

Embodiment, Disembodiment and Re-embodiment in the Construction of the Digital Self

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ABSTRACT

In this article I will show that the problem of embodiment goes back to the question of the mind-body split, as this has been established and discussed by the philosophical tradition. With the digital turn and the advent of ubiquitous computing the problem of embodiment has taken new (and far more complicated) forms that have led scholars to introduce the notion of a “new digital Cartesianism.” Subjectivation processes within digital culture have mostly been explained by resorting to what I will call the “E-D-R scheme,” (embodiment-disembodiment-reembodiment scheme) which assumes that a real detachment between the body and the mind really occurs in digital processes. Since—as I will show—this is not actually the case, I will suggest replacing this epistemological scheme with a new one, which I will call the “double-embodiment scheme,” in order to acquire a more fitting epistemological account of the underlying digital ontology. Finally, I will discuss the distinction between bodily extension and the incorporation of non-bodily objects introduced by Helena De Preester in order to show that, in the digital realm, this distinction is much more blurred and complex than she acknowledges: digital interaction requires both bodily extension and the incorporation of objects as complementary processes.

1. Introduction

“We have divided what once was united”: if we were to choose a motto to sum up the philosophical origin of the problem of embodiment, we should certainly go for this one. In some respects, the problem dates back to the very beginning of philosophy: as soon as Plato argued for the immateriality of the soul, a split between an immaterial entity (the soul) and a material entity (the body and, by extension, reality as such) was established. From Cartesianism onward, this split has been known as the mind-body problem and the greatest efforts have been

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made by philosophers to bring back together what had been divided, i.e. to find an essential connection between being and knowledge.¹

With the digital turn² and the advent of ubiquitous computing,³ the problem of embodiment has taken new (and far more complicated) forms: it has even been argued that «text-based computer-mediated digital culture repackages the Cartesian desire to transcend the body», leading scholars to introduce the notion of a «new digital Cartesianism».⁴ The main problem within the digital context is the “apparent disembodiment” characterizing computer-mediated communication (CMC), which is strongly emphasized by cyberculture with its «promises of anonymity and fluid identities».⁵ Despite this hype surrounding disembodied forms of subjectivation achieved by means of digital practices and devices—a hype which is often fueled by neoliberal marketing strategies⁶—and the idea that dematerialization and disembodiment truly characterize digital media as “new media of disembodiment”,⁷ it seems reasonable to argue—with Megan Boler—that:

¹ «Theories of embodiment have a long and complex history. The initial ideas emerge from a philosophical tradition of inquiry into the nature of being and knowledge» (Farr, Price, Jewitt, 2012, p. 2).

² The expression describes «(...) the ever-growing flow of digital media, tools, and devices that pervade our daily lives and connect us to the news and the communities and culture we are part of»; thus, it refers to «(...) the role of computers, smartphones, social media, and the Internet at large and how these contribute to our understanding of the world» (Westera, 2015, p. 6 [<http://www.thedigitalturn.co.uk/TheDigitalTurn.pdf>, retrieved June 25, 2019]).

³ The shift to ubiquitous computing is pivotal in order to understand the change in human-computer interaction from the spatial and bodily limitations of desktop computing (designed for use at a single location) to the possibilities disclosed by a pervasive form of computing occurring at any time and everywhere by means of portable devices (such as laptops, tablets, smartphones etc.) See: Greenfield, 2006; Hansmann, 2003; Poslad, 2009.

⁴ See: Boler, 2012, p. 331 and: Boler, 2007.

⁵ Boler, 2007, p. 140. Disembodiment is actually a recurring theme in cyberpunk literature, with its fascination with the online setting (the so-called cyberspace) and the blurred lines between actual and virtual reality (I shall return to this point later).

⁶ Marketing discourses are «(...) employed to promote and sell software, hardware and other CMC technologies. Surveying the images and texts of advertisements used to target consumers from around 2000 reveals several, frequently recurring themes: transcending bodies, transcending differences and transcending space and place» (*ibid.*, p. 143).

⁷ I am borrowing an expression introduced by Ingrid Richardson and Carly Harper in their article: *Corporeal Virtuality: The Impossibility of a Fleshless Ontology* (2001) (<http://people.brunel.ac.uk/bst/2no2/Papers/Ingrid%20Richardson&Carly%20Harper.htm>, retrieved June 25, 2019).

(...) in digital Cartesianism, ironically the body—although allegedly transcended in virtual environments according to the hypes and hopes—actually functions as a necessary arbiter of meaning and final signifier of what counts as “real” and “true.” (...) In digital Cartesianism, users ironically turn to the body as the final source of epistemological certainty.⁸

This assumption leads to the problem of re-embodiment within the digital realm: it is not only a matter of overcoming the mind-body split, since this attempt remains subject—as we shall see—to the critical limits of technological re-embodiment;⁹ rather, and more radically, we should ask whether the split itself *actually occurs* in the forms and practices of digital subjectivation or whether it reflects an epistemological scheme in need of updating. Indeed, I will argue that most criticisms toward the idea of digital disembodiment assume that mind and body must actually be brought back together, as if the split had ontologically (and not only epistemologically) occurred at some point in time. On the contrary, I will argue that our *account* of the digital (i.e. our *epistemological scheme*, to which I will refer as the E-D-R-scheme, i.e. the “embodiment-disembodiment-reembodiment scheme”) does not truly correspond to our actual digital *being* (i.e. to the implied digital *ontology*).

2. How It All Began: A Philosophical Dilemma

It is well known that in the Platonic dialogue *Phaedo*, Socrates upholds the immortality of the soul by giving four arguments in favor of his thesis.¹⁰ Crucial to his reasoning is the assumption that the soul (*psyche*) is immaterial: «(...) for if death—we read—were an escape from everything, it would be a boon to the wicked, for when they die they would be freed from the body and from their wickedness together with their souls».¹¹ If the soul lives on after body’s death, it must have a reality of its own. This is the core of the metaphysical tradition in

⁸ Boler, 2012, p. 331.

⁹ See: De Preester, 2011.

¹⁰ These arguments are known as the opposites argument (69e-72e), the theory of recollection (72e-78b), the affinity argument (78b-84b) and the final argument (102b-107b). They all assume the immateriality of the soul and are based on the distinction between an empirical, bodily and mortal dimension and a non-empirical, immaterial and immortal dimension.

¹¹ Plato, 1966, 107c.

philosophy.¹² In this tradition, a central role is played by René Descartes. In order to understand the contemporary shift to a “new digital Cartesianism,” we must first briefly outline Descartes’ own theory of mind. In the sixth of his *Meditations on First Philosophy* (1641), Descartes argues for «The existence of material things and the real distinction between mind and body»—this being the title of the sixth *Meditation*. Here he claims that mind and body are characterized by two essentially different properties: thought, on the one hand, and extension, on the other hand. Since these are two essential attributes, they must belong to different substances: indeed, while the mind is capable of thinking (*res cogitans*), but has no extension, the body does have extension (*res extensa*), but is not capable of thinking. Although this argument has been considered the starting point of the mind-body problem, the question of dualism is a complicated one in Descartes’ philosophy: in *The Passions of the Soul* (1649) he claims that «(...) because we have no conception of the body as somehow thinking, we have reason to believe that all our thoughts, of whatever kind, belong to the soul».¹³ In making this claim, Descartes is implicitly assuming the distinction between *res cogitans* and *res extensa* that he had already theorized in his *Meditations*. However, in reply to Princess Elizabeth’s criticism of the theory of the “real distinction” between body and soul and in an attempt to explain how the soul is capable of moving the body, given that they are two completely different substances, he specifies that «the soul is joined to the whole body».¹⁴ Indeed, in order to make possible for the soul to move the body, a point of contact between them is needed, which Descartes identifies with the pineal gland within the brain.

¹² Of course, there is a whole materialistic tradition, in the history of philosophy, which—starting with Democritus in ancient times—does not conceive the soul as immaterial and separate from physical reality but rather reduces it to the actual (material) components of reality. Aristotle himself criticizes—in his treatise *On the Soul*—Plato’s notion of immaterial soul as theorized in the *Phaedo*, despite an initial proximity to the Platonic conception expounded in the *Eudemos* (on the development of Aristotle’s theory of the soul from the first works to the last ones, see: Berti, 1962, chapter 5: *L’Eudemo e i dialoghi etico-politici*, pp. 351 ff.) However, materialistic arguments do not properly intersect the problem of embodiment precisely because they elude the mind-body split by reducing mind to the material dimension.

¹³ Descartes, 1989, Part I, argument 4.

¹⁴ *Ibid.*, argument 31. In a 1643 letter, Elizabeth had perceptively noted: «For the determination of movement seems always to come about from the moving body’s being propelled—to depend on the kind of impulse it gets from what sets it in motion, or again, on the nature and shape of this latter thing’s surface. Now the first two conditions involve contact, and the third involves that the impelling thing has extension; but you utterly exclude extension from your notion of soul, and contact seems to me incompatible with a thing’s being immaterial».

The latter, he writes, is «(...) the only place in the body where the soul *can* directly exercise its functions [on the body] (...)».¹⁵

Modern philosophy has been marked by the problem of dualism: «this idea that the mind was separate from the body was later dominant in the Christian metaphysical tradition in the form of a “soul” (...)» and the conception «of a mind-body split persisted into the 18th century through the works of Locke, Hume and Kant (...)».¹⁶ Contemporary philosophy, and especially the phenomenological tradition, on which I will focus here, reacted to dualism by developing the notion of embodiment. Husserl’s conception of *Leib*—or the living body as more than just a physical body (*Körper*)—is already meant to overcome substantial dualism: what makes a body a *living* body is the fact that it inhabits and experiences itself (and others) within a certain environment, and this experience is inseparable from the kinesthetic processes performed by the body. Intentionality itself expresses the original correlation of mind (subject) and body (materiality): the starting point is, phenomenologically, the implication of body and mind, and not their split. They constitute each other mutually from the very beginning.¹⁷

Heidegger’s account of tools and technology further challenges dualism and suggests a particular notion of embodiment: in the world that we phenomenologically inhabit as living bodies, we encounter objects that (can) serve as tools for our actions. In *Being and Time* (1927) Heidegger argues that our relationship with tools can become so close and familiar through the use of them, that, the more we learn to master them, the more seamless their use becomes, blurring the lines between users and tools. In Heidegger’s words:

The less we just stare at the thing called hammer, the more actively we use it, the more original our relation to it becomes and the more undisguisedly it is

¹⁵ Descartes, 1989, argument 32.

¹⁶ Farr, Price, Jewitt, 2012, p. 2.

¹⁷ Cf. this passage from Husserl’s *Ideas II*: «It is in connection with what is material that the psychic is given to us. Among material things there are certain ones, or from an eidetic standpoint there are certain ones a priori possible, which are soulless, “merely” material. On the other hand, there also are certain ones which have the rank of “Bodies” and as such display a connection with a new stratum of being, the psychic stratum, as it is called here. What is included under this heading? What experience first discloses to us here a stream, with no beginning or end, of “lived experiences” of which manifold types are well known to us from inner perception, “introspection,” in which each of us grasps his “own” lived experiences in their originality» (Husserl, 1989, p. 98). For an in-depth account of Husserl’s theory of embodiment, see for instance: Lanfredini, 2014.

encountered as what it is, as a useful thing. The act of hammering itself discovers the specific “handiness” of the hammer. We shall call the useful thing’s kind of being in which it reveals itself by itself handiness.¹⁸

In this sense, the tool is «(...) seen to become “embodied,” to become part of you as a “master” of that tool»;¹⁹ therefore, as noted by Hubert L. Dreyfus, «Heidegger’s sole effort focuses on transcending the subject-object dichotomy in theory as well as in practice».²⁰ However, the most radical account of embodiment from a phenomenological perspective was provided by Maurice Merleau-Ponty in his *Phenomenology of Perception* (1945). In order to highlight the a-priori coincidence of consciousness and the body, i.e. in order to reject every kind of mind-body dualism, Merleau-Ponty argues that mind and body are not reducible to their parts and that the body is never simply an object or subject, since from the very beginning it is already a *body-subject*. With this notion,

(...) Merleau-Ponty implicitly challenges all philosophical positions which accept some basic dichotomy between subject and object, and then assigns the (human) body to the latter category. In particular, he rejects Cartesian dualism, which places the human body in the same ontological category as the “objects” of the physical sciences, and identifies the subjectivity of the human with its consciousness (...). For Merleau-Ponty, by contrast, the human body is itself a “subject,” and the human subject is necessarily, not just contingently, embodied.²¹

Merleau-Ponty refers to the very same case as Descartes, that of movement, and against Cartesian assumption argues that «our bodily experience of movement is not a particular case of knowledge; it provides us with a way of access to the world and the object, with a “*praktognosía*”, which has to be recognized as original and perhaps as primary».²² This means precisely that «(...) the body’s *praktognosia*, i.e. practical knowledge, cannot be analytically decomposed into more primitive concepts, such as “body” and “mind;” and that this

¹⁸ Heidegger, 1996, p. 65.

¹⁹ Farr, Price, Jewitt, 2012, p. 4.

²⁰ Dreyfus, 1991, p. 67. For an in-depth analysis of Heidegger’s account of technology, see for instance: Maggini, 2014.

²¹ Keat, 1982, pp. 1-2 (online at <http://www.russellkeat.net>, retrieved June 25, 2019).

²² Merleau-Ponty, 2005, p. 162.

praktognostic body in some sense forms the basis for all other kinds of relationship between the human subject and the world»²³.

We shall now see how (and why) the philosophical dilemma of the mind-body split and the consequent phenomenological response through the notion of embodiment is relevant in the context of the digital turn.

3. Is Digital Disembodiment for Real?

There is a strong urgency to this discussion, as the interfaces through which people interact with digital information now expand beyond physically delimited screens and are increasingly situated at the level of experience and perception. Augmented reality, the Internet of things, real-time data analytics, and other fluid interfaces are all instances in which digital information is rendered somehow indistinguishable from the way subjects experience and perceive the world.²⁴

In the age of codes and pervasive computing the way our body interacts with reality needs to be reshaped: to put it with Mark B.N. Hansen, the body can be referred to as a “body-in-code,” meaning «a body whose (still primary) constructive and creative power is expanded through new interactional possibilities offered by the coded programs of “artificial reality”». ²⁵ Thus, the body-in-code is «a body submitted to and constituted by an unavoidable and empowering technical deterritorialization—a body whose embodiment is realized, and can only be realized, in conjunction with technics». ²⁶

²³ Keat, 1982, p. 8 (online at <http://www.russellkeat.net>, pp. 1-2, retrieved June 25, 2019).

