Immersion as Fiction: Divergent Uses of Emotion in Artistic and Occupational Virtual Reality

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This paper investigates the relationship between immersion, emotion, and imagination in virtual reality (VR), focusing on two seemingly distant domains: Alejandro G. Iñárritu's installation *Carne y Arena* (2017) and VR-based workplace safety training. Both cases demonstrate that simulated environments can elicit authentic emotional responses – such as fear, stress, or vulnerability – yet the implications of these experiences diverge sharply. Drawing on theories of presence and the "paradox of fiction", we argue that VR should be understood not as a substitute for imagination but as a heightened form of fiction that depends on the user's willingness to engage in make-believe. While *Carne y Arena* frames affect as an entry point for moral imagination within an explicit artistic and symbolic context, occupational safety training instrumentalizes emotion as a means of behavioral conditioning within a productivist framework. The danger in both domains lies not in immersive experience itself but in mistaking a single simulation for the fullness of lived reality.

Keywords: Virtual Reality, Emotion, Carne y Arena, Immersive Safety Training

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1. Introduction[1]

Virtual reality (VR) is becoming increasingly widespread across a variety of fields, from entertainment and gaming to education and corporate environments. Among these, the artistic and industrial contexts are particularly revealing. While both demonstrate the capacity of VR to elicit genuine emotions from simulated events, they do so with divergent aims and implications. For this reason, this article concentrates on these two domains, using two case studies to examine how VR shapes the interplay between immersion, emotion, and imagination.

The paper proceeds in three steps. First, we analyze the concept of presence in virtual environments, exploring how VR generates both a perceptual and a fictional illusion that sustains engagement and emotional response. We argue that presence cannot be reduced simply to a perceptual trick. Rather, it entails the user's imaginative willingness to inhabit a fictional "as if" space.

Second, we turn to the relation between VR, emotion, and fiction, situating virtual environments within a broader continuum of fictional experiences ranging from literature and cinema to highly immersive simulations. We examine how VR intensifies sensory involvement and emotional resonance, but also how this very intensification may coincide with a reduction in ontological depth.

Third, we offer a critical comparison between Alejandro G. Iñárritu *Carne y Arena* (2017) and VR-based workplace safety training. Both cases rely on immersion to produce authentic affective reactions, yet they differ fundamentally in orientation: the former is

[1] The article was jointly conceived and developed by both authors. The final manuscript was written as follows: Fussi authored sections 3 and 4, while Gasparoni authored sections 1, 2, 5, and 6.

an artistic artwork that frames emotional engagement as a threshold for moral imagination, while the latter instrumentalizes emotion for behavioral conditioning.

The conclusion draws these threads together, arguing that immersive VR can function as a powerful catalyst for imagination, reflection, and responsibility, but only when integrated into a broader narrative and relational frameworks.

2. Sense of Presence in Virtual Environments

A central feature of virtual reality is the sense of presence[2]. Whether VR is approached primarily as a technological system or as a particular type of experience[3], presence remains the common denominator. Broadly conceived, presence is not exclusive to VR; it can be found across a variety of human experiences, independent of technology, as the general *sense of being there*. Within virtual environments, presence emerges from immersion – that is, from the dynamic interaction between subject and environment[4]. Lombard and Ditton define it as the «perceptual illusion of non-mediation»[5], that is, the impression that the medium itself has vanished from conscious awareness. In this state, individuals perceive themselves as "inside" the virtual environment.

Presence in VR is reinforced by multisensory stimulation – primarily delivered by head-mounted displays (HMDs) providing stereoscopic vision, along with auditory and haptic interfaces – which decrease external stimulation while increasing synthetic one. Interactivity further enhances immersion by allowing active participation in the computer-generated environment. Through the user's actions, the equipment recedes into transparency, and the stable perception of the instrument itself fades from awareness. Reframing this process through Gibson's ecological theory (which echoes Heidegger's notion of the *ready-to-hand*), Coelho and colleagues argue that:

> It can be assumed that the user understands the VR equipment in terms of what can be done with it, resulting in invisibility of the VR (ready-to-hand) technology to the user. […] The

[2] Cfr. M. Slater, *Immersion and the illusion of presence in virtual reality*, in "British Journal of Psychology", CIX/3, 2018, pp. 431-433, doi:10.1111/bjop.12305.
[3] Cfr. C. Coelho, J. Tichon, T. J. Hine, G. Wallis, G. Riva, *Media presence and inner presence: The sense of presence in virtual reality technologies*, in G. Riva, M.T. Anguera, B. K. Wiederhold, F. Mantovani (ed. by), *From Communication to Presence: Cognition, Emotions and Culture Towards the Ultimate Communicative Experience. Festschrift in Honor of Luigi Anolli*, IOS Press, Amsterdam 2006, pp. 25-45.
[4] Cfr. T. Mazuryk, M. Gervautz, *Virtual Reality. History, Applications, Technology and Future*, Technical Report TR-186-2-96-06, Institute of Computer Graphics, Technical University of Vienna 1992.
[5] M. Lombard, T. Ditton, *At the heart of it all: The concept of presence*, in "Journal of Computer-Mediated Communication", III/2, 1997, online, doi:10.1111/j.1083-6101.1997.tb00072.x, url: https://academic.oup.com/jcmc/article/3/2/JCMC321/4080403 [accessed 8 September 2025].

> feeling of presence occurs when the subject mentally represents the possibility of acting upon the virtual world. […] Therefore, presence in a virtual environment is an active suppression process of the real world and the construction of a set of action patterns based on the immediate stimulus[6].

In this sense, the virtual space immerses the user, situating them in an egocentric position analogous to the one they inhabit in the real world. Importantly, presence is not merely a visual or spatial phenomenon; it is also an embodied and affective one. VR's unique affordance lies in its ability to suppress visual traces of the physical environment, thereby sustaining focused attention and inducing absorption – a state of deep concentration coupled with temporal and spatial dissociation[7]. As Coelho and colleagues put it: «The main purpose of VR is, therefore, to induce the feeling of reality through the development of an immersive synthetic system, in which the subject can interact with computer generated objects and people. It is, therefore, basically, about "misleading" the senses»[8].

Yet sensory stimulation alone is not sufficient. Evidence indicates that presence in VR depends also on the willingness of the user, a voluntary commitment to assign meaning to the stimuli provided[9]. Presence thus results from a tacit "contract". The machine's task is to mislead the senses, while the users must allow themselves to be misled in order to sustain immersion. The degree of presence, therefore, is inseparable from attentional factors, depending on the participant's ability and will to concentrate on the virtual task while disregarding external distractions[10]. In this view, presence arises not only from the richness of sensorial information but also from the interest and engagement elicited by the presented scene.

Building on this discussion, we argue that presence in virtual environments is best understood as a perceptual mode that coexists with the background awareness of being in a fictional space. VR generates what can be described as both a perceptual and a fictional illusion. Users generally do not take the virtual experience to be real, yet it still provokes genuine emotional reactions. This is because they accept being situated within a fictional

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[6] C. Coelho, J. Tichon, T. J. Hine, G. Wallis, G. Riva, *Media presence and inner presence: The sense of presence in virtual reality technologies*, cit., p. 29.
[7] Cfr. R. Lavoie, K. Main, C. King, D. King, *Virtual experience, real consequences: The potential negative emotional consequences of virtual reality gameplay*, in "Virtual Reality", XXV/1, 2021, pp. 69-81, doi:10.1007/s10055-020-00440-y.
[8] C. Coelho, J. Tichon, T.J. Hine, G. Wallis, G. Riva, *Media presence and inner presence: The sense of presence in virtual reality technologies*, cit., p. 29.
[9] Cfr. D. Shin, F. Biocca, *Exploring immersive experience in journalism*, in "New Media and Society", XX/8, 2018, pp. 2800-2823, p. 2814, doi:10.1177/1461444817733133.
[10] Cfr. R. P. Darken, D. Bernatovich, J. P. Lawson, B. Peterson, *Quantitative measures of presence in virtual environments: The roles of attention and spatial comprehension*, in "CyberPsychology & Behavior", II/4, 1999, pp. 337-347.

space, implicitly adopting an attitude of *make-believe* that sustains their engagement. One might argue, however, that VR should be understood purely as a perceptual illusion and that no belief in its fictional status is required to account for the reactions it provokes. As Slater puts it:

> The whole point of presence is that it is the illusion of being there, notwithstanding that you know for sure that you are not. It is a perceptual but not a cognitive illusion, where the perceptual system, for example, identifies a threat (the precipice) and the brain-body system automatically and rapidly reacts (this is the safe thing to do), while the cognitive system relatively slowly catches up and concludes "But I know that this isn't real"[11].

Yet, this account risks drawing too sharp a line between perception and belief, implicitly suggesting that emotions are generated only by perceptual stimuli and that we cannot feel genuine emotions in response to something we merely imagine. The emotions we experience in VR are not reducible to automatic responses to perceptual triggers; they presuppose a form of acceptance that the objects we encounter are fictional. Presence thus entails a willingness to make-believe that one is somewhere else, all the while knowing that this is not literally the case. As Studt argues: «presence is not merely a perceptual illusion; rather, it is a particular attitude by which the perceptual illusion is accepted as true for the purposes of making-believe that the user is present in the VE»[12]. The analogy with cinema is helpful:

> While watching horror films, audience members may experience real fear in response to danger they know to be fictional or real disgust in response to violence they know to be special effects. This does not necessarily mean that audience members actually believe fictional propositions; rather, it means that imagining danger and violence can encourage real emotional responses. The same applies to VR[13].

The crucial point is not simply perceptual illusion but the active role of imagination. The user's willingness to imagine being present in the virtual environment is what sustains the experience. Presence, in this sense, is not a matter of being deceived by perceptual cues but of entering into an act of make-believe. It could be argued that the attitude of users in a virtual environment resembles what Winnicott (1971) describes as the child's

[11] M. Slater, *Immersion and the illusion of presence in virtual reality*, cit., p. 432.
[12] E. Studt, *Virtual reality documentaries and the illusion of presence*, in "Studies in Documentary Film", XV/2, 2021, pp. 175-185, p. 182, doi:10.1080/17503280.2021.1923147; cfr. N. