Much in the same way that the mind or soul was long considered the universal and identifying aspect of human beings, the body has emerged philosophically in recent years with a similarly universal character. It is this universal character of the body that I argue is both false and harmful. I will here lead you through just a few places that we find this notion of a standard or universal body evoked, and the work that it does in those theories. Then, I will present an overview of evidence from across disciplines that shows there really is no such thing as a standard body. What bodies are is plastic and changeable.

7 <http://eyedocnews.com/006373-how-effective-is-the-brainport%C2%AE-vision-device/> Accessed October 20, 2012
As we have already seen with the removal of the child Junjie's well-formed third arm in China, there is a commonsense understanding of what bodies should be, and this both informs the medical dialogue as well as being formed by it. (We instinctively see a third arm and think, "that's wrong, we should remove it," and through its removal that view is reinforced as acceptable.)

This, as well as many other headline cases in recent years (such as Ashley X\textsuperscript{8}, and Lakshmi, the Indian girl born with 8 limbs and believed by her village to be the reincarnation of a god\textsuperscript{10}) has shown us that we have expectations about bodies – they should, for the most part, look a certain way, including but not limited to exactly two arms, two legs, five functional senses and the sense organs that accompany them, be of a certain height and weight, mobile, motile, and of exactly one sex and one gender\textsuperscript{11}.

Many arguments have also been made that there may be an assumed standard race as well, which really highlights the cultural aspect of this list. Simply by how these issues arise within bioethics, we can see immediately why this question of a standard body matters ethically. Most of us probably share this intuition of a standard body (were there a good way to gauge visceral reactions from here, I would bet that many people, upon seeing their first image of Junjie, feel instinctively that something is wrong).

Additionally, our common discourse and approaches to bodies reinforce this intuition. Yet while assuming we know what bodies are, we presume to say what they ought to be. And this is problematic, as has been known at least since David Hume wrote A Treatise

\textsuperscript{8} < http://www.theguardian.com/society/2012/mar/15/ashley-treatment-email-exchange> accessed March 21, 2016
\textsuperscript{9} < http://content.time.com/time/nation/article/0,8599,1574851,00.html> accessed March 21, 2016
\textsuperscript{10} < http://news.bbc.co.uk/2/hi/south_asia/7082305.stm> accessed March 21, 2016
of Human Nature in 1739. In fact, when I use the word “standard” or “normal,” simply through common discourse it is impossible for you to tell whether I am referring to the numerical average sort of body, the one that just appears most often in actuality, or using the words in a normative sense- of what bodies “ought” to be. Both of these senses can be attached to the words “standard” and “normal” as we commonly use them.

This standard body shows itself in philosophy and cognitive science in particularly nefarious ways. While the standard body makes an appearance in quite a few of the contemporary arguments concerning experience and knowledge, I will concentrate on just one example – the work in conceptual metaphor theory, championed by Berkeley linguist George Lakoff and Oregon philosopher Mark Johnson12. Overturning the old, broken theory of how we develop concepts about the world, Lakoff and Johnson have developed an influential and empirically verifiable argument that shows how embodiment plays a vital role in the ways which we know and understand the world, down to our very ability to create abstract concepts. This theory argues that many of our abstract concepts are built directly off of the physical structures already in place in our brains to deal with our concrete understanding of the physical world. Our sensori-motor neurons are recycled, in a sense, for abstract processing. To give a very simple example, we all have a concept of "grasping". Our concrete understanding of grasping comes from the fact that our physical bodies have actually grasped things in the real world. This is where our concept comes from. Yet we also use this term abstractly. We "grasp" an idea. The theory of metaphorical conceptualization argues that we know what it means to grasp an idea in this way because we have the sorts of bodies that have physically experienced

grasping. A slightly higher level example is how we speak of "understanding" as "seeing." We use very visual terms to talk about how we understand something. In fact, the prevalent argument is that our bodies are one of the primary ways that we conceptualize these abstract concepts. My question involves asking how we share these concepts with individuals who lack the bodily experience to perform this bodily abstraction. How does a blind person use the phrase "I see what you're saying" meaningfully when there is an assumption that we all share these bodily capabilities? Can a conjoined twin fully grasp what it means to "Get behind someone's ideas" when the appropriate metaphor involves the assumption that every individual consists of a single body with spatial relations that relate to just that body?

Lakoff and Johnson's use of the body in philosophy and cognitive science are particularly useful for one very important reason: the theory seems right. It would be uninteresting if this were a theory that assumed a universal body but whose conclusions did not have empirical evidence and verifiable conclusions. But Lakoff and Johnson's work is leading the revolution of embodiment within cognitive science, and for that very reason their assumption of this universal body should be further examined. Today's talk merely hopes to lay out the problem and some of the evidence against a standard body. Time limits a deeper examination of my ultimate conclusions. I merely hope to show that the assumption is real and has practical and lived effects, and offer a survey of the evidence against the assumption.

1. Biology

Let us first look at biology. Whenever someone speaks of the human genome, we tend to understand them as speaking about the blueprint for a human being – the set of
rules that ensure our biology builds itself properly into a “normal” human being. The very concept of the human genome project rests on the assumption that there is some set of code that is specifically and uniquely human, and that the human genome describes that standard outcome: human being. However, as Junjie, the 3-armed Chinese baby that I introduced earlier illustrates, some human beings don’t seem to develop according to whatever this standard is. In fact, biologists largely seem to acknowledge that mutation and change are not just small details that the field is forced to deal with but would prefer to ignore, rather, these concepts are foundational to the very idea of evolution. In his book about human mutation, Armand Marie Leroi says:

> Who, then, are the mutants? To say that the sequence of a particular gene shows a ‘mutation’, or to call the person who bears such a gene a ‘mutant’, is to make an invidious distinction. It is to imply, at the least, deviation from some ideal of perfection. Yet humans differ from each other in very many ways, and those differences are, at least in part, inherited. Who among us has the genome of genomes, the one by which all other genomes will be judged? The short answer is, no one does.\(^{13}\)

What Leroi is pointing out here is that every single individual inherits mutations from their parents, and in fact about 100 new mutations arise with each new individual\(^ {14}\). We would be in error to assume that there is one particular, complete set of genes that each of us should have. But even within the biological sciences, the emphasis rests on the similarities, and tends to ignore human variation, almost as a matter of principle. Biologist Ernst Mayr points out that, "it is amazing to what great extent variation in natural populations has been neglected in the study of evolution. Amazing because natural selection would be meaningless without variation"\(^ {15}\). Not only is human variation

\(^{14}\) ibid, pp. 18
necessary for evolution to occur, but we cannot judge what makes one set of genes “better” than any other, accept in relation to a given environment and reproductive success, biologically speaking. If Junjie had grown up and used his extra arm to become the most amazing violin player in the world, his reproductive success might far outreach those outdated two-armed players.

2. Disability Studies

I want to turn now to look at the work done in both phenomenology and disability studies on what the experience of a human body is like. It is common for most individuals whose bodies fall into the statistical norm to believe that people whose bodies do not appear “normal” would, given the chance, want those bodies fixed. This is at least part of the rationale behind the surgery to remove Junjie’s third arm. However, the emerging field of disability studies shows us this is absolutely not true. Sometimes, there are cultural considerations involved; Deaf families tend to want Deaf children16 because of the rich culture and unique language built up around American Sign Language. But this phenomenon tends to reach many or most groups of people who fall outside some norm or standard, whatever the measure of normality is. Alice Domurat Dreger, in her examination of conjoined twins, says:

Most normates assume that everyone, given the choice, would choose a “normal” body. But many of the “fixed” say they feel damaged by being “fixed”; and many of the “unfixed” claim they feel normal, that the people who know them well – as individuals, not simply as examples of various conditions – see them as normal. All this is true of people who were born missing limbs, people who were born blind, people who were born black or female or with an intersex condition. It surely isn’t a coincidence that historically there have been some close ties between the civil rights movement and the disability rights movement17.

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16 Lane, Harlan. (2002). “Do Deaf People Have a Disability?” Sign Language Studies 2.4, p. 369
It would be a strange moment if, in favor of democratic accessibility, people who fit into some statistical norm decided that they had some sort of democratic obligation to alter the bodies of individuals who feel normal already.

The disability studies movement brings to light more than just this unintuitive argument against forced normality. It highlights the fact that most of the individuals who are viewed as abnormal do not experience their own bodies in this way. Regardless of how others view the non-standard embodiment of these individuals, they themselves have an experience of a whole, complete body. And it makes sense that they would. Take, by way of example, the fringe phenomenon that has emerged in very recent times of individuals who alter their bodies in an attempt to acquire sense experiences not available to most human beings. Some of them surgically implant very tiny rare earth magnets in their fingertips so that they can “sense” magnetic fields\(^\text{18}\). Others, more famously, have implanted themselves with RFID (radio frequency identification) chips in order to have a biological connection with their own technologies (see, for example, Kevin Warwick, Professor of Cybernetics at the University of Reading and his 1998 experiment). Color-blind artist Neil Harbisson famously integrated an antenna into his skull that translates the visual spectrum (among other things) into sound so he has some experience of color, although not my experience of color.\(^\text{19}\) And yet, knowing these sorts of experiences are available, very few human beings are rushing out to engage in them. Those of us who lack the ability to sense magnetic fields do not experience it as a loss any more than someone born congenitally deaf experiences their own body as lacking a sense. For this

\(^\text{18}\) <http://www.wired.com/gadgets/mods/news/2006/06/71087>
reason, many deaf-born individuals resent the term “hearing loss” because of the implication that they are somehow incomplete – they have not actually lost anything. To complicate matters, individuals in wheelchairs (for example) often report that the only reason they feel disabled is because they are met with cultural obstacles such as stairs that assume certain body types are what we ought to have.

Rod Michalko translates for us with the problem of embodied concepts into phenomenology when he describes his experience of blindness. He claims that he "merely happens to be blind" when he says, "See you later" to a friend. He knows how to meaningfully use the phrase, so it is not a problem with language, but instead a problem with our conception of bodies. In his book *Rebuilt: How Becoming Part Computer Made Me More Human*, author Michael Chorost recounts his experience with going entirely deaf and getting a cochlear implant. It is through repeated upgrades of the software that he comes to recognize that there truly is no such thing as "normal" hearing (or normal sense-perception at all). Rather, each individual's experience with the world is always mediated through the different forms that individual bodies take. He argues that it was only through his experiences with cochlear implant technology that he finally recognized that every person's relationship with what they believe to be reality can be "amended and edited and upgraded." If bodies differ as a point of regularity, then our perceptual interactions with the world, informing our conceptual understandings, may also differ. If it is the case that our abstract concepts are generated through a creative re-use of our body's hardware that is built to deal with the concrete world, then our

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20 Lane, Harlan (2002) p. 367
conception of bodies needs to account for the fact that those which do not seem to share their traits universally are still able to communicate those concepts effectively.

We can also examine disability studies in a context that argues that each of us, should we live long enough, will experience some form of disability through the inevitable process of aging (many lose vision or hearing, physical abilities, cognitive abilities, etc.) Since these experiences will happen to most of us at some point in our lives, how is it appropriate for us to consider them atypical? This raises even more issues around what a standard body looks like or should feel like – we are temporal creatures, so we must question what determines a single point in our lives to be the standard or ideal for bodies. It rests on a value judgment, and one that has a strong, invisible cultural component.

3. Neuroscience

There are a quite a few studies that now demonstrate what happens in the brain of an individual who loses (or never acquired) a given sense-perception. For example, a deaf individual is faster and more accurate than a hearing individual at detecting the direction and motion of peripheral stimuli in the visual system\textsuperscript{22}. Likewise, a blind individual is significantly more accurate than a sighted individual at detecting sounds in the periphery\textsuperscript{23}. And the primary mechanism that makes these differences possible is neural plasticity. So if you look at the Penfield map, which illustrates the way our bodies are given representational space in the brain, you can imagine that the brain space allotted to eyes in a person who can see is instead taken over by ears in a blind individual,

improving that sense beyond what is usually the case. (Or, what is “normal.”) It is the brain’s ability to adjust itself according to the given environment and body that accounts for these, and many other, individual differences. Similarly, we can assume that Stelarc’s third arm, as well as the cane of the blind individual, spoken of so robustly in Merleau-Ponty’s phenomenology (and unfortunately excised from this discussion) are most likely allotted neural space for their constant conjunction with the “natural” body.

Conclusion

Finally, we can say that there seems to be no biology that dictates a standard body, particularly in light of evolutionary requirements of variation; no experience of a standard body, especially among those individuals we would most often expect to report some loss; and finally, a brain that adjusts itself to robustly represent whatever bodily configuration a person has. And yet, the assumption that there is a standard body persists, explicitly cognitive science through epistemology, and at least implicitly in bioethics through the medical decisions made to alter those bodies deemed not standard enough. This assumption of a standard body carries with it an ethical imperative to help standardize bodies that vary from that standard. These are not questions with obvious or simple answers. These are questions relating to the identity of individuals, as well as the identity of humanity itself.

There is a problem involved in defining the commonalities or universals that all human bodies claim to possess. Bodies vary a great deal in nature (we don’t for example, seem to try to standardize hair or eye color very often), and so we must ask ourselves whether these universals or some standard does actually exist, since cognitive science and bioethics both appear to be placing a good deal of importance on them, in relation to both
meaning and values. It is important to recognize that our very rationality and ability to conceptualize the world, and hence communicate effectively with one another, is at stake in this discussion, as is the way we ethically encounter individuals with bodies non-identical to our own.

In an effort to make this survey of the standard body as accessible as possible, it has been necessary to provide only a brief overview of the various disciplines involved in demonstrating that there really is no such thing as a standard body. The evidence from each of these fields, including biology, neuroscience, phenomenology and disability studies, is not just an argument that concerns one philosophical theory or sensationalist news media. It is the very question of what we are – what it means to be human, and, even more importantly, whether there is some clearly defined boundary that tells us what we should be. Human bodies are elastic and adjustable, and there simply is no one appropriate body that we all happen to share, or ought to share. Remember, the doctor that operated on Junjie was quoted as saying, "The surgery really went much better and smoother than expected because we found the nerves and blood vessels for the arm were formed just as they would be for a normal arm." So, ultimately, we should be left wondering why on earth someone would cut off a normal arm.