²⁴ Lepage-Richer, 2018 (online at <http://www.gnovisjournal.org/2017/12/07/on-modes-of-digital-embodiment-movement-and-the-digital/>, retrieved June 26, 2019).

²⁵ Hansen, 2006, p. 38.

²⁶ *Ibid.*, p. 20. One of the fields in which this digital empowerment of the embodied subject becomes most clear, is that of (video)gaming. In this context, «not only are forms of digital interaction starting to use more (or all) of the body as a control device, but human-computer interaction is increasingly based on natural or mimetic forms of movement». Although the notion of embodiment at play here can be vague, since «there is a persistent ambiguity within the literature on virtual realities and games over “immersion, engagement and presence” (...), since the terms are often used interchangeably (...), «there is a general consensus among designers that immersion is achieved through fostering a sense of embodiment». Therefore, the way in which the player experiences the game and the digital world through his/her own avatar is based on a kind of “enacted embodiment” (Farrow, Iacovides, 2014).

[also online at http://eprints.whiterose.ac.uk/130590/1/Embodiment_games.pdf, retrieved June 26, 2019)].

However, the question of embodiment in the digital context is complicated by a range of processes of (apparent?) disembodiment, on which the literature has long focused. As noted by Richardson and Harper in their work on virtual corporeality, both critical and popular discussions on Virtual Reality (VR) and cyberspace show a tendency to deny the corporeal dimension of these technological experiences and to posit them as new media of disembodiment.²⁷ Standard definitions provided by cyber-enthusiasts clearly show this tendency: «In cyberspace minds are connected to minds, existing in perfect concord without the limitations or necessities of the physical body»;²⁸ «it's like having had your everything amputated».²⁹ Vicky Kirby—drawing upon the view expressed by cyberpunk novelist William Gibson in his 1984 novel *Neuromancer*³⁰—suggests we understand digital subjectivity as a post-corporeal subjectivity configured in purely IT and immaterial terms.³¹ Subjects are moving within a digital environment, a “cyberspace,” which Gibson describes as follows:

Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts. A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding.³²

By interacting with such a dematerialized reality, subjects also experience a form of detachment from the materiality of their own bodies and interpret this very detachment as a kind of liberation from the limits of the flesh and of embodied experience:

The damage was minute, subtle, and utterly effective. For Case, who'd lived for the bodiless exultation of cyberspace, it was the Fall. In the bars he'd frequented

²⁷ Richardson, Harper, 2001

(<http://people.brunel.ac.uk/bst/2no2/Papers/Ingrid%20Richardson&Carly%20Harper.htm>, retrieved June 26, 2019).

²⁸ Heim, 1993, p. 34.

²⁹ Barlow, 1990, p. 42.

³⁰ See: Gibson, 1984.

(online at: https://archive.org/stream/NeuromancerWilliamGibson/Neuromancer%20-%20William%20Gibson_djvu.txt, retrieved June 26, 2019).

³¹ See: Kirby, 1997.

³² Gibson, 1984.

(online at: https://archive.org/stream/NeuromancerWilliamGibson/Neuromancer%20-%20William%20Gibson_djvu.txt, retrieved June 26, 2019).

as a cowboy hotshot, the elite stance involved a certain relaxed contempt for the flesh. The body was meat. Case fell into the prison of his own flesh.³³

It is easy to see that cyber-enthusiasts base their theory on an implicit and naïve epistemological framework that restores the Cartesian mind-body split; moreover, they radicalize this split by positing the body as non-necessary. This kind of discourse, to which Megan Boler has referred as a “new digital Cartesianism,” is characterized by three conceptual features.

First, it utterly privileges the mind over the body. As stated by Descartes, rational consciousness is independent from the body, even though the body can exercise certain “effects” on the mind; in his doubt argument, he argues that we know our mind better than our body, since «“the first thing one can know with certainty” is that “man, that is his soul, is a being or substance which is not at all corporeal, whose nature is solely to think”». ³⁴ As already observed, Gibson wants his characters to free themselves from the limits of the flesh through immersion in and interaction with an online, virtual environment where «(...) users are also told that the physical body is of no consequence (...). VR is promoted as a body free environment, a place of escape from the corporeal embodiment of gender and race». ³⁵

Second, it assumes the autonomy of the thinking subject (*res cogitans*): «with Descartes is born the distinctive emphasis on consciousness as a quality located within the private interior space of the mind». ³⁶ This intimacy seems to be fully realized in digital culture, since—as noted by several scholars³⁷—one of the main features of the digital personhood consists in its being inwardly oriented, i.e. it focuses on its own inner world and experiences. However, this tendency is marked by a certain degree of ambiguity: digital subjects show a desire for connection with others and their private, inner world is increasingly meant to be shared with others through “self-disclosure” practices that are made easier by the anonymity of the Internet.

