

What's Wrong with the Idea of an Embodied Athlete?

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Abstract

The idea of an embodied athlete has been a foundational concept upon which much ethical reasoning regarding the acceptability of technology has relied. This idea that there is a clearly defined, delineable and discrete, self contained entity that is a person, is further reinforced by what appears to be phenomenological evidence: "I know where my body begins and ends because I can feel and/or control it." This recognition of an embodied self allows a distinction to be made between technology (as Butryn (2002) describes) that is Self technology and that which is Implement technology. As suggested, this distinction is not merely descriptive but also ethical, on the grounds that technology that affects the 'self' is fundamentally more disagreeable than technology that affects the game or sport.

However, this paper questions the tacit assumption that there is such a thing as an embodied self. It will draw upon evidence from contemporary neuropsychology to dispose of the idea that the self resides within a fixed, stable and identifiable body. For instance, experiments carried out by Ramachandran (1998) indicate that a phenomenologically detectable self can be identified (under particular but simple conditions) within inanimate objects such as tables and chairs.

This has implications upon sport and the way that technology is viewed within sport. First, it indicates that the tools that an athlete uses can be as much a part of the 'self' as is a hand or foot. Second, a reassessment of the reasoning behind a rejection of particular technology on an account that it compromises the very being of an athlete is required. It may be that arguments rejecting the use of particular technology must be refocused away from the conservation of the athlete and his or her phenomenologically ascribed 'body', to the preservation of the brain and neurological systems that allow the concept of self to exist at all. In this, the distinction given by Butryn and others (between self and not self) must be tapered to a much greater extent than it has previously been. The outcome of such a reconceptualisation may mean that the arguments behind the rejection of particular technologies are subsequently weakened.

This is an attempt to use contemporary psychological and neurological theory to dispose of the assumption that the self is embodied in a fixed, discrete entity. In doing so, it will refute the arguments provided by those who argue that there is a qualitative difference between technology that affects the self (as internal) and technology that is external. This has further implications upon the use and acceptance of technology from an ethical standpoint. If we can argue that the self as an embodied athlete is non-existence then perhaps the only thing that we can / should seek to protect is the brain from which the phenomenological account of the self arises.

Recent arguments have attempted to differentiate between internal and external technology (Butryn). However, this paper will argue that such a distinction is contrary to evidence provided by psychological and neuropsychological research which has suggested that the self as a discrete entity manifested as a human body has no phenomenological grounding. For instance, Rachmanian has repeated experiments that cause participants to feel as if their self (and body) extends to inanimate objects such as tables. Such evidence has implications upon decisions made regarding the acceptability of technology within sport and also highlights the philosophical question that aims to

distinguish between 'knowing how' and 'knowing that'. It may explain how users of any technology in sport, ranging from skateboards to tennis racquets to hockey sticks are able to absorb this technology into a phenomenological account of the self whereby the surfboard is as much of the body as is the hand or nose. Such conclusions would arguably call into question policy decisions that are made on the ground of ethical considerations on prohibiting particular technologies.

Abstract Ends

What's wrong with the idea of an embodied athlete? Nothing, you might say. We, as humans (and you might want to extend that to animals also), are all embodied. Our self is contained within a clearly delineated and concrete body: I begin and end within this skin covered structure. The general consensus within the Western secular world is that my being – the 'I' as it were - does not reside anywhere else outside my body.

What I want to do in this talk is to reject this whole idea of embodiment as a factual situation and propose instead that embodiment and the self/not self distinction is an illusion that we maintain as part of our attempt to make sense of the world and the human condition; that is, it is the result of the endless confrontation with our own existence.

So what does this have to do with sport and athletes? The implications of accepting such a conclusion – that embodiment is an illusion - will affect the justification given for the acceptance or not, of various technology in sport. Sport traditionally aims to uphold the ideal that the natural ability of the human should be tested and not technological innovations or the achievements of engineers or scientists. If it can be shown that the distinction between the natural human and the external environment is much more fluid than is granted, then the arguments resting on such a distinction break down. This would have profound effect on sport itself as the authorities would have to accept that decisions as to whether specific technology, objects, or devices are acceptable or not are political and arbitrary decisions, not based on preserving a universal concept of 'human'.

