I, avatar: Towards an extended theory of selfhood in immersive VR

In this paper, I argue that virtual manifestations of selfhood in VR environments have a transformative effect on the users, which in turn has spillover effects in the physical world. I will argue in favor of extending our notion of personal identity as to include VR avatars as negotiable bodies that constitute a genuine part of who we are. Recent research in VR shows that users can experience the Proteus Effect and other lasting psychological changes after being immersed in VR. An extended theory of the self, modeled after the extended mind thesis advanced by Clark and Chalmers (1998), can offer a deeper understanding of how and why immersive virtual experiences have such a transformative effect on users. The early VR scholars had a similar intuition-that "VR is a medium for the extension of body and mind" (Biocca and Delaney 1995), acting like a genuine "reality engine" (Biocca and Levy 1995).

Keywords: *Virtual Reality, personal identity, first-person perspective, embodiment, virtual environments*

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Abstract

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I. Introduction

The rise of Virtual Reality as an accessible immersive and hyper-immersive way of engaging with digitally rendered environments brought about a series of open-world games, like Sansar (the offspring of Linden Lab's Second Life), Altspace, Sinespace or Dreamscape. These social virtual worlds are designed to allow users to experience and interact with the environment in a way that was previously reserved to real life interaction- in the absence of a task and narrative-oriented game design, users are free to explore the virtual universe, to engage in social interactions with other avatars, fall in love, participate in poetry readings or philosophy classes, and build for themselves the virtual life they see fit. Much like in the case of Second Life, the immersive VR experience, user interaction dynamics, and environment design have the peculiar effect of triggering self-referential use of the first-person pronoun in users when talking about their virtual bodies- namely the avatar one can customize and manipulate inside the virtual environment of choice. Immersive virtual experiences are meaningful or unforgettable in the sense that they can trigger a lasting change in the users (Morie 2006). The use of 'I' when referring to one's avatar, the immersive trait of VR experiences and the robust social life of users in social virtual worlds provide the premises of a philosophical inquiry into the nature of avatar-real self relation.

Several interpretations of the nature of this relationship were advanced in the literature addressing this topic. Most authors adhere to a narrative identity theory as a means of explaining the shift from role-playing or make-belief interpretations (Gotlib 2014; Schlechtman 2012; Taylor 2002). Others argue that a fictional identity view can better accommodate the gameplay experience (Robson and Meskin 2016). Popat and Preece see

the avatar-intermediated experience as an embodiment performance, a way of exercising embodiment through a pictorial construct (2012). In spite of the many differences between these theories, I argue that all proposals are built on a common assumption: that virtual manifestations of selfhood have a transformative effect on the users, which in turn has spillover effects in the physical world. Starting from this common denominator, I will argue in favor of extending our notion of personal identity as to include the VR avatars as nego-tiable bodies who constitute a genuine part of who we are. An extended identity theory, modelled on the extended mind thesis advanced by Clark and Chalmers (1998), can offer a deeper understanding of how and why immersive virtual experiences have such a trans-formative effect on users. The early VR scholars had a similar intuition- that "VR is a medium for the extension of body and mind" (Biocca and Delaney 1995, 58), acting like a genuine "reality engine" (135).

II. Immersion, presence, agency and embodiment in Virtual Reality

As the tech market becomes more aware of the widespread potential of Virtual Reality (VR) for entertainment products, furthering therapeutic methods and doing research with more accurate results, the experience of immersion and hyper-immersion is raising novel conceptual challenges for philosophers of technology and ethicists alike. Immersive tech-nologies can affect how we act, perceive reality and understand ourselves.

The avatars available in Virtual Reality games have also evolved into more sophisti-cated virtual objects, with a wide range of customizing options available for the users. Lin-den Lab's Sansar, for example, made available to users an avatar editor that gives full control over the visual narrative players want to create for themselves, once immersed into one of the complex virtual worlds (Takahashi 2019). It is true that a much smaller number of users experience the virtual life offered by Sansar, when compared to the more known three-dimensional virtual worlds like Second Life. Nonetheless, it is plausible that the number of VR users will grow dramatically in the years to come. The VR technology has been around for a long time now, but the tech market only began to tap into its full poten-tial recently. Performant VR headsets, once only available to a few research labs, can be purchased nowadays in the price range of a smartphone. The gaming industry will continue to produce massively for computer interfaces, but a significant part of the market already oriented towards developing more complex and immersive virtual worlds for VR. As the VR social platforms gather more users, the philosophical questions regarding the relation-ship between individuals and their virtual selves call for a closer investigation into how we are to understand personal identity.