Finally, «(...) Descartes’ famous maxim “I think therefore I am” translates into “I flicker therefore I am”». ³⁸ Flickering surfaces, bits and bytes are pivotal

³³ *Ibid.*

³⁴ Boler, 2012, p. 332 (quoting Descartes from: Bordo, 1987, p. 26).

³⁵ Balsamo, 2000, p. 493.

³⁶ Boler, 2012, p. 333.

³⁷ See, for instance: Zhao, 2005.

³⁸ Boler, 2012, p. 333.

for cyberpunk literature and, more generally, constitute a relevant component of digital “aesthetics.”

However, Boler raises the question of whether digital disembodiment—based on Descartes’ original version of the mind-body split—is for real or, on the contrary, the actual, “real” body is (implicitly) required in order to perform digital activities:

The “real body” is frequently invoked in online communication to authenticate identity and establish meanings. Unlike the Cartesian ideal, in digital transactions the body functions as a transcendental signifier. In online environments, the metaphysics of presence depends upon real bodies, despite the hype that cyberspace allows us to interact exclusively negative and with pure minds.³⁹

Not only do I agree with this statement by Boler, but I would like to push it further, through a revised version of what I have called “the epistemological E-D-R scheme.”

4. The E-D-R Scheme Revised: Double-Embodiment

First of all, the idea that an actual detachment from our bodies occurs in technological (and, therefore, digital) activities is untenable for the very reason that our (inter)actions within technology are always *mediated* by tools (i.e. digital devices) of various sort—which brings us back to the phenomenological (and especially Heideggerian) conception of embodiment and technology. The channel for this mediation is the body: it is through our body, i.e. through our senses, limbs, movements, through our very bodily experience, that we can use and control these tools and, therefore, perform digital activities.⁴⁰ This means that a complete detachment of our mental skills from our bodily skills is not conceivable in a technological context: our real, actual being is not only assumed as a starting point, but it represents a condition of possibility for experiencing a techno-digital world. The body works as a bi-lateral point of access: it is the channel through which—with the help of digital media—reality impacts our inner experience, as well as the window through which we access external experience.

³⁹ *Ibid.*, p. 334.

⁴⁰ By using joysticks, smartphones, laptops, etc., the mediation of our bodies and (a combination of) our senses is always needed in order to *use* and possibly master these devices.

Moreover, I would like to stress that the mediation of the body provides an assurance that our experience can also be socialized: while the way each subject reacts to stimuli is largely subjective, intimate and inaccessible, the way in which the *design* of a certain device or technology works and—providing it works correctly, i.e. for the purpose it is designed for—impacts our senses and body is more objective and can be foreseen to some extent. With regard to material conditions, for instance, gamers playing online are all having the “same” experience, which of course differs phenomenologically in terms of the qualitative and subjective feelings that they are having in the first person.

This brings out a further dimension of embodiment in the digital realm: the concept not only expresses the fact that our experience of the environment is always located, contextualized and mediated by the body and its sensorimotor performances, but also the fact that the tools and devices by means of which we experience and know our digital world are increasingly becoming embodied, i.e. embedded in our bodily and cognitive dimension. We are increasingly *technologizing* ourselves, i.e. our bodily and cognitive abilities. This technologization implies a double-embodiment process: as we *extend* ourselves into reality by means of digital devices, these in turn become *embedded* into our bodies, increasingly blurring the lines between the organic and the digital dimension. *Double-embodiment* involves the subjective side (embodied experience) as well as the objective side (embodied technologies) of our relationship to the digital world.

These reflections evoke the urgency to revise the traditional epistemological scheme, what I have defined as the E-D-R scheme (embodiment-disembodiment-reembodiment scheme), so as to develop a more fitting account of the digital ontology (of the subjects as well as of the tools) implied by digital embodiment. The E-D-R scheme could be replaced by a double-layered scheme, which is able to describe the bilaterality of (double-)embodiment without leaving its conceptual ground, i.e. without the epistemological need to suppose a process of dis-embodiment and subsequent re-embodiment in the digital context.

As stated by Helena De Preester, «in contrast to the idea that the use of technology implies the ability of *dis*embodiment, or a neglect of the body, I want to prepare the ground for the opposite claim, namely that this experience requires the capacity for *re*-embodiment, not for disembodiment». ⁴¹ In her

⁴¹ De Preester, 2011, p. 120.

article, De Preester focuses on the problem of the “technologization” of bodies and outlines an essential distinction between bodily *extension* and the *incorporation* of non-bodily objects. Her argumentation is developed on the general level of technology as such, where three cases are to be considered: limb prostheses/extensions, perceptual prostheses/extensions and cognitive prostheses/extensions.⁴² De Preester regards extension (on the side of the body) and incorporation (on the side of objects) as two different phenomena, characterized by distinct features and conditions, and locates real re-embodiment processes on the side of incorporation/prosthesis. However, by applying De Preester’s categories to the more specific context of digital technologies, I aim to show that extension and incorporation are *both* at play in digital embodiment, since they are both required by digitally mediated forms of interactions. Therefore, they can be considered the two sides of the double-embodiment scheme that I am proposing here.

In order to achieve actual re-embodiment, precise conditions must be fulfilled in all three cases analyzed by De Preester:

In the case of limb prostheses, the crucial factor is a change in the feeling of body ownership. In the third case, cognitive prostheses, it is also a feeling of ownership that is at stake, but this time it is about ownership of thoughts. In the second case, perceptual prostheses, a change in subjective experience is the central issue.⁴³

These conditions allow a proper incorporation of objects and instruments into the body and are only fulfilled by prostheses, whereas body extensions do not necessarily imply changes in body (or thought) ownership and in subjective experience. Therefore,

Real re-embodiment would be a matter of taking things (most often technologies) into the body, i.e. of incorporation of non-bodily items into the body. This, however, is a difficult process often limited by a number of conditions of possibilities that are absent in the case of ‘mere’ body extensions.

While a distinction between extension and incorporation can possibly be drawn—as shown by De Preester—in the case of technical instruments and artefacts, my point is that *digital* technologies and subjectivation processes challenge and blur precisely this very distinction. Real digital (re)embodiment

⁴² *Ibid.*, paragraph 2, pp. 120 ff.

⁴³ *Ibid.*, p. 137.

does not coincide *exclusively* with incorporation but requires a complementarity of extension and incorporation. In order to show my point, I will discuss all three cases analyzed by De Preester.

4.1. Limb extensions/prostheses

De Preester argues that «whereas tool use induces an *extension* of the sensorimotor body, changes in body ownership are *nota* matter of extension (...). In short, the strategy followed by the incorporation of something extracorporeal into the body, is one of replacement rather than extension». ⁴⁴ In other words, the use of a pen as a writing tool does not alter our body ownership: we would never think of the pen as a body part. A limb prosthesis, instead, does challenge our body ownership, since it properly becomes part of our body. However, the author acknowledges that in some cases—at least from the perspective of how the tool or the prosthesis is experienced by subjects—a certain ambiguity is at play and a clear distinction cannot be drawn. «The above thus shows that the distinction between tool and prosthesis is not rigid». ⁴⁵ I would argue that this ambiguity radically increases in the case of digital extensions: let us consider the most widespread and daily experienced case—the use of smartphones. The “O2 Mobile Life Report”⁴⁶ has revealed that around 30% of smartphone users reported they had begun to see physiological changes to their body. Our posture is changing as a consequence of our use of smart devices and especially the smartphone. Touch-screen interfaces have made this change even faster and more complex: a study of 1,000 British adults conducted by Broadband Choices has revealed that more than a quarter of them injured themselves while using the phone—from using in bed to hand strain, neck strain and bruising.⁴⁷

⁴⁴ *Ibid.*, p. 125.

⁴⁵ *Ibid.*, p. 124.

⁴⁶ See: <https://news.o2.co.uk/?press-release=were-all-fingers-and-thumbs> (retrieved June 17, 2019). “Two in five (37%) of the population also say they expect their bodies to further change over time as smartphones continue to transform society, relationships and everyday life. People have reported that they think the thumb of their ‘swiping hand’ is on average 15% larger than the thumb on their opposite hand as the muscles have been given a work out” (Allison, 2016: <https://www.digitalspy.com/tech/smartphones/a796989/mobile-phones-changing-body-shape-report/>, retrieved June 27, 2019).

⁴⁷ See: Gavin, 2017 (<https://www.express.co.uk/news/weird/860552/how-human-hand-could-evolve-to-use-smartphones>, retrieved June 27, 2019).

Therefore, although smartphones represent digital extensions of ourselves that could hardly be “incorporated” or embodied in De Preester’s sense, their *use* is deeply changing the physiology of our bodies—or, at least, our own perception of it—and the effects of this modification *are being* increasingly embedded into our bodily experience. Similar effects also play a role in other (very common) digital tools/extensions such as tablets, laptops, joysticks and so on; therefore, I would argue that such digital tools are more than “mere” extensions and convey a feeling of incorporation.

4.2. Perceptual extensions/prostheses

In his 1979 book *Technics and Praxis*, Don Ihde has underlined that perceptual extensions are mostly based on a reduction/amplification structure, which amplifies (or reduces) certain features of the experienced environment while reducing (or amplifying) others. Typical extensions of this kind include spectacles, lenses, microscopes, telescopes, and the telephone; what such devices all have in common is the fact that they isolate a certain perceptual content (while dismissing all other content as not relevant), thereby amplifying it. Interestingly, De Preester believes that virtual reality techniques fall within this category and mentions flight simulators, games and art experiments as main examples. These kinds of extensions don’t challenge our feeling of body ownership and, therefore, they can’t provide any real form of re-embodiment. As examples of the latter, De Preester suggests we consider sensory substitution devices (SSD), i.e. prostheses that are usually developed to re-establish a lost or damaged sense and that «(...) convert stimuli of one sensory modality (e.g. light) into stimuli for another sensory modality (e.g. sound)». ⁴⁸ The use of SSD would generate «a new kind of experiencing», and this «is what might demarcate perceptual prostheses from perceptual tools, and might be the searched for analogue of change in the feeling of body ownership». ⁴⁹ I would question this interpretation by introducing two arguments (and a conclusion), that emerge within digital contexts.

