Rage against the Empathy Machine Revisited: The Ethics of the Empathic Affordances of Virtual Reality

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The paper revisits these claims, arguing that they rely on empathy notions that are dominant in traditional art-media, while overlooking VR's unique experiential affordances. Drawing on psychophysiological evidence, it argues that the ethical significance of VR lies in the unique ways in which it manipulates the user's body scheme via multisensory stimulation. These manipulations result in unprecedented empathy-related perceptual and conceptual transformations whose ethical implications require new ethical framing.

Rage against the Empathy Machine Revisited: The Ethics of the Empathic Affordances of Virtual Reality

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Abstract

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The paper revisits these claims, arguing that they rely on empathy notions that are dominant in traditional art-media, while overlooking VR's unique experiential affordances. Drawing on psychophysiological evidence, it argues that the ethical significance of VR lies in the unique ways in which it manipulates the user's body scheme via multisensory stimulation. These manipulations result in unprecedented empathy-related perceptual and conceptual transformations whose ethical implications require new ethical framing.

1. Introduction

When considering the history of virtual reality (VR), the second decade of the 21st century may be seen as analogous to what the early 20th century was for cinema: a defining moment when this technology came of age as an independent art medium. Recent years have witnessed a 'second wave' of VR – a technology that immerses its users in reconstructed digital scenes by blocking out their perception of the natural environment and replacing it with panoramic images and sounds. Dozens of genre-diverse VR pieces have seen light in the past five years[1], while the medium attracts prominent filmmakers such as Werner Herzog, Kathryn Bigelow,

Ridley Scott, and Alejandro Iñárritu, and features in leading film festivals, including Sundance, Tribeca, Cannes and Venice (Raz, 2019).

VR development has involved intensive pioneering artistic exploration of its stylistic and experiential affordances. A key domain of exploration has been empathy, which will be broadly defined here as "the act of coming to experience the world as you think someone else does" (Bloom 2016, 16). The notion of the extraordinary *empathic* powers of VR is neatly articulated in a statement, which is a recurring (and apparently inevitable) reference in relevant literature, by the American artist Chris Milk. Milk collaborated with partners from the United Nations to create a series of documentary VR projects, including *Clouds over Sidra* (Arora and Pousman, 2015), which tells the story of a Syrian girl in a Jordanian refugee camp. “What I was trying to do was to build the *ultimate empathy machine*”, explained Milk. “When you are inside the headset […] you are sitting there in her [the refugee’s] room, watching her […] And that's where I think we just start to scratch the surface of the true power of virtual reality"[2]. Thus, for Milk, just as VR can assimilate the users into the perceptual perspective of another person more intimately, totally (in technical terms) and powerfully (in psychophysiological terms), it may also dramatically boost the extent to which they share emotions and cognitions with that person.

The following paper addresses the notion of the extraordinary empathic powers of VR, how it has inspired contemporary VR practitioners, and the harsh criticism that it has attracted. It focuses on the ethical aspects of this debate, reviewing claims that Milk's vision is not only superficial and naïve, but also profoundly flawed and even ethically dangerous since it promotes a privileged and exploitive "identity tourism". This mode of entertainment is claimed to rely on a false sense of intimate access to the subjectivity of a marginalized target of empathy.

I will argue that these objections should be carefully revisited vis-à-vis a refined depiction of the unprecedented experiential affordances of VR. Artists who employ these affordances may affect the users' intersubjective skills and tendencies in ways that diverge from the traditional notion of empathic media impact that underlies both Milk's vision, and are thus also resistant to its ethical critique.

2. **The VR-Empathy Dyad**

Milk's notion of VR as an empathy booster has been repeatedly echoed in recent work by practitioners who aim to harness the powers of this technology to profoundly immerse the user in another's perspective. Such works offer vivid simulations of extraordinary social,

historical, physical, mental and perceptual states (usually disadvantageous). These artists adopt (and sometimes combine) two major empathic strategies.

Perspective-taking is employed to elicit enhanced sense of witnessing remote situations first-hand, especially in the growing genre of *immersive journalism* that places users in reconstructed news events (Domínguez, 2017). The assumption here is that amplified sharing of another's optical point-of-view via panoramic first-person perspective results in enhanced understanding of his/her state. Prominent themes in this context are migration (e.g., *Refugees,* Hernandez 2015; *Home: Aamir,* Saadati, Norris, and Coffey 2016), ethnic conflicts (e.g., *Home after War,* Parameswaran 2018; *Behind the Fence,* Olinger and Lindsay 2016; *Traveling While Black* Williams 2019), and environmental issues (e.g., *Collisions,* Lynette 2015; *The Protectors: Walk in the Ranger's Shoes,* Ismail and Bigelow 2017).

An alternative, but often complementary, empathic engine involves interactive multisensory simulation, including proprioceptive and haptic cueing. This strategy is facilitated by Computer-Generated imagery VR (CGI-VR), which enhances interactivity relative to 360°-VR by allowing navigation through the virtual environment.