The main thesis of this paper- that avatars must be considered a part of the extended self of their respective users- is primarily considering types of avatars that display plasticity of self-representation in Virtual Reality settings. I take the difference between online VEs (virtual environments) and IVREs (immersive virtual reality environments) to be one of degree, not necessarily a difference in nature. Nonetheless, the avatar embodiment expe-rienced in IVR possesses some traits that make the expression of one's extended self more readily noticeable: the first-person perspective, the feeling of presence, the sense of agency and ownership displayed by players in respect to their actions and virtual body, to name

just a few. There is enough evidence that experiences in VR can be designed to be embodiment labs through and through (Spanlang et al. 2014). I will also assume that there is such a thing as a self, be it narratively constructed or otherwise, that we can meaningfully discuss about. Even if one adheres to a Humean position or to a similar thesis developed in neurophilosophy, like the self-model theory of subjectivity (Metzinger 2003), the extended selfhood thesis will only change its form in order to refer to the possibility of constructing virtual phenomenal content that contributes substantially to the illusion of the self.

Contemporary research in VR technologies dedicated a lot of attention to measuring presence and degrees of immersion in VR settings. Even though the conceptual distinction between presence and immersion is rather blurry, the existing body of literature on this subject can shed light on how users experience virtual reality through their avatars.

Immersion best describes a capability of a system that generates virtual reality. In order for a system to generate immersion, it must provide the user with the "ability to perceive through natural sensorimotor contingencies" (Slater and Sanchez-Vives 2016, 5) which, in turn, facilitates the illusion of being there, the subjective experience of presence or place illusion (PI). Presence manifests as the feeling "that the mediated environment is real and that the user's sensations and actions are responsive to the mediated world as opposed to the real, physical one" (Fox et al. 2009, 98). Presence is a multifaceted concept; it encompasses more than one way of being in a VE. Lee proposed three distinct categories of presence: physical presence, social presence, and self-presence (2004, 44-46). Physical presence is the dimension of presence correlated with the properties of the ecological, mediated space. The higher the level of physical presence, the more a user is able to make abstraction of the mediated character of the environment. Social presence is a "psychological state in which virtual (…) social actors are experienced as actual social actors in either sensory or non-sensory ways" (45). Lastly, self-presence refers to the psychological state of feeling connected with a virtual body. All of these subcategories of presence contribute to inducing the sense of ownership over a virtual body (Slater et al. 2009).

A higher level of immersion stimulates a greater sense of presence. A measurable indicator of presence is the physiological responses of users to VR environments. A series of experiments show that highly immersive virtual environments can trigger acute physiological responses in users, such as increases in heart rate, blood pressure, skin temperature, and perspiration (Macedonio et al. 2007), but can also induce strong emotions through persuasive design (Riva et al. 2007). One of the most interesting instances of embodiment in VR can be observed in the use of therapeutic applications meant to treat PTSD, phobias or anxieties. The success of these applications is conditioned by the believability of the illusion of embodiment. While the physical body of the users is constrained by its actual location in the physical world, the mind is thoroughly compelled into treating the virtual experience as authentic. Exposure therapy is conducted through VR applications because all of the user's senses are connected to a reality producing engine. If one uses Samsung's Be Fearless app, the fear of heights one displays in the real life instantly triggers authentic emotional responses in users.

Embodiment, defined as corporeal awareness, encompasses a series of disparate phenomena such as body-ownership, self-location, and agency (Borrego et al. 2019). A considerable body of literature is dedicated to analyzing the perceptual experiences of

immersive VR users in respect to their virtual bodies and limbs. The Rubber Hand Illusion experiment is recognized as an established instrument of investigating the sense of body ownership in neuroscience[1]. VR researchers conducted similar experiments to test the existence of a Virtual Hand Illusion. Some results show that users display a strong sense of ownership towards their virtual limbs when they use self-avatars (Yuan and Steed 2010) and that the users respond to threats posed to their virtual bodies as if it were real (Gonzalez-Franco et al. 2013). These mental states induced by immersive environments can influence the behavioral responses of users in the virtual environment, but it can also register a lasting change in the beliefs and attitudes of users once they are decoupled from the VR equipment (Madary and Metzinger 2016). The Proteus Effect, a phenomenon first documented by Yee and Bailenson (2007), consists in the tendency of subjects to behave in accordance with the social roles they associate with their avatar's appearance. Other lasting psychological effects of avatar design were documented by researchers, such as reconsideration of money spending patterns and the propensity of subjects to display altruistic behavior after being exposed to suggestive virtual experiences (Fox et al. 2009, 100).