Let me give a specific example: no-one would argue that it would be acceptable to compete in the 100m sprint whilst wearing jet-powered roller skates. The use of such apparatus (providing one could use it) would give an unfair advantage. All that it would demonstrate would be that jet-powered roller skates are faster than a human without the roller skates. What we really want to test in the 100m sprint is how fast a human can run 'naturally'. Now here I could go into a discussion about whether wearing synthetic body suits or spiked running shoes affect the concept of testing the natural capabilities of the human but I will leave that discussion for today. The point that I want to make is that there appears to be a clear delineation between the natural athlete and external technology. Indeed, this is the very argument that Butryn makes in his paper entitled, 'Cyborg Horizons: Sport and the Ethics of Self-Technologization'. Butryn maintains that a clear distinction can be made between self-modifying technology and the modification of the external environment. Technology such as blood-doping, genetic modification, and even psychological interventions are the former, whereas the development of a new tennis racquet or bicycle are the latter. Butryn later goes on to say that such a delineation, between technology that affects the self (and that includes the body) and external technology, provides guidance as to making ethical decisions. In other words, the development of technology that can be considered external to the body can be dealt with via the constitutive but arbitrary rules of that sport; whereas the development of internally affecting technology, that which affects the athlete herself is a different kind of issue; it is not political but ethical.

Yet what I wish to argue is that this distinction between external technology and self-affecting technology is not so straightforward. If it can be shown that the self doesn't exist in a fixed and clearly demarcated body, then it can be argued that the acceptability of external technology in sport is as much or as less of an ethical issue as that which is considered 'self-affecting' technology. In this sense, all technology is self-affecting technology.

One of the most controversial pieces of sporting technology in recent years was the development of the fastskin swim suit. The suit was developed to specifically enhance performance and reduce times by altering the surface of the skin – in fact, Speedo claims that the drag produced by the human skin is

29% of the total drag in the water. Needless to say, if the skin could be altered in some way to reduce this drag, performance would be dramatically enhanced. It is said to improve performance by doing two things: by compressing the body thus providing greater core stability and firmness during competition without being restrictive, and improving muscle efficiency through a reduction of excess muscle vibration or oscillation. It is interesting to note that on the Speedo website, when detailing the materials used for the suit, they also say, "If only we could somehow genetically engineer these characteristics into the athletes themselves".¹ (I don't think that Speedo would really want this to happen otherwise they it would detrimentally affect their business.) But what this indicates is that the line between that which is internally affecting technology (i.e. genetic modification) and that which is external (i.e. the development of the fastswim costume) is very thin indeed.

So let me return to the concept of 'embodiment'. Embodiment isn't simply an objectively granted presence. It is a subjective account and phenomenological experience. It is the boundary where you are able to encounter yourself.

So I can say that my ability to experience qualia – the raw sense sensations – can be found here in my hand, and here in my nose, and here in my eyes. But I won't say that I can experience the same qualia in that chair. Anything that happens to that chair doesn't happen to me. You could pick it up, throw it against the wall and rip it apart, and I won't feel a thing. Attempt to do the same thing to my fingers though and the effect would either be a painful squeal, a series of expletives or a black eye (depending on how big you are). I extend only as far as this self-contained body.

Now there have been some really interesting scientific experiments in the area of embodiment. The most notable ones have been conducted by Ramachandran.

In 2003, Armel & Ramachandran published a paper entitled 'Projecting Sensations to External Objects.'² The experiment it was based upon involved a human participant sitting in front of a table. On this table is placed a rubber arm – the type you can get in novelty shops. The participant places her own arm under the table so she is looking at the fake arm. The researcher then stimulates the fake hand by a series of random strokes whilst synchronously stroking the participant's real hand under the table. The general result is that the participant begins to experience the fake hand as her own.

One of the explanations attributed for this projection of sense experience onto an external object is that the brain assimilates two pieces of information – the visual awareness that an object is being stimulated in a particular way, and the raw-sensation that the body, i.e. the hand, is experiencing this stimulation. The brain rationalises that such an independent occurrence is unlikely to be a coincidence, so concludes that they must be part of the same event. And indeed, the less random the series of strokes and taps, the less intense the experience becomes. It has been suggested, all this experiment shows is the dominance of our visual perception over incongruent proprioceptive information. Yet, further evidence suggests that such an illusion cannot simply be put down to the dominance of our visual perception.

This is supported by a study by Ehrsson, Holmes, and Passingham³ who modified the experiment by blindfolding the participants. This time, instead of the researcher stimulating the fake hand, the participants left index finger was used instead. At the same time, the participant's real hand was synchronously stimulated. Again, pretty quickly, the participant began to experience the fake hand as their own. What Ehrsson et al. concluded was that it is activity in broader areas of the brain, notably the premotor and cerebellar regions, which manifests itself as the experience of body ownership. In

¹ Speedo Aqualab on <http://www.speedoqualab.com/site.html> [accessed September 15th 2007]

² Armel, K. C., & Ramachandran, V. S. (2003) 'Projecting Sensations to External Objects: Evidence from Skin Conductive Response.' The Royal Society. 29th January 2003.