An enlightening example of such content is the award-winning project *Notes on Blindness: Into Darkness* (La Bu*rthe et al*., 2016) (Figure 1). While both this VR piece and the associated documentary film (Middleton and Spinney, 2016) tell the story of theologian John M. Hull, who gradually lost his vision over decades, the works diverge in their strategies of engagement with Hull's world. While the film's plot revolves around Hull's concerns, such as his need for sovereignty and safety and desire to be meaningful and supportive to his relatives, the VR project provides little narrative information about Hull's social concerns, instead focusing on sensorimotor simulation. The users explore and interact with the virtual world, which appears as a dark three-dimensional space spotted with glowing particles and blurred shapes. They are asked to follow the sounds and ghostly image of a bird as it flies across the darkness or to expose the contours of the scene by manually summoning virtual wind blows. Thus, the prime empathic engine of this VR work is sensorimotor rather than social cognition.

Figure 1: Images from the documentary (left) and the VR artwork *Notes on Blindness*

The VR piece *Origins* (Kirkley, 2016b) and the documentary *Orange Sunshine* (Kirkley, 2016a) similarly diverge in their empathic strategies in the context of psychedelic experiences of a Californian spiritual group. Another acclaimed CGI-VR work (a Special Award Oscar winner), which integrates sensorimotor elements, is Alejandro Iñárritu's *Carne y Arena*

(Iñárritu, 2017). In this work, the user, who embodies an immigrant, is stepping on the virtual desert's sand with bare foot while being spotted by American patrol at the Mexico-U.S. border.

Among other notable sensorimotor simulations are the hand-drawn U.S. veteran's post-traumatic flashbacks in *Mind at War* (Sutu, 2018), and claustrophobic experiences in a solitary confinement cell (*After Solitary;* Herrman and Mucciolo 2017), and Anne Frank's hiding place (Force-Field-Entertainment 2018).

3. Discontents with the empathic VR ideal

While in the past decade VR practitioners have increasingly adopted Milk's vision, often explicitly acknowledging the empathic 'superpowers' of the emerging medium, VR-empathy 'euphoria' has not remained academically unchallenged. Recent years have also witnessed a growing wave of criticism over the ethical desirability of its alleged function as an "ultimate empathy machine". Critics maintain that in contrast to VR's promise to enhance broad social understanding and affiliation, it might actually promote egocentric and ethnocentric blindness to others.

A first interesting reference in this context is Paul Bloom's magazine article: *It's ridiculous to use virtual reality to empathize with refugees* (Bloom, 2017). Bloom is a psychologist who recently published a polemic book titled *Against Empathy* (Bloom, 2016), in which he aims to systematically demonstrate that empathy entails substantial ethical drawbacks at both the personal and social level. In his critical account of VR-empathy vision, Bloom is mainly concerned with the veridicality of the medium, stating that this technology "doesn't actually help to appreciate what it's like to be a refugee, homeless, or disabled". He adds that "In fact, it [VR] can be dangerously misleading", as it elicits a false sense of direct access and sufficient knowledge of the object of empathy. From a safe position, while suffering no extreme hunger, thirst or fatigue, the user cannot obtain a genuine understanding of an exhausted refugee, a distressed sleepless single-mother, or a homeless person. If the users develop over-confidence in their knowledge, they might draw incorrect conclusions, such as underestimating the misfortune of homeless people or overestimating a blind person's suffering.

Similarly, Erick Ramirez (2017) warns against the illusion that VR provides direct access to another's experience. He stresses that VR simulations are fundamentally partial. When engaging in in-another's-shoes VR simulation of a homeless, for example, the user retains most of his/her "characterological dispositions", which commonly differ from those of the real homeless. In fact, the user takes part in a distorted simulation of what it would be like *for him/her* – and not for another person – to be homeless. A genuine in-another's-shoes

simulation is impossible according to Ramirez, and any personal insight derived from it is prone to bias and possibly dangerous.

Another strand of ethical critique of VR empathy draws on Emmanuel Levinas' view that proper inter-personal contact requires "neither to invest the other and annul his alterity, nor to suppress myself in the other" (Levinas 1998, 86). Due to the limits of reason we cannot fully know and comprehend the Other. The boundaries between the self and other cannot be totally dissolved. The other will always have aspects that escape us; something that we cannot genuinely understand and feel. Thus, otherness has to be respected. Ethically speaking, the gap between the self and the other has to be acknowledged as a "necessary precondition for our capacity to care for the other" (Silverstone 2003, 479).

In his ethical account of cyberspace communication, Roger Silverstone (2003) follows Levinas' claim that care and responsibility for the other should be a-priori to any actual encounter with a specific other. For Silverstone, proper distance means neither getting too close to the other and becoming blind to otherness nor remoting oneself to the level of indifference. Similar accounts of proper distance that resist the temptation of empathic union with the object of empathy were offered by Sara Ahmed in the context of empathy for pain and its politics (Ahmed, 2002), and Lili Chouliaraki in the context of humanitarian appeals, celebrity humanitarianism and disaster journalism (Chouliaraki, 2011).