In the virtual worlds in which users can immerse themselves only through the use of keyboard and mouse, the sense of agency and self-ownership is incomplete with respect to the avatar. The information produced and transmitted inside the VE cannot reach all the senses. All the avatars can be perceived as negotiable bodies, but most unforgettable experiences are reserved for the immersive VR environment. The linguistic intuitions of users also seem to support the hypothesis that the virtual self, namely one's avatar, is regarded as an extension of the user. The use of the first-person pronoun in these kinds of contexts is common enough (Velleman 2013, 14). When narrating their virtual encounters and experiences, users refer to their avatar with the first-person pronoun, saying 'I did this or that', instead of 'My avatar did this or that'.

The peculiar features of 'I' generated a fertile debate between philosophers in what concerns its ability to successfully self-refer. Wittgenstein distinguished between two uses for the first-person pronoun: as a subject, when the speaker intends to communicate information about her beliefs and emotions, for example, and as an object, when the speaker tries "to match up first-person experience with some known criterion in order to judge the experience to be [her] own" (Gallagher 2000, 15). When a player says 'I like video games', it would be nonsensical to question the ability of the speaker to correctly identify herself. The subjective use of the first-person pronoun is immune to error through misidentification (Shoemaker 1968; Evans 1982).

On the other hand, when a VR user says 'I am on top of Mount Everest', she can fail to refer successfully to her own person. Let us suppose that someone will spend the entire morning in her room logged in a VR application, exploring Mount Everest and trying to overcome her fear of heights. She will say 'I was on Mount Everest', but she would objectively misidentify herself. She was in her room, immersed in a VR game, while her avatar was on Mount Everest. We can accept that her body was not located on Mount Everest at the indicated time, and therefore the sentence is false. But do we have sufficient reason

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[1] The Rubber Hand Illusion and the Virtual Hand Illusion are induced by applying repeated and synchronized strokes to a rubber hand/ virtual hand that is positioned so that it appears to be an extension of the bodily self of the participant in the experiment.

to say that the first-person pronoun in used erroneous in this case? The answer to this question is dependent on the weight one is willing to give to occurrent moral and linguistic intuitions. It is true that the VR user is not physically on Mount Everest, but all of her senses were tricked into believing that she is there, experiencing avatar embodiment, acting according to her beliefs and desires. From this perspective, the objective use of the first-person pronoun can be taken to encompass more than the mere location of the body. Through immersion, the user experiences the virtual environment as a substitute for reality.

The subjective use of the first-person pronoun is less philosophically problematic. When the VR user says 'I was very afraid I would fall', the use of the first-person pronoun is immune to misidentification. The privileged access one has to its own first-person experiences and to the phenomenological content of those experiences cannot be incorrectly attributed by their possessor. Even if the VR user's body is safe inside the confinement of her room, the user is present inside the virtual environment generated by a VR equipment.

To better understand why VR users tend to use the first-person pronoun when referring to their avatars, we must turn our attention to avatars and their standing in relation to ourselves.

III. Avatars as negotiable bodies

The virtual environment is a digital space populated by diverse virtual objects, including human and animal representations. Human representations are either called avatars, when controlled by a human user, or agents, when controlled by an algorithm (Fox et al. 2009, 97). The object of interest for this present paper is the avatar, the "pictorial constructs used to actually inhabit the [virtual] world" (Taylor 2002, 40). Avatars can be highly realistic, pictorials designed to recreate the exact physical appearance of a user through facial modelling techniques. At the other end of the spectrum, one can manipulate a pixelated avatar that looks nothing like the user controlling and incorporating it in the virtual environment. The degree of realism imprinted on an avatar has little to no bearing on the degree of immersion and presence the user is experiencing in VR settings. With the exception of the games designed to randomly assign an avatar to the player, the avatar is an expression of one's form of choice for the virtual embodiment.