³ Ehrsson, H. H., Holmes, N. P. and Passingham, R. E. (2005) 'Touching a Rubber Hand: Feeling of Body Ownership Is Associated with Activity in Multisensory Brain Areas' in *The Journal of Neuroscience*. November 9, 2005. 25(45). Pp10564-10573.

other words it is not simply concerned with information processed from visual representations but the result of a variety of multi-sensory signals.

Yet Ehrsson went beyond this position to claim that there does not even have to be the typical correlation between multisensory signals. He argued that the rubber hand illusion can be brought about without touching the hand at all. Sometimes all that was required to elicit the feeling of bodily ownership was that the participant looked at the fake hand for a while. The question that arises from this is; to how far can this feeling of bodily ownership be projected? Is the illusion contained to those things that appear to be a normal body part or could it occur in objects that bear no resemblance to the human body?

Ramachandran has attempted to answer this question, with some surprising results. When the experiment was conducted without the fake hand and the stimulation occurred on the table itself, the participant began to feel that the table was part of their body. This is despite the conscious mind knowing that it is logically absurd. Ramachandran found that the illusion was so persuasive that when he accidentally made too long a stroke on the table compared with the participant's real hand, the participant experienced his hand as being stretched or lengthened to abnormal proportions.

In addition to this, Ramachandran studied the effect of further manipulation to these objects. He tested the participant's response to shock, trauma or pain, via galvanic skin response (GSR) and discovered that when the table was hit aggressively with a hammer, there was an enormous change in the GSR. Ramachandran said that the participant responded as his own fingers had been hit.

What this indicates is the extent to which the participant has assimilated the object into her own body schema. That there is a physiological response suggests that it isn't a superficial self-denial or a tendency towards participant bias.

Ehrsson and other researchers at UCL have gone further than getting people to believe that inanimate objects are part of the embodied self and have been able to consistently recreate a feeling of complete disembodiment. In this experiment, participants were filmed from behind whilst wearing goggles that displayed the real-time footage. In essence, they saw their body a couple of meters in front of them. At the same time, the researcher used a brush to stroke their back. The effect was an out-of-body experience. Furthermore, when the participant was led backwards a meter or so and then asked to step forward to their original position, the participant would always return to a position further forward than where they were originally standing: they would return to the position where they saw their body through the goggles, not the location where they experienced standing.

A feeling of disembodiment doesn't have to be the result of clever visual trickery. In an account of what it is like to be in space, the NASA astronaut Jeffrey Hoffman, states that one of the most peculiar effects of relaxing in an environment without gravity is the feeling of disembodiment. He says, "My favourite recreational activity in orbit was just to float freely and let every muscle in my body become totally relaxed, so much so that I often lost the sensation of having any body at all."⁴ I'm sure that some of you have had the experience when you've been totally relaxed and you can't feel your body or parts of your body.

All of these studies and anecdotes support the notion that the concept of the embodied human is a myth. We are victims of self-deception.

I'll quote Ramachandran's conclusion in full as it is expressed so eruditely:

"For your entire life, you've been walking around assuming that your 'self' is anchored to a single body that remains stable and permanent at least until death. Indeed, the 'loyalty' of your self to your own body is so axiomatic that you never even pause to think about it, let alone question it. Yet these experiments suggest the exact opposite – that your body image, despite all its appearance of durability, is an entirely transitory internal construct that can be profoundly modified with just a few

⁴ 'Confessions of an Astronaut.' *New Scientist magazine*, 05 September 2007, page 36-41

simple tricks. It is merely a shell that you've temporarily created for successfully passing on your genes to your offspring."⁵

So what does this mean for sport? I'm sure you're all aware of the case of Oscar Pistorius, the South African athlete who runs with the use of specially designed prosthetic legs. The International Association of Athletics Federations is in the process of carrying out research as to whether the use of such legs contravenes the rule relating to the use of technical aids during 'able-bodied' competition. In particular, the study will be focused on two issues; whether Pistorius's blades constitute an advantage through the means of wheels, springs or other such elements over other athletes not using the blades, and/or whether the appliance positively affects or increases the capability of other aids beyond the level which is permitted. My understanding of this is: in the first case, the studies will concentrate on the claim that the blades are in essence, spring-loaded, thus, for example, providing a longer running stride for the athlete. In the second; whether any element of the appliance affects the functioning of the prosthetic limb to such an extent that it provides an unfair advantage.

Although the IAAF explicitly states that they are not discriminating against the use of prosthetic limbs, but rather technical aids, the rule is based on a conception of the capabilities of a typically embodied athlete. The prosthetic limb is considered to be an extraneous object, something that is not part of the athlete themselves. One can anticipate the defence to this view: the prosthetic limb *is* extraneous. That Pistorius has a variety of lower limbs that he can pick and attach to his body as necessary depending on what activity he is participating in, is similar to deciding whether to wear sandals, boots or running spikes. No one would argue that footwear is part of embodiment and therefore Pistorius blades have to be considered in the same vein.

