

Technology and the Myth of ‘Natural Man’

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Abstract The main suggestions and objections raised by Don Ihde and Charles Lenay to my ‘Technology and the body: the (im)possibilities of re-embodiment’ are summarized and discussed. On the one hand, I agree that we should pay more attention to whole body experience and to further resisting Cartesian assumptions in the field of cognitive neuroscience and philosophy of cognition. On the other hand, I explain that my account in no way presupposes the myth of ‘natural man’ or of a natural, delineated body from before the fall into technology.

Keywords Embodiment · Technology · Incorporation · Extension

The fall might very well have always already begun.
(B. Stieger 1998:118)

In what follows, I will summarize the main arguments and objections raised in the comments by Don Ihde (2011) and Charles Lenay (2011) to my paper “Technology and the Body: The (Im)possibilities of Re-embodiment” (De Preester 2011) and I will deal with them in a systematic way. Both Ihde and Lenay go straight to the heart of my exposition, and I am pleased to respond to such stimulating comments.

Ihde repeatedly raises the important point that the empirical studies I mention consider the senses as separate modalities, a symptom pointing to a Cartesian vestigial hang-over. Generally speaking, that is correct, and partly due to the fact that to study whole body experience in cognitive neuroscience or neuropsychology is methodologically very difficult. Nonetheless, I am not pessimistic, since more and more studies are the result of joint efforts, e.g., of phenomenological philosophy and empirical studies of cognition, and these joint

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efforts can help us in moving away from an improper form of Cartesianism. A number of recent hypotheses and theories clearly do move away from separating and isolating bodily functions and this is echoed in experimental work as well (e.g., the sensorimotor theory of perception and studies in SSDs).

Another fundamental issue is raised by Lenay, who presents the subject matter of my contribution in terms of (1) the augmentation of ‘natural’ faculties versus (2) a genuine transformation of our lived bodies by the re-embodiment of prosthetic devices. That is rephrased where he says that, in my point of view, (1) some technical aids simply remain external whereas (2) others radically transform our experience. To phrase the subject matter in that way is not entirely correct for two reasons.

First, I’m not sure what he means with natural faculties, but it seems to me that he has something in mind like Jean-Jacques Rousseau’s man in his (or her) ‘naked’ condition, i.e., before the fall into technology, using his (or her) hand only to grasp things, not to manipulate tools. As argued elsewhere (De Preester and Tsakiris 2009) to manipulate tools and to be a prosthetic being precisely belongs to the ‘natural’ condition of man. Humans are, by definition, tool bearers, and it is precisely this natural bodily relation to tools and prostheses that I wanted to examine into more detail. In other words, what is at stake for me is a closer examination of man’s naturally unnatural or artificial condition.

Second, the distinction I propose between bodily extensions on the one hand and incorporation on the other hand does not necessarily correlate with, respectively a less and a more radical transformation of our feeling of embodiment. To extend our bodies can be radical and can profoundly alter our feeling of embodiment (e.g., think of the thrill of playing tennis with a racket, or the feeling of our extended embodiment when driving a car). I think that the reason for Lenay’s remark is an unwarranted confusion of the extension of sensorimotor capacities and the relation in which two items simply remain external to each other (separability or permanence are not adequate criteria in my account, cf. *infra*). In fact, I argue for a distinction between two kinds of (re-)embodiment: (re-)embodiment based on extension and (re-)embodiment based on incorporation. Tools are not simply external in my view, but embodied. However, I argued that we should be careful and that we should not label all kinds of embodiment of artificial items as instances of incorporating something as a body part. Body extension and incorporation into the body surely have overlapping characteristics, but also exhibit a set of distinctive properties. The overlapping characteristics have to do with profound changes in sensorimotor capacities, the distinctive properties with the absence or presence of changes in body ownership. I am not sure that the criteria of ‘internal’ versus ‘external’, or of ‘permanence’ and ‘separability’ can cover the differences between incorporation and extension. Thus, my exact claim is that the distinction between bodily extension and body incorporation is based on a difference in the feeling of body ownership. And that does not contradict the claim that we experience the extension of our bodies with tools as something very natural.

Therefore, and third, the crucial difference between extension and incorporation is not, as Lenay claims, a difference between more and less assimilation to the lived body. Most people know that prostheses are difficult to assimilate into the body, whereas the assimilation between body and tool often happens more naturally. The transparency of tools precisely is a measure of assimilation. What differs, however, is that tools are mainly assimilated at the level of the body schema, whereas prostheses, if they are to count as a body-part, have to meet an additional demand. Prostheses have to fit the norms of a top-down body model. If there is only assimilation at the level of the body schema, the prosthesis is experienced as an instrument—an option equally valid for many prosthesis users. This also shows that the distinction between incorporation and extension does not necessarily run parallel with the

distinction between prostheses and tools. One can be perfectly assimilated to the prosthesis as a tool.

The first point makes that Lenay and I agree when he claims that "the way in which we understand technological modifications of action, of perception or of cognition has immediate consequences for our way of understanding these faculties in general". This fits a Heideggerian point of view: *Dasein* can only be understood if we take into account that its being-in-the-world is mediated by the ready-to-hand (for a Heideggerian interpretation of the relation man–tool, cf. De Preester, forthcoming). According to Lenay, it is unjustified to postulate an essential difference between so-called natural cognition and the technical environment, partly because that renders the constitutive role of technology with respect to experience inexplicable. Lenay's remark seems utterly correct to me, and my paper spells out in more detail than is usual in what way embodiment is essentially malleable by technology and how technology is indeed constitutive of experience. Anthro-pology and techno-logy are one, and humanity is unimaginable without technical mediation.

Nonetheless, Lenay's worry is that there is at least some risk present of reactivating an essentialist distinction between nature and culture, and thus between a natural, biological human body and technological aids. I will do my best to relieve him of this worry, but some minor points first need correction.

First, the distinction between internal prostheses (such as implants) from external prostheses is not necessarily based on the possibility of detaching the prosthesis (although one is easily inclined to formulate it this way). In contrast, the distinction is based on which bodily layer is *primarily* affected: the motor body, the perceiving body, or the internal body (or, alternatively, the in-depth body, cf. De Preester 2007). The issue of detachability can only be secondary. What I did say, however, is that the removal of an internal prosthesis is most often more difficult in the sense that it possibly is life threatening to do so (something which is often not the case with other kinds of prostheses). Another difference is that some prostheses (such as internal prostheses) must fulfill their function continuously (e.g., when regulating heart activity), whereas other prostheses (or tools) can be laid down according to the activity one is engaged in: I don't need my artificial limb when sleeping, it would even bother me, and once my meal is finished, fork and knife are not needed anymore (and would be impractical during other activities). Internal prostheses or implants are, however, not treated in my paper. At this point, Ihde is certainly right: internal prostheses, just like other kinds of prostheses, involve whole-body changes.

Second, when it comes to the RHI, and to the worry that the illusion only occurs when the subject is passive, it is interesting to have a look at a study by Tsakiris et al. (2006), in which three conditions are explored: active finger movement, passive finger movement, and (traditional) tactile stimulation. In all cases, the RHI was found, but whereas previous studies showed that the induced changes in body awareness were local and fragmented (i.e., restricted to the stimulated finger), this study showed that this was only the case during tactile and passive stimulation. During active movement, in contrast, the effect of proprioceptive drift (the measure for the RHI) was spread across the whole hand. In other words, agency has a positive effect on the illusion, and this renders the claim that the RHI is due to passivity on the side of the subject incorrect.

Third, the RHI experiment shows that bodily 'appropriation' does not happen solely on the basis of intermodal (or multisensory) correlation, in this instance between vision and touch. The phenomenon of phantom limbs in cases of congenital absence of a limb or a part thereof, the experiments by Rochat and Morgan (Rochat and Morgan 1995), in which infants appear to be sensitive to the left-right reversal (on a screen) of their own legs, and the results of the RHI-experiments themselves precisely evidence that a causal explanation in terms

of multisensory correlation is insufficient. If the opposite were the case, the body model hypothesis would be plainly superfluous (for a more extended argumentation, cf. De Preester and Tsakiris 2009). Maybe Lenay has in mind the experiments by Armel and Ramachandran (2003), in which virtually no matter what can become a part of the body. The main measure there is, however, skin conductance response and, as a whole, the experiment seems to point to the basis of empathy, not to the basis of incorporation and/or extension.

Another distinction might also be useful, namely the distinction between the feeling of body ownership and the feeling that one is where one is acting, as in cases of telepresence. The feeling of telepresence is not the same as what I discuss, namely the feeling that something non-bodily is part of my own body. An avatar in virtual reality, e.g., does not feel as if he or she is *part* of me, instead, I feel *as if I am there*. In short, telepresence (most often based on acting from a distance) is not to be equated with accepting something non-bodily as part of the body.

Let us now get back to the main worry, namely that the distinction between body extension and body incorporation would lead to the acceptance of a ‘natural’ human body which is absolute and predefined. I think this worry is unnecessary, because it neglects the phenomenon that our bodies are *both* stable and malleable. Whereas Lenay warns us for a point of view in which a human body has fixed, absolute boundaries, I am inclined to complement his worry with another warning—perhaps equally apt in our time of cyborg fantasies—namely that the plasticity of our body is not infinite, but also based on a certain body-stability. What fascinates me, is how it is possible that our bodies do not only show adaptability, but adaptability-within-stability. Therefore, instead of dismissing the normativity of the body-model as a relapse in a delineated ‘natural’ body, one might also consider it as an *enabling constraint* or a condition of possibility for plasticity. After all, according to the hypothesis, it is the body-model that makes it possible for humans to integrate (in the sense of incorporating) a non-corporeal object into their body. It thus seems that the so-called natural body *essentially* implies the possibility of having a most intimate relation to originally non-corporeal objects. But, and this was my plea, one should be cautious and not lapse into techno- or cyborg-fantasies. I argued, from a phenomenological and cognitive-scientific point of view, that the fundamental and crucial bodily openness that we as humans exhibit, as testified by the embodiment of tools, is *not* to be equated with the acceptance of tools as *body parts*.