The concept of proper distance is also employed in Kate Nash's (2017) ethical account of VR empathy. She observes that while utilizing the sensory totality of the medium, VR practitioners often replace the traditional cinematic act of *representation* with that of *simulation*, which directly invokes some aspects of others' experience. This simulative form of VR documentary entails not only moral affordances, but also ethical dangers. Nash sides with Silverstone and Chouliaraki, warning that when first-person immersion in the virtual world is too powerful, the effect of the transformation from physical to virtual presence might steal the user's attention away from the documented testimony and lead him/her to focus on his/her own feelings. She adds that VR immersion might elicit a narcissistic reflection on one's own experience rather than openness to otherness and may cause blindness to the political context[3].

A more radical critique targets not only the efficiency of VR empathy given the egocentric nature of the medium, but also doubts the good will of its advocators. For Grant Bollmer the ideal of unmediated simulation in VR entails a "vampirical" or "cannibalistic" relationship between the user and his/her object of empathy (Bollmer 2020, 18). He argues that the aspiration to totally absorb the user in another person's virtual perspective implicates a denial of subjective aspects of 'the Other' that cannot be communicated. Another's experience

is effaced unless it can be made sensible. Otherness is annihilated and transformed into sameness. According to Bollmer, this is an act of "literal subsuming of the other into the same, doing violence to them, all in the name of understanding" (Bollmer 2017, 74): "Empathy, I claim, while seeming to be politically productive way, is a negative annihilation of the Other as their otherness becomes nothing beyond what can be absorbed and experienced by oneself. Counter to the claims of VR developers, it does not allow us to 'understand' others. Rather, empathy excludes anything that cannot be made visible and sensible" (Bollmer 2017, 72).

Lisa Nakamura's critique (Nakamura, 2020) of the empathic aspiration of VR documentarists of social marginalization echoes the biblical verse "have you murdered and also inherited" (1 kgs 21:19). She argues that such VR content is exploitive since it turns the suffering of the marginalized person into an emotional commodity. Thus, the homeless or the black person are exploited to allow the white users to indulge their empathy. This automated "identity tourism" also serves as an alibi for big tech companies, such as Facebook, which brand empathic VR as curative in an attempt to mask their adverse social impact.

Finally, Wendy Chun argues that at odds with the VR artists' explicit aspiration for curatives technology based empathic breakthrough, they in fact take the advantage of the marginalized body by turning it into an attraction for whites. Chan replies Chris Milk's motto with her own catchy phrase: "if you were in someone else's shoes, you have taken their shoes".

It is worth noting an important difference between the ethical criticism exerted by Bloom and Ramirez on the one hand, and Bollmer, Nakamura, and Chun on the other. While the former identify an ethical problem with the *consequences* of the empathic appeal of VR, for the latter VR's sin starts earlier; with the very *intention* of virtual embodiment.

4. A psychophysiological perspective on the unique empathic affordances of VR

4.1 Embodiment and VR

The argument that I will put forward here in defense of VR-engagement is that the traditional theoretical framework of empathy/ sympathy as cognitive or perceptual perspective-taking processes, which has been fruitful in cinema studies (e.g., Tan 1995; Smith 1995), limits the ethical discussion in VR empathy since it overlooks key new affordances opened by virtual embodiment. Here I part with Eitzen and Nash who offered no decisive verdict on VR and empathy acknowledging the heterogenity of the latter notion. The following sections aim to focus the ethical debate about VR empathy on a refined account of the unique empathy-related affordances of VR associated with virtual embodiment.

So what is embodiment and how does VR manipulate it? Psychophysiological research into embodiment has accelerated over the past two decades with the discovery of the *rubber-hand illusion* (Botvinick and Cohen, 1998). To induce this illusion, the experimenter hides the participant's real hand while introducing an alternative visible rubber hand. Next, the fake and the real hand are simultaneously stroked. This manipulation often results in a sense of ownership over the fake hand, which was validated and replicated using various behavioural and physiological measures measurements (Ri*emer et al*., 2019). Importantly, an illusion of ownership was successfully elicited toward *virtual* hands as well (IJsselsteijn, de Kort, and Haans 2006; Raz et al., 2019).

In her account of body ownership illusions, Frédérique de Vignemont offers a formal definition of embodiment: "E is embodied if and only if some properties of E are processed in the same way as properties of one's body" (De Vignemont 2011, 84). Among de Vignemont's insights, possibly the most significant to the present discussion is her distinction between *neutral embodiment* and *self-specific embodiment* (*ibid*, 89). Neutral embodiment refers to processes that "do not make a difference between processing properties of one's body or properties of other bodies" (*ibid, ibid*). Her example is the visual processing of eye colour. It relies on one's own body model and therefore can be considered as embodiment, but it is still largely indifferent to the identity of the owner of the perceived eye. In contrast, in self-specific embodiment the information is processed differently than information about other people's bodies. The main difference here is the sense of exclusive ownership over the embodied object: "It is not sufficient for an object to be processed like a body among others for the object to be experienced as one's own. It must be processed like only one's own body is. *Self-specific processes thus indicate that E is not only a part of a human body, but also a part of one's own body, and of no other bodies"* (*ibid*, *ibid*, italics added).

How does the processing of bodily information elevate to the level of self-specific embodiment? What makes one feel that an object becomes part of his/her body? Olaf Blanke, Mel Slater and Andrea Serino (2015) point to four types of multisensory and cognitive evidence whose strength directly affects embodiment. The magnitude of the illusion increases with *spatial* proximity between the real and the fake hand under multisensory stimulation; *temporal* congruence of the multisensory stimulation (asynchronous stroking of the real and the fake hand reduces body ownership illusion); *semantic* resemblance between the target object and a body organ; and resemblance between the *postures* of the real and the fake limb.

Based on empirical findings, these authors also suggest that body ownership illusions are mediated by *peripersonal neurons*. These multisensory neurons, which were discovered in

the early 1980s (Rizzolatti *et al*., 1981), have receptive fields that are anchored to specific body parts (e.g., hand, torso, face). They are sensitive to stimuli originating from a space that surrounds these organs (like "invisible bubbles" or graded fields; Bufacchi and Iannetti 2018).

Evidence suggests that multisensory stimulation may affect the formation of PPS not only around physical objects like rubber hands, but also around virtual bodies (Noel *et al*., 2015). Thus, similarly to the rubber-hand design, VR may facilitate self-specific embodiment. This process depends on multisensory stimulation of the biological and the virtual bodies at the same time, where spatial, temporal, semantic, and proprioceptive alignment between the bodies enhance embodiment. The strength of this multisensory evidence for the belongingness of virtual objects to the user's body correlates with the magnitude of self-specific embodiment.

Among the variety of multisensory evidence, Blanke, Slater, and Serino (2015) give special attention to proprioceptive and tactile cues, distinguishing between the processing of bodily and external cues. They argue that when individuals process external audiovisual stimuli, they can determine their location based on separate computations: the auditory and the visual input are processed in relation to the spatial coordinates of the cochlea and the retina, respectively. However, when the VR users process audiovisual information related to their virtual avatar and integrate it with information they perceive from their muscles, tendons and joints (proprioception) or skin (tactile), they need to continuously update their body scheme. *Since the distance between the user's eyes and ears remains approximately constant, no ongoing computations of the relative positions of these organs are needed. Conversely, as the users' limbs, muscles and skin continuously change their positions relative to each other and to his/her eyes and ears, a flexible perceptual framework comes into action when they are embodied in virtual avatars.*

At this point, a substantial difference between VR and other media emerges. This difference is based on the type of multisensory processing involved in VR experiences. Indeed, vivid multisensory stimulation underlies experiences across various art media including dance, theatre and cinema. Several influential film scholars (e.g., Sobchack 2004; Shaviro 1994; Gallese and Guerra 2012; Barker 2009) have recently revived Merleau-Ponty's phenomenological notion of the cinematic experience as a synesthetic interaction with a “film body”, while the spectator is hypothesised to be immersed in a gestalt of haptic, motor and visceral interaction.

However, crucially, the literature reviewed above reveals a qualitative difference between VR and other media. Self-specific embodiment seems to depend on synchronous multisensory stimulation, including *actual* tactile and/or proprioceptive cueing, rather than on

a simulated synesthetic gestalt, as suggested by film phenomenologists. The illusion of body-ownership that can be evoked in VR experiences relies on previously mentioned determining factors, including spatial proximity between the fake organ and its biological analogue, the temporal synchronicity of the multisensory cues, and the concealment of the biological analogue during the illusion induction (Blanke et al., 2015). These criteria are not fully met in cinema, television, theatre and even video games. Therefore, the user-character duality is maintained in these media, which means that self-specific embodiment is not facilitated. Technically, the determining factors of self-specific embodiment can only be fully achieved in esoteric forms of interactive performance/installation or, much more easily, with VR via proprioceptive and/or tactile user-avatar alignment.

Thus, by administering an actual synchronised multimodal stimulation of peripersonal neurons, VR may unprecedentedly induce remapping of the user's body onto a virtual agent. This art medium assumingly manipulates the peripersonal space in ways that are not possible in other media, and thus induces unique self-specific embodied experiences. By blocking the natural visual perception of the user's biological body and by triggering a synchronous visual, auditory, tactile and proprioceptive stimulation that aligns the user's body with a virtual body, VR strengthens evidence that cannot be reconciled under a dual viewer-avatar scheme (akin to the cinematic spectator-character duality), and thus elicit self-specific embodiment.

4.2 Embodiment and the Proteus effect

Not all VR works exploit these unique experiential affordances. A quantitative analysis indicates that only 7% of immersive journalism VR content partially or fully embodies the user in an avatar (Bevan et al., 2019). However, in the past decade there has been a growing interest in VR embodiment in experimental psychology. Research in the field has given rise to the notion that VR embodiment may induce a holistic *Proteus effect*, where an individual adopts alleged perceptual, cognitive and behavioural tendencies of the virtual body she is embodies. Evidence suggests that VR can implicitly induce remarkable and sometimes lasting transformations in the user's perceptual and conceptual biases.

Perceptually, full-body embodiment of adult participants in a child avatar was found to induce an implicit tendency to overestimate the size of virtual objects (Banakou, Groten and Slater, 2013; Tajadura-Jiménez *et al*, 2017). Strikingly, the overestimation effect was stronger after the embodiment of a girl-avatar compared to the embodiment of a middle-aged woman of a comparable size, suggesting that the users implicitly adopt alleged perceptual avatar's properties based on semantics.

In a line of studies, Slater and his colleagues demonstrated that embodiment of white users in dark-skinned avatars induce race-related Proteus effects such as an increased tendency to unconsciously mimic gestures of a black avatar (Hasler et al., 2017), and reduced implicit bias against dark-skinned individuals (Peck *et al*., 2013; Banakou, Hanumanthu and Slater, 2016). Furthermore. embodying an old-looking avatar resulted in a slower motor performance (Beaudoin et al., 2020), and virtual body swapping among friends increased their perceived similarity (Tacikowski et al., 2020).

What drives the Proteus effect in VR? Maister and colleagues (Maister *et al*., 2015) offer the following hypothesis: when one virtually embodies an avatar whose characteristics differ from his/her own characteristics, his/her brain acts to reduce resulting perceptual-conceptual prediction errors; i.e., the gaps between one's self-concept and the input received from the virtual body. Neural computations converge on the most parsimonious way to reconcile the complex sensory and conceptual information it processes. The body ownership illusion is the best solution for the conflict that is generated by the synchronous multisensory stimulation. The same logic applies not only to perceptual conflicts, but also to the conceptual ones: when young and white individuals embody old or black avatars, the conceptual distance from the notion of elderliness or blackness is blurred. Their neural systems work to minimise the gap between their self-concept and the other-concept. The perceived bottom-up input suggests that one is black, yet his/her prior knowledge indicates that s/he is not. Given that the body scheme is considerably flexible, this gap can be somewhat bridged by virtual embodiment and result in both perceptual and conceptual transformations. Thus, while the Proteus effect is not unique to VR, the quality of the multisensory stimulation in this medium may induce special conditions for these empathic transformations.

5. Revisiting VR empathy ethics

In their recent book about cinematic empathy, Gallese and Guerra (2019) focus their research on what they call *the sub-personal level*; i.e., processes that "do not apply to the individual as a whole" (3), but rather to underlying mechanisms. In the case of empathy, for example, accumulating evidence suggests that this term conflates distinct psychophysiological processes, including motor mirroring, mentalising (perspective-taking), and somatovisceral resonance (experience-sharing), which may not only dissociate but also contradict (Stietz et al. 2019).

Given the experiential manifold and the related heterogeneity of empathic processes, a valid ethical account of VR empathy must take this variability into consideration. With the

exception of Nash's account (2017), VR critics usually blur the distinctions between empathy-related processes and regard Milk's vision mostly in terms of experience-sharing. Yet, a single ethical verdict for VR empathies altogether is a scholarly oversight as it conflates important differences between the sub-personal psychophysiological processes in question. Drawing on the psychophysiological evidence outlined above, I will elaborate on phenomena that can be seen as the unique empathy-related affordances of this medium beyond experience-sharing and perspective-taking. I will assign these VR affordances to the domain of *intersubjective affinity*, which will be regarded here as one's ability and readiness to understand and share the experiential world of another individual. Intersubjective affinity is related to empathy in the sense that it facilitates enhanced access (though still partial) to another's experiential world. Thus, it can be considered as a precursor of empathy rather than empathy per se. Unlike empathy, intersubjective affinity does not require a target with alleged subjectivity or life story. To clarify this point. I will focus on two types of intersubjective affinity affordances that are uniquely manipulated by VR; namely, *shared sensorimotor engrams* and *placeholder embodiment.*

5.1 Sensorimotor engrams in VR

The term 'engram' was coined by the biologist Richard Semon to denote "a permanent change wrought by a stimulus" (Semon 1921, 24); a biological memory trace formed mainly in the nervous system. In a later incarnation of the concept, Deane Juhan assigned a key role to engrams in the sensorimotor functioning of the body: "Each discrete sensory record of a particular movement is called a sensory engram and once the feeling of it is established as a clear, recallable memory, this engram is like a template" (Juhan 1987, 266). Semon's notion has recently attracted renewed attention with the discovery of *engram cells*, which are "neurons that are activated during learning to encode a specific experience and can subsequently be selectively reactivated to produce the memory of that experience (retrieval) or inhibited to prevent the memory (retrieval failure)" (Takami*ya et al*., 2020).

Engrams seem to have functional significance in intersubjective communication. The linguist Daniel Dor maintains that language has been developed under social pressure to meet the essential need of encoding and transmitting experiences via imagination. Thus, its fundamental social function is *experiential mutual identification*. Dor explains:

> The basic idea is quite simple: as speakers whose experiential worlds are different, we have to work together to create a model of the world that we can tentatively agree on, and thus use as a channel for instructive communication. […] From the mutual-

> identification of meaning, emerges the *symbolic landscape*, the mutually-identified model of the world that allows for the instruction of imagination (Dor 2015, 34).

Now, this symbolic landscape does not only inhabit direct real-world experiences. Motion pictures, for instance, offer vivid audiovisual engrams, originating from realities that the average spectator has never visited. Relevant examples are the dramatic image of a giant beast fighting aircraft at the top of the Empire State Building in *King Kong* (Cooper and Schoedsack, 1933), apocalyptic images of zombie pandemics, such as in *World War Z* (Forster, 2013), or of an approaching planet filling Earth's skies before a fatal collision, such as in *Melancholia* (Von Trier, 2011). If these examples invoke some recalled sensory experiences among readers, this would be evidence for the existence of an intersubjectively shared symbolic landscape that relies on audiovisual fictions rather than on a direct encounter. Here, movies are not only collections of *signifiers*; i.e., audiovisual entities that refer to existing meaningful elements. They also function as synthesisers of engrams that furnish the collective symbolic landscape and expand the experiential repertoire on which mutual identification relies.

To what extent does the expansion of a symbolic landscape that is shared across individuals support empathy? What is special about VR in this context, given that engrams can be produced by other media as well? And what are the ethical implications of engram production in VR?

To address these questions, let us recall Bloom's definition of empathy as "an act of coming to experience the world as you think someone else does" (Bloom 2016, 16). If artistic experiences expand and deepen our common symbolic landscape by distributing shared engrams, they naturally also enhance our experiential mutual identification as well as the magnitude of our ability to perform an "act of coming to experience the world as [...] someone else does". The phrase omitted from the last quotation – "[as] you think" – distinguishes experiential mutual identification from empathy. The presence of another individuated sentient agent and the attribution of the evoked experiential element to that agent fulfil Bloom's criteria for empathy. The synthesis, replication, distribution, and consolidation of experiential engrams by the media do not warrant immediate empathy. They comprise its necessary, but not sufficient, condition. Such engrams can function as resources that may be activated in the presence of a sentient agent to whom they can be attributed. For example, the empathic spectator not only shares the engram of a zombie appearing in a certain horror scene with the character, but also understands that this engram is acutely activated by the character, giving rise to certain vicarious concerns, effects, and action plans.

Importantly, VR offers a special type of multisensory engrams that may substantiate empathic effects. Unlike classical modes of cinema, theatre, painting, sculpture and dance, for example, VR flexibly manipulates the space surrounding the user's body and assumingly engages peripersonal neural processing in unique ways. Peripersonal neurons are multisensory in their nature, so the same neuron that is activated by touching a certain body part is also activated by visual and/or auditory stimuli that are *spatially adjacent* to this region (Bernasco*ni et al*., 2018). As VR simulates spatial proximity in ways that are not possible in other art media, it may form multisensory signatures of a different quality.

An example of these special empathy-facilitating engrams is the simulation of walking with severe vision loss in *Notes of Blindness*. Careful movement in a dark environment dotted with glowing spots, which involves enhanced attention to proximal obstacles, may leave traces in the user's memory that can be retrieved in future communication about vision loss. Similarly, Iñárritu*'s Carne y Arena* offers potent sensual memories of physical inferiority based on the feeling of bare feet stepping on the sand of a seemingly endless surrounding desert, and the posture of an immigrant trapped under the spotlight of a virtual American helicopter at the border. Similarly, the virtual tour in Anne Frank's hiding place summons several opportunities for the generation of proprioceptive and tactile engrams. The user may adapt her posture to the low ceilings or the narrow walls and condensed space of Anne Frank's room, and share her deliberate physical distress vis-à-vis the shut window at the edge of the room, which cannot be opened to relieve claustrophobia for security reasons.

In an entirely different context, the virtual visit to a solitary confinement cell in *After Solitary* (Herrman and Mucciolo, 2017) may leave a mixture of sensations of spatial constraint and social exclusion. In contrast, a sense of over spatial openness is evoked in the BBC's interactive VR work *Home – An Immersive Spacewalk Experience* (Bartlett and Burton, 2016). This piece offers visuo-vestibular sensations related to low gravity in the context of an emergency repair mission outside of the space station.

A final intriguing example is the VR edition of *Hellblade: Senua's Sacrifice* (Antoniades, 2017), which mimics various psychotic symptoms of its female warrior protagonist by employing various game mechanics. For instance, in several situations where users move to a certain location, the space they had just crossed suddenly looks different, containing elements that did not exist before. This mechanics may produce sensory memories of different quality, depending on whether the delusional architecture is revealed by the user's head motion in VR or by operating the game controller in a standard 2D display. In the first case, that illusion is part of a sequence of the user's bodily actions, and therefore it might be

remembered as a dreamlike, continuous sensorimotor event, whereas in the second case the event is mediated by an external device.

A refined ethical account of VR empathy has to take this special empathic affordance into consideration, and acknowledge its difference from other modes of empathy. Unlike affective resonance, intersubjective affinity that draws on the sharing of sensorimotor engrams does not require a bodily representation of the target of empathy in their diegetic world. Moreover, sensorimotor engrams are generalizable precursors of empathy that can be employed on *future* occasions toward other targets. Thus, engram-based intersubjective affinity also differs from mentalising and motor mirroring, which rely on the mental representation of cognitive or bodily states of *specific individuated* characters, respectively.

Does the empathic potential of VR that relies on the extension of shared sensorimotor engram repertoires necessarily implicate the subsuming of specific Others, as Bollmer warns? VR engrams can serve as off-VR experiential signifieds when one tries to understand an immigrant, a homeless person, or a prisoner, for instance. In this case, engrams originated from VR experiences do not differ from engrams acquired in other ways. Empathy critics might have condemned the aspiration to promote the sharing of these engrams as means of 'subjective imperialism'. However, if human communication critically depends on the extent to which the addresser manages to activate corresponding micro-experiences stored in the addressee's mind and thus facilitate mutual identification, there has to be some overlap between their experiential repertoires.

Indeed, mutual identification and intersubjective understanding are substantially partial and fragile due to the fundamental limitations of our communication technologies[4] and the limited overlap between the addresser's and the addressee's symbolic landscapes. However, a minimal sharing of experiential repertoires is a precondition for *any* form of communication, including the ethically accepted alternatives endorsed by empathy critics. The very recognition of the Other as a sentient entity relies on the sharing of basic human experiences related to agency and social functions, for example.

Bloom argues that in order to learn what it is like to be a single mother, for instance, one cannot just extrapolate this from a brief baby-cry experienced under safe VR conditions (Bloom, 2017). But how can one assess the validity of Bloom's own argument without such extrapolation? Can an individual with no prior experience in prolonged nurturing of a baby grasp the substantial differences between short-term and long-term exposure to a baby-cry without relying on procedures of engram integration that involve some extrapolation?

Similarly, the ethical concerns raised by Ramirez and Bloom about the veridicality of empathic understanding and the potential empathic overconfidence stand, but their validity is not limited to VR. The reliability of intersubjective communication has been an important factor in the evolution of semantic systems and their underlying psychophysiological mechanisms, traded-off against powerful pressures for flexibility and novelty. Therefore, symbolic communication is prone to misunderstanding, inaccuracies, errors, deviations, overgeneralisation, lies, and deception (Knight and Lewis, 2014).

The extension and enrichment of the intersubjectively shared experiential repertoires can enhance mutual understanding without denying the limitations of this process. Interestingly, in his polemic book *Against Empathy* Bloom himself distinguishes such processes of 'mindreading' via cognitive empathy from affective empathy, stating that while the latter involves partiality and biasness, the former are "ethically neutral" and have a key role in social cognition (Bloom 2016, p. 18).

How does one obtain an understanding of another's homelessness or physical disability, for example? Adopting a sub-personal perspective, it appears that when individuals are engaged with phenomena such as homelessness, they do not have a single and complete mental image of this notion, but rather a mixture of stored concepts and sensations. Assuming that one has no first-person experience of homelessness, s/he could recall a sense of temporary exclusion, outdoor nights and feelings of insecurity from his/her own past. Indirect memories, including VR sensorimotor engrams, may also be employed in such simulation, but as interacting components rather than monopolist generators. Thus, the ethical danger of empathic overconfidence following VR experiences lies at the level of the *integration* of these experiential traces in future occasions of perspective-taking, rather than in the intention to generate sensorimotor engrams in the first place.

5.2 Placeholder embodiment

While the production of proximal sensorimotor engrams is special but not artistically unique to VR, the second type of intersubjective affinity affordances discussed here is practically exclusive to this medium. This phenomenon, which is referred to here as *placeholder embodiment*, occurs under the condition of self-specific embodiment as defined by de Vignemont, where the user embodies an impersonalised character following a synchronous stimulation that involves tactile and/or proprioceptive cueing. The abovementioned series of studies that employed advanced motion-tracking techniques provides several examples for such placeholder embodiment.

In placeholder embodiment, VR allows the user to experience key identity-defining physical properties, such as being a child or having an old face and body, different skin colour, gender characteristics, or even animal features. However, unlike the common cinematic target of empathy, here the character that one embodies is emptied of any identity and sovereign personality. The virtual avatar functions as an empty shell, a framework of 'otherness' that the user inhabits.

Although placeholder embodiment may seem similar to perspective-taking in cinema, for example, there are crucial differences between the two phenomena. First, cognitive perspective-taking relies on the representation of the character's concerns and the appraisal of the diegetic reality through these concerns (Tan 1995). In placeholder embodiment, on the other hand, the avatar is devoid of autonomous concerns. Like a puppet, it becomes an inanimate object when not embodied. There is no separate mind for the user to mentalise.

While this argument also applies to the user's interaction with video game avatars, these two modes of engagement significantly diverge in terms of embodiment qualities. As de Vignemont observes, in self-specific embodiment the duality between the biological and the artificial bodies dissipates. Unlike the relationship between the spectator/user and the character/avatar in motion pictures and video games, in VR the sense of parallel existence of the two entities may be challenged to such an extent that it is eliminated. This difference results from the near-exclusive ability of VR to fulfil the preconditions for self-specific embodiment; i.e., blocking the user's perception of his/her body and providing multisensory stimulation that involves tactile and/or proprioceptive elements. As discussed above, the resulting self-specific embodiment may facilitate perceptual and conceptual transformations in which the user adopts alleged components of the avatar's identity.

When focusing the ethical account of VR empathy on placeholder embodiment, both lines of critique discussed above are challenged. Let us first reconsider Bloom's and Ramirez's warnings about overconfidence in misrepresenting certain social groups. Let us also recall the line of works that demonstrated how VR induces transformations in which the user adopts perceptual and conceptual properties of the avatar.

Significantly, in these studies empathy-related effects did not depend on the sharing of *concerns* specific to the represented group. Hence, while Bloom warns that VR representation of an immigrant's life, for example, is inaccurate and misleading, not all VR works that allow outgroup avatar embodiment attempt to represent special characteristics of the life of the target outgroup. There is nothing specific to black-skinned individuals in the Tai Chi class (Banakou et al., 2016), environment exploration *(Peck et al*., 2013) or aesthetic discussion (Hasler et al.,

2017) scenarios employed in studies of 'racial Proteus effect'. Likewise, age-related perceptual and conceptual transformations were reported following embodiment during virtual activities that are apparently age-neutral (Beaudoin et al., 2020; Reinhard et al., 2020). In these examples, the psycho-physiological mechanism that underlies the empathy-related effect is not a cognitive adoption of the perspective of a black person or a young girl and a resulting tendency to judge the diegetic world through her concerns. The Proteus effect could be alternatively explained here as the outcome of psycho-physiological processes of another type; namely, a multi-level neural computation that reconciles bottom-up and top-down information in the most parsimonious way (Maister et al., 2015). Therefore, since no specific concerns or typical situational characteristics are represented in these cases, the argument about the distortion of these elements becomes irrelevant.

Furthermore, in placeholder embodiment the user-avatar interaction is not based on interpersonal relationships between two singular entities. Rather, it occurs at sub-personal levels. The embodied avatar is not a complete old man or dark-skinned person, but rather a digital signifier of a high-level conceptual category, such as elderliness or blackness. It is almost entirely devoid of biographical context. Therefore, given that in this mode of VR, the avatar is hollow by definition, what is the relevance of Bollmer's critique about the sin of denying non-communicable aspects of the Other in placeholder embodiment? Here, the avatar is defined in a way that leaves no such denied aspects. Can users of these VR pieces indulge themselves with exploitive "identity tourism" in the absence of biographical details that define the avatar's identity?

Thus, placeholder embodiment challenges the Newtonian notion of proper distance, which assumes the existence of solid and singular interacting entities. It replaces it with the notion of fluid and multifaceted identity, which moves between states according to updating probabilities. However. The notion that placeholder embodiment in VR may dissolve identity boundaries requires considerable further theoretical empirical, and artistic elaboration.

6. Concluding remarks

The ethical discourse about VR-empathy should acknowledge the specific experiential affordances of this medium. These are often disregarded by both VR artists and scholars who employ traditional notions of art empathy. While the critique of the abusiveness of certain "empathic VR" pieces is in place, VR also offers unique ethically-valid intersubjective affinity affordances. Importantly, placeholder embodiment and sensorimotor engrams may mitigate implicit biases and enrich common experiential vocabulary, respectively, facilitating enhanced

access and better understanding of the other's world. However, even if VR efficiently enhances intersubjective affinity and avoids the abovementioned ethical pitfalls of "identity tourism", it may nevertheless not be superior to other media in elucidating the historical and social conditions that sustain marginalisation, and in inducing a sense of personal connection between the user and this knowledge. This affect is of high ethical significance. Thus, it is possible that VR's special affordances turn it into a powerful *catalyst* of such contextualised empathy, but not necessarily as the main driver of this process. A further productive investigation of these empathic and ethical horizons in VR requires a nuanced analysis of both the artistic affordances and the experiential impact of this emerging medium.

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[1] http://vrdocumentaryencounters.co.uk/

[2] https://gosouth.co.za/birth-virtual-reality-art-form/

[3] Dirk Eitzen similarly argues that the egocentric nature of VR experiences fundamentally hinders the efficiency of this technology in eliciting empathy (Eitzen, 2020). For Eitzen, profound empathy requires the mentalizing of characters, which relies on narration. Narration, in its turn, crucially depends on framing; i.e., the director's decision to focus the viewer's attention on specific diegetic elements. VR moves the power of framing from the director to the user. Such interactivity shifts the focus from the character to the user and thus it diminishes empathy.

[4] Including language; see Dor, 2015, pp. 34-59.