And yet, some of those developing orthotic and prosthetic appendages are arguing that our attitudes towards such devices will change. Hugh Herr, a professor at MIT recently wrote that such devices will be considered 'intimate extensions of the human body, structurally, neurologically and dynamically'⁶ In this sense, maintaining that such the use of prosthetic limbs constitute an unfair advantage in sport will be as absurd as arguing that having a particular physiological or genetic makeup is an unfair advantage. Each will be as much part of the concept of an embodied athlete.

That the body is able to adapt so quickly to changes in phenomenological perception is not a recent discovery. Early psychologists experimented with experiments in perception by wearing visual appliances that inverted their world. For instance, Stratton in 1896⁷ wore such a telescope for eight days. He adapted to a different phenomenological perspective relatively quickly. After five days he had to consciously remember that the world was being inverted. Yet, it is with the ongoing development of technology that is ever increasingly sensitive to our control and manipulation that will increasingly blur the boundaries between our self and the external environment. Today's and tomorrow's technology can alter all areas of our proprioception not simply our visual perception. In their studies on the area of telepresence – that is, technology that enables the individual to perceive themselves in an alternative location than where they are 'really' situated - IJsselsteijn *et al*⁸ conclude that "provided reliable and real time intersensory correlations can be established" we will be able to "effectively integrate the technology as a phenomenal extension of the self."

This idea of telepresence has been further explored by the Australian born artist, Stelarc, who is best known for his thesis that the body is obsolete. Many of his installations focus on using technology, robotics in particular, to provide an alternative vehicle for the self. His installations include 'The Extended Arm' where he added a robotic hand onto his own; the 'Exoskeleton' in which he rigged himself up to a machine with pneumatic spider-like legs. A few years ago he wired his arm up to the internet so that his movements could be manipulated via cyberspace. Okay, you might want to say –

⁵ Ramachandran, V.S. & Blakeslee, S. (1998) *Phantoms In The Brain*. London: Fourth Estate. p61-62

⁶ Syed, M. 'Man with the blades aiming to cut through the red tape' THE TIMES. April 23 2007

⁷ Stratton, G. M. (1896) 'Some Preliminary Experiments on Vision'. *Psychological Review*, **3**, 611-17.

⁸ IJsselsteijn, W. A., de Kort, Y. A. W., & Haans, A. 'Is This My Hand I See Before Me? The Rubber Hand Illusion in Reality, Virtual Reality, and Mixed Reality.' *Presence: Teleoperators and Virtual Environments*. **5**, 455-464. DOI 10.1162/pres.15.4.455

but at the end of the day, he can step out of this machine or disconnect the cables and he is still the same embodied human. Stelarc would disagree; there could feasibly be a day where assimilates his being into a permanent fusion with such objects and technology. In many of his installations he deliberately pierces and manipulates the skin in order to show that the self/not self distinction isn't a fixed one. And I think you could see that it is feasible for such technology to be a permanent not a transient state. For Stelarc, the idea that the skin represents a boundary between our self and the rest of the world is something that he is desperately trying to eliminate. Ultimately, Stelarc's view indicates that technological advances will subsume our reservations about the sanctity of the physical body so subtly that most of us probably won't even realise it.

What Stelarc's installations and the neuropsychological experiments by those such as Ramachandran and Ehrsson do is to urge us to resist this traditional concept of embodiment; in that there is a 'self' contained within an organic flesh and blood entity.

It might be worth reiterating Merleau-Ponty's position on embodiment here. As with other Existentialists, Merleau-Ponty maintains that we can have no real knowledge of the body except from the position of subjective conscious experience. Our existence is only through acquaintance with the world – and I would argue that this means a phenomenological acquaintance. The self extends as far as our experience with the world and is not contained within a body in the same way that water is contained within a glass. Therefore, to talk about the world as if we are embodied minds separate to the external environment makes no sense.

So, let's bring all this together. What I have attempted to argue is the following:

1. The only experience of the world we have is a phenomenological one
2. The phenomenological experience of an embodied self can be artificially manipulated
3. Therefore, the traditional conception of an embodied self is an illusion
4. Sport is founded upon this traditional conception of the embodied self
5. The use of technology in sport is considered peripheral to testing and measuring the abilities of the natural, human, embodied athlete
6. If one accepts conclusion (3) then one would have to reject premise (5)
7. This would have implications on the use of technology in sport; in that rules on the use of technology would have to be political not ones based on ethical or ontological reasons