Choosing and customizing an avatar can be seen as a technique of negotiating the boundaries of the self. When talking about the use of prosthetic devices in the same way in which one makes use of natural limbs, Andy Clark notes that "creatures capable of this kind of deep incorporation of new bodily structure are examples of what I shall call "profoundly embodied agents". Such agents are able constantly to negotiate and renegotiate the agent-world boundary itself" (2008, 34). The avatar is commanded just like a prosthetic arm, an alien addition to the natural body, who is manipulated through automatic, unreflective brain commands. When she/he manipulates a prosthetic arm to hold a grab a book, she/he does not say "My prosthetic arm grabbed a book", but rather "I grabbed a book". The same phenomena appear in the case of avatars- the users typically say 'I did this or that' because the mind is immersed in the virtual world when the act occurs. The avatar does not appear in the practical reasoning of VR users because the coordination of brain

command and movements is accurate enough.[2] The development of VR equipment designed to enhance the immersion of users into the virtual environment, such as haptic gloves and full-body haptic suits, makes possible the complete coordination between the virtual body of the avatar and the physical body of the user.

In this sense, the avatar as a negotiated body provides "access points in the creation of identity and social life. The bodies people use in these spaces provide a means to live digitally- to fully inhabit the world. It is not simply that users exist as just 'mind', but instead construct their identities through avatars" (Taylor 2002, 40). For Taylor, the avatar is a fictional self who can act as a means of self-discovery and self-creation for players. The Virtual Reality is not solely experienced by users' disembodied minds, roaming freely in a digitally rendered space, but by embodied agents, virtual extensions of the self. The non-conceptual first-person content displayed by users in VR also indicates to individuals assuming an embodied position in the environment. This type of content manifests like the feeling of being there, in the virtual environment, and can be seen as a manifestation of self-presence. The reports of Second Life players are testimony to an even more robust sense of selfhood experienced through one's avatar. Some SL residents believe that virtual embodiment is a way of expressing the authentic self, saying that the avatar reflects the way in which they perceive themselves to be "on the inside" (Boellstorff 2008, 134). For example, those residents who are body bound by permanent physical disabilities are negotiating the form of their embodiment (137), thus exercising ways of interacting with the environment that are not available to them in the physical world. Nonetheless, the subjective experience one has when manipulating an avatar in Second Life is not bound to be coherent. The practice of having and using alts (more than one avatar per player in the same virtual environment) simultaneously can cause fractures in users' subjectivity (150). The same objection cannot be made in respect to VR experiences because VR users cannot virtually embody more than one avatar at a time.

Virtual embodiment is perceived as being an authentic form of expressing one's self especially in the presence of virtual communities. A virtual world design that favors inter-subjectivity creates the conditions of possibility for the users to experience a full social life in a virtual space. In the absence of inter-subjectivity, a user can only experience the ecological space rendered by the hardware setup. Even though "the plasticity of our self-representations" and the characteristics of the virtual environment are very important to the creation of online identities, "technical affordances on social interaction in online environments" can reduce the gap between real and virtual selves (Yee and Bailenson 2007, 272).

IV. From the extended mind to the extended self

In their highly influential article entitled "The extended mind", Andy Clark and David Chalmers argued for an active form of externalism about the mind, a view which entailed that cognitive processes supersede the traditionally accepted boundaries of the skin and

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[2] The argument is inspired by David Velleman's treatment of players controlling avatars through the keyboard and mouse. Velleman believes that, as the player gains more skills in controlling her avatar, the manipulation of artifacts disappears from her explicit intentions (2013: 12).

skull (1998, 7). If, when dealing with epistemic actions, an artifact functions as a process which we would normally recognize as being a cognitive process if it were to happen inside the head, then the artifact-mediated process is also a part of the cognitive process (8). To illustrate the extended mind thesis, Clark and Chalmers use the example of Otto, an Alzheimer's patient, who extends his mind into the world through the means of his notebook. The notebook acts as Otto's surrogate memory: every new piece of information or belief about the world is written down and looked up in the notebook by Otto when needed (12). The notebook here has the same function as one's biological memory.