The alternative proposed by Lenay, that the difference in the feeling of ownership could be explained as a function of the permanence involved soon runs into trouble. What is permanent about an artificial leg that is put off when going to bed? In what sense does this ‘permanency’ differ from the permanency tools can have, taking into account that many of the tools we use join us many hours a day? Moreover, the quasi-permanency of a prosthetic leg does not guarantee the feeling of body ownership over the leg. Many users of an artificial limb do not experience their prosthesis as a body part. It is only on the basis of careful empirical studies that the claim of permanency might be validated, but—by now—empirical studies show that the extra-corporeal item at stake does not need to be permanent or to be attached at all to the body for the feeling of body ownership to occur (cf. the prosthetic hand in the RHI, which is in no way attached to the body).

Let us now turn to the distinction extension/incorporation in the domain of perception. I would say that Lenay’s comment precisely shows that it is impossible to discriminate between extension and incorporation on the basis of a sensorimotor theory of perception, since the sensorimotor theory simply does not discriminate between the functioning of natural biological organs (or ‘organic tools’) and artificial ‘organs’. On the other hand, my

distinction between incorporation and extension does nowhere contradict the sensorimotor theory of perception. Nothing more is proved by Lenay than that the sensorimotor theory is not capable of making the distinction (and neither was it designed for making such a distinction). Ihde rightly points to the fact that my analysis presupposes a sensorimotor account and the attainment of skill, and he refers to the work of Hubert Dreyfus and the lacuna in Martin Heidegger’s tool analysis.

Next, I haven’t claimed that wearing spectacles does not make a difference for lived experience. That one can feel like a different person when wearing spectacles simply is not a topic in my paper, nor does my paper contradict this experience. What I did claim, however, is that the changes in lived experience when putting on spectacles, do not involve access to a *new* perceptual modality, and do not imply, therefore, qualitative changes. Spectacles might give us access to more details of the visual world, or they make previously unseen features visible, but they do not lead to a new perceptual modality, since these new features are still accessed on the basis of vision. So Lenay is very correct in saying that each instrument of perception brings with it new conditions of possibility for the existence of *contents* of lived experience, but my criterion was not access to previously unexperienced contents, but new *forms* of experience, i.e., new modalities (and in my paper, I use the term ‘quality’ in opposition to the term ‘content’). That does not contradict the claim that other instruments, *without* giving access to new modalities, can be (and most often are) constitutive of our lived experience. So I think we need a sufficiently rich and balanced vocabulary for analyzing these different phenomena, and it seems to me that Ihde recognizes this need for a finer analysis.

Ihde points to the category of imaging technologies that are hermeneutic, and to the need for such a separate category. I agree that imaging technologies form a distinct category, but I am rather wary of calling these technologies ‘prosthetic’. If we see—technologically mediated—the various shapes of galaxies, the translation of the previously unseeable into the humanly perceivable happens by technologies with which we do not have a relation of embodiment. The main reason is that the machine is not transparent in our experience (the ‘transparency’ of the screen should not be confused with the bodily transparency of tools). I guess that that is also Ihde’s reason for distinguishing a separate category of hermeneutic forms of technologies.

As to cognition, what I defend is not a functional difference between extension and incorporation. In contrast, I consider functionalism explicitly as insufficient (cf. section 6), and I argue that we have to take into account the phenomenology, or the what-it-feels-like aspect of mind-enhancing tools. I use the term ‘appropriation’ or ‘re-appropriation’ in the sense of becoming owner of a piece of information, i.e., in the sense of having the feeling of cognitive ownership over the content of a thought. Sure, if someone asks me what time it is, and I show him or her my watch, this shows that I own my watch as an object and that it is at my disposal. But that the watch as an object is at my disposal, does not mean that I know what time it is. Indeed, I need to look at my watch in order to *know* what time it is (which is clearly different from knowing that I have access to my watch—a difference Lenay seems to neglect). In other words, it still is the case that the information on my watch remains external. I guess Clark and Chalmers do not just aim at the situation in which I answer ‘Yes, I know the time’ and show my watch to someone without looking at it myself. This would be equivalent to Otto who knows that he has his notebook with him, but does not look in it for knowing when the museum is open. In other words, the discussion is not just about which information is at our disposal, but about which information we actually access.

The fact that we can externalize information (e.g., in writing) is an essential aspect of our being human. As argued elsewhere (De Preester and Tsakiris 2009), to off-load cognitive

and physical work onto the environment (and the example of the empty square in the table illustrates this) is an essential characteristic of being human. There is a good chance that Lenay and I agree on that, and thus on the positive—or constitutive—power of the separability of information for being human. But this point of view is far from endorsing the technofantasies to which Ihde points in his comment, and which I target in my analysis.

In sum, Bernard Stiegler's idea that anthropology is technology (a thought he borrows from André Leroi-Gourhan) might in fact be supported by a nuanced analysis of what it means to be re-embodied into technology. The 'fall of natural man' into technology might indeed have always already begun, and what this precisely means, is still subject of further and more refined investigations.

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