1. The assumption that VR consists in a mere extension of our experience, which would not produce a new kind of experiencing, is problematic: although simulated virtual environments seem to be subject to the very same limits as actual experience, i.e. they too are based on strategies for amplifying/reducing

⁴⁸ De Preester, 2011, p. 129.

⁴⁹ *Ibid.*, p. 131.

certain elements, VR is a *simulated* reality. This means, above all, that it is free from the spatial and temporal limits of actual experience: while this latter is a *continuum* in which, by means of technical instruments, we can modify and improve or reduce some elements without interrupting the continuity of our experience, with VR we *enter* a parallel world, in which we can entertain ourselves for some time, and then we *exit* it. We actually shift from one experience to another: indeed, VR *devices* and *tools* can be regarded as body extensions; by contrast, *Virtual Reality as such*—which does not coincide with VR devices but is rather technically produced by them—is not an extension of our body, but the simulation of *another body* (a virtual one, possibly controlled by us as actual persons) with *another environment*. The virtual body as another body, as the *body of another*, would experience the virtual environment in a different way: to reduce the experience we have in VR contexts to the actual experience we have in our “real” world is largely to overlook the significance and meaning of this peculiar experience.⁵⁰

2. What about augmented reality (AR)? In the contemporary discourse on computer technology, the level of AR achieves a genuine integration between the virtual and the real, which is not typically the case with VR (where the assumption is the creation of an isolated virtual environment). Augmented reality is the blending of virtual reality and real life, as developers can create images within applications that blend in with contents in the real world (just think of the most recent videogames, games for smartphone users such as PokemonGo, GPS-technologies, and so on). AR technologies can hardly be considered mere extensions of the self, since the contents they create blend with and augment our actual reality, including our bodies and corporeal skills.

3. (Conclusion from the previous two arguments). If—as argued by De Preester—SSD devices (i) allow a real re-embodiment, since they disclose a new kind of experiencing, while (ii) perceptual extensions do not, because they neither challenge our body ownership nor disclose a new kind of experiencing; and if I have shown that (i) digital extensions convey a new kind of experiencing

⁵⁰ We can again refer to videogames as examples of this: «The fictional worlds of games like these are often not attempts to emulate real life, but to re-create shared cinematic, literary or televisual worlds which have no physical correlate» (Farrow, Iacovides, 2014 [online at http://eprints.whiterose.ac.uk/130590/1/Embodiment_games.pdf, retrieved June 27, 2019). However, (re)embodiment in gaming activities remains problematic in some respects: «The extent to which a player can feel embodied in such forms is debatable»; «further, precisely what is meant by “embodiment” within digital environments remains unclear» (*ibid.*).

and (ii) can also challenge our body ownership, since they are more than “mere” extensions; then the distinction between extensions and incorporations within digital contexts must be questioned. Digital extensions (the subjective side of the body) and digital incorporations (the objective side of the tools) are complementary, as required by the double-embodiment scheme.

4.3. Cognitive extensions/prostheses

«In a seminal article, Clark and Chalmers (1998) ask the question where the mind stops and the rest of the world begins. In fact, the question is more specific: what can be recognized as part of a cognitive process?». ⁵¹ De Preester refers here to the famous thought experiment suggested by Clark and Chalmers in *The Extended Mind*, concerning two fictional characters, named Otto and Inga, who are both travelling to a museum simultaneously. Otto has Alzheimer disease, and has written all of his directions down in a notebook so as to help his memory. Inga does not have any disease and is able to recall the directions within her memory. Both Inga and Otto can be thought to have held a belief of the location of the museum before consulting their memory (in Inga’s case) or notebook (Otto’s case); the only difference existing in their two cases is that Inga’s memory is being internally processed by the brain, while Otto’s memory is being served by the notebook. ⁵² The question here is: should Otto’s notebook be considered a body extension or rather a form of incorporation?

De Preester suggests that, «since Otto is in an unfavorable position (since he suffers from memory loss), we cannot say that he owns his beliefs in the notebook in the same way Inga owns her belief». ⁵³ Indeed,

(...) Otto has to re-appropriate his belief each time he needs the belief at stake and looks it up in his notebooks, whereas Inga is in a position in which her implicit ownership is not only made explicit when she retrieves a belief from her memory, but also reinforces her ownership over the thought each time she retrieves the belief. ⁵⁴

Thus, in order to speak of real (re)embodiment in the case of cognitive processes, a change in the feeling of our thought ownership is required, which does not

⁵¹ De Preester, 2011, p. 135.

⁵² See: Clark, Chalmers, 1998.

⁵³ De Preester, 2011, p. 36.

⁵⁴ *Ibid.*

occur in Otto's case. I have discussed this topic in a recent article where I tried to demonstrate that Clark and Chalmers' hypotheses needs a phenomenological integration in order to acquire full significance.⁵⁵ In the case of belief—this is Clark and Chalmers' pivotal assumption—«there is nothing sacred about skull and skin. What makes some information count as a belief is the role it plays, and there is no reason why the relevant role can be played only from inside the body».⁵⁶ Thus, they compare Otto and Inga's positions, since no relevant difference occurs in Otto's cognitive processes because of the external supplementation of his memory.

I believe that, as regards the way in which the cognitive process occurs, Clark and Chalmers are right against De Preester: she writes that «Otto has to re-appropriate his belief each time he needs the belief at stake», whereas Inga has an «implicit ownership» of her memories, which is being reinforced «each time she retrieves the belief». My point is that we have no reason to rule out that Inga herself has to re-appropriate her belief each time she needs it, even though she resorts to her biological memory: for she also retrieves the information needed when external, practical necessities require her to do so. When this happens, she also goes back to her memory, just as Otto refers to his notebook: from a qualitative point of view, the two cases are comparable. The fact that Otto's memory is *externalized* does not mean that it is not “implicit” like Inga's: if we conceive the fact of being “implicit” as synonymous not with being “internal,” i.e. located somewhere inside our brain or consciousness, but with being reactivable and retrievable, then Otto's memory does not essentially differ from Inga's in terms of ownership and cognitive functioning.⁵⁷

An essential difference between Otto's situation and Inga's has to be sought elsewhere. The point is that Clark and Chalmers' theory seems to be lacking a fundamental explanatory dimension to which, however, they briefly draw attention in their article: «Does the extended mind—they ask—imply an extended self? It seems so. Most of us already accept that the self outstrips the boundaries of consciousness».⁵⁸ Indeed, «the hypothesis of the extended mind

⁵⁵ See: Buongiorno, 2019.

⁵⁶ Clark, Chalmers, 1998, p. 14.

⁵⁷ Moreover, Otto's notebook can be considered a body extension in the very sense I have discussed in paragraph 4.1. with regard to smartphones. I have already shown there that the distinction between extension and incorporation in the case of digital processes and devices is far more problematic and blurred than De Preester suggests.

⁵⁸ Clark, Chalmers, 1998, p. 18.

is essentially linked to the mediation played by some kind of external apparatus (like the notebook [...] as in the famous example made by Clark and Chalmers in their 1998 article)». ⁵⁹ The problem with this mediation is not that it marks a difference between the way Otto and Inga's memory works, but rather that it «(...) implies the agency performed by an “extended self” as the actor of symbolic, extended processes of cognition». ⁶⁰ What if we thought of Otto's notebook as a *digital* one? ⁶¹ Then, the distinction we are searching for could be that Otto is constituting himself as a subject *digitally*, whereas Inga is not. This implies that Otto must develop a whole range of performances and skills—bodily as well as cognitive—that Inga does not need to have ⁶²: the notebook as a digital *extension* impacts Otto's body and causes substantial changes in his way of knowing and perceiving the world. These very changes *are being incorporated (embodied)*—no matter whether they change his thought ownership or not.

5. Conclusion

In this article I have tried to demonstrate that the problem of embodiment goes back to the question of the mind-body split, as this has been established and discussed by the philosophical tradition. With the digital turn and the advent of ubiquitous computing the problem of embodiment has taken new (and far more complicated) forms that have led scholars to introduce the notion of a “new digital Cartesianism.” Subjectivation processes within digital culture have mostly been explained by resorting to what I have called the “E-D-R scheme,” which assumes that a real detachment between the body and the mind really occurs in digital processes. Since this is not actually the case, I have suggested replacing this epistemological scheme with a new one, which I have called the “double-embodiment scheme,” in order to acquire a more fitting epistemological account of the underlying digital ontology. Finally, I have discussed the distinction between bodily extension and the incorporation of non-bodily objects introduced by Helena De Preester in order to show that, in the digital realm, this distinction (and its conditions in terms of body or thought ownership and the production of a new kind of experience) are much more

⁵⁹ Buongiorno, 2019, p. 62.

⁶⁰ *Ibid.*

⁶¹ Otto could refer, for instance, to Google Maps in order to recall the way to the museum.

⁶² Otto is thought to be able to use a smartphone, to search through Google Maps, to interact with a digital interface, to understand and retrieve the information needed, and so on.

blurred and complex than she acknowledges: digital embodiment does not only occur in the case of incorporation, since—as the lines between the two become blurred—it requires both bodily extension and the incorporation of objects as complementary processes.

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