The extended mind thesis, in its original form, consists of three argumentative layers: one arguing in favor of extending cognitive processes into the world, one regarding the extension of cognitive states, and the last one concerning the self. The existence of an extended mind carries with it an extension of the concept of person as an "integrated system when coupled with external resources" (Shin 2013, 83). If the mind is not bound by the limits of the skull, personal identity can also be seen as an extended system, "spread into the world" (Clark and Chalmers 1998, 18). The rapid pace of innovation in technology may call for this sort of reconceptualization of personal identity and the boundaries of the self. The use of prosthetic devices meant to enhance the human body or to remedy a lack in the ability to perform certain actions, ranging from pragmatic to epistemic actions, is already a matter of great interest for philosophers. But one of the newest puzzles for personal identity theoreticians is the role that our virtual lives have in who we are and how we understand ourselves. The extended mind thesis invites to a reinterpretation of the relation between virtual embodiment and the creation of the self in rapidly evolving world of immersive technologies. Building on the model put forward by Clark and Chalmers, the extended theory of identity should take the following form: *if we would normally see a particular action or process as being a part of one's narrative identity when performed by a physical body in the physical world, then the corresponding process performed by the corresponding virtual body in a virtual environment, controlled by the same mind, must receive the same philosophical treatment.* In other words, one's avatar must be regarded as the extended self of the user.

With this in mind, we can alter Otto's example in order to better understand the mechanism of mind and self extension into the world, be it virtual or physical, and the ethical implications of adhering to such a position.

Let us imagine Otto logging into Sansar from his room. Once he has the VR headset on, his haptic gloves and the full-body haptic suit, he is fully immersed in the virtual environment. Little to no external stimuli would be registered by Otto's senses. He built for himself an avatar called Toto to resemble his physical appearance. Otto knows that Toto's adventures can cause him no real physical harm: even if Toto can get hurt and even die in his virtual universe, Otto would still be safe in his room. If Otto would have a heart attack and die, his avatar would not. It appears that Otto and Toto are two distinct entities. But Toto is mimicking every move Otto does in the real world. If Otto moves his hand to the right, Toto would do the same. If Toto is hit by an object in Sansar, then Otto would feel his full-body haptic suit vibrating. It is the case that" the participant in a virtual world moves his avatar under the impetus of his own beliefs and desires about the virtual world, and he does so with intentions like the ones with which he moves his own body (and its prosthetic extensions) under the impetus of his beliefs and desires "(Velleman 2013, 15). Otto's narratives- the real life narrative and the virtual odyssey associated with his avatar- intertwine inasmuch they are "subplots in the more comprehensive

narrative of the resident (...) Both sets of adventures are part of the same life because, although distinguishable sub-narratives, they impact each other along the most fundamental dimensions of narrative interaction" (Schechtman 2012, 341). Interpreting this phenomenon through a narrativist take on personal identity, we arrive at the conclusion that Otto cannot insulate his real-life narrative from that of his avatar. In turn, the latest can have transformative effects on the meta-narrative in the same degree as the real-life narrative.

At this point, a critic could formulate the following objection: a lot of external factors impact one's process of constructing the narrative self, and these factors cannot be regarded as extensions of selves. Books, fictional characters that we inhabit in our imagination while reading a story, can be taken to have a similar impact on the construction of one's character. Whilst fictional characters can play a fundamental part in character formation, the relationship between a reader and a character is very different from that between a VR user and her avatar. As readers, we can be passive or engaged recipients of experiences that make an impression on us because one can exercise sympathy towards the characters and their narrative arc. We exercise our moral capacities only to pass judgements on character's choices and behavior, to enjoy or dislike the course of action, etc. A reader is never an agent in a story because the narrative is controlling the experience, not the one who reads it. VR users are in complete control of the narrative. They have absolute control over their actions and here resides the strongest, yet trivial, answer to such an objection.

I have argued, up to this point, that VR experiences and avatars have a special status when compared to other potentially character-building environments. This argumentative step is necessary, but not sufficient in supporting an extended identity view. In order to be successful in showing how one's self can reside inside the avatar, I argue that, more often than not, these experiences have a long-lasting, real impact on the way users perceive and understand themselves.

Whilst the physical harm cannot transcend the immersive virtual reality setup, other type of experience outcomes might spill over in the real world. Otto can feel happiness, sadness, excitement or anxiety as a consequence of his virtual activities and interactions because he is the one to live them- Toto is a mere depository of Otto's agency. In comparison with the avatars from computer games, VR avatars are stimulating a sense of agency and ownership in the human users behind them.

The possibility of living unforgettable experiences in VR is conditioned by the induced belief that users are the ones causing an action, not the avatar. In fact, the experience could not belong to anybody else besides myself, the user, as the avatar has no memory, intentionality and no standing agency.

What counts as an unforgettable life experience? It is surely not just the actions done under the fear of suffering physical pain. Jacquelyn F. Morie takes an unforgettable experience to be the kind that "lasts beyond the time of the actual experience. It could initiate the formation of strong memories of the experience, reignite ties to personal memories, or initiate a lasting change within the experiencer" (2006, 2). In other words, for something to count as a meaningful experience, it must be able to substantiate a psychological effect in the experiencer that supersizes the conceptual limits of a minimal self.[3]

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[3] The minimal self refers to "the consciousness of oneself as an immediate subject of experience, unextended in time" (Gallagher 2000: 15).

One particular aspect of the virtual social life can be of use in trying to illustrate the heavy weight of these experiences in relation to one's autobiographical sense of self- experiencing virtual intimacy through an avatar. Many residents of SL report engaging in relationships with other avatars. When things get sour, "the sense of loss could be as intense as with an actual-world relationship" (Boellstorff 2008, 173). Players also engage frequently in sexual activities, ranging from sex work to public orgies (161). Some of these sexual experiences have a strong linguistic component. In VR, the movements of one's body give content to an interaction. The user has complete and immediate control over her actions. The rise of new technologies will transform the way in which we explore our sexuality, allowing more complex interactions between avatars and the corresponding bodies from the physical world. One report predicts that, in the following years, new devices will transform sexual virtual interactions into experiences more real than ever: the use of integrated sex devices, immersive VR with touch, cybersex, connected dildos and sex sleeves, long-distance kissing devices, etc. (Owsianik and Dawson 2017). This, in turn, will affect the quality of the sexual experiences in VR worlds, which would better emulate the real experience. VR will then become an even more accessible space for self-discovery, where the boundaries of the virtual world will be bent by the use of devices and brain interfaces.

VR applications already are genuine spaces for self-discovery, cognitive and moral enhancement. Some experimental applications of VR show that, when a subject is induced the illusion of full body ownership with respect to her virtual body, the socio-perceptual processes of users can be substantially modified. One of these experiments shows that VR technology can be effectively used to help domestic violence offenders learn to identify emotional responses and practice their moral capacity of sympathy towards victims of abuse (Seinfeld et al. 2018). Such a result was possible due to the shift in perspective- the offenders virtually embodied female avatars who were subjected to abusive treatments. If one would have a similar experience in the real life, that said experience would be seen, without a doubt, as being fundamental to character development, a non-invasive technique of moral enhancement or moral treatment.

V. Further remarks

In this paper, I explored the possibility of expanding our notion of selfhood into immersive virtual worlds that use first-person perspective, rather than a view from one's avatar proximity. Even if I did not support the thesis that VR environments are inherently different from other virtual environments, I took the first-person perspective and the technological ability of coordinating the body movements of users and avatars (matching the proprioceptive feedback through body-motion capture) as being fundamental for reaching a state of hyper-immersion (Miller and Bugnariu 2016), which in turn facilitates the identification of one's self with the avatar (self-presence). Virtual experiences can have a lasting psychological effect on the users. The reports of Second Life residents show that the relations they form in the virtual space and the design of the platform, which fosters meaningful social interactions, provide the premises for self-reported authentic life experiences. VR offers an even more immersive space one can inhabit, a genuine reality engine in which users can experience love, friendship, sex and intimacy.

IVR technology holds great promise for non-invasive cognitive and moral enhancement, whilst also exposing users to virtual harms. It operates in a "reality horizon" (Slater and Sanchez-Vives 2016) and, like any other technology, it is both a burden and a blessing (Postman 1993, 5). An extended selfhood thesis bears wide ethical implications that must be further explored. If we accept that the avatars one inhabits in IVR social worlds are part of who we are, we must also consider how one can evaluate the moral responsibility one bears for virtual moral transgressions that are already happening, such as murder, rape (Marika 2019), theft, and other forms of physical and emotional harm performed in the virtual reality.

We externalize more and more cognitive processes into the external world through various devices, starting with our memory. It is not implausible to think that, in the near future, we would rely more and more on virtual environments for self-discovery and experimentation of all sorts. This calls for conceptual refinement of notions such as personal identity, moral responsibility and social life. This paper was an attempt to do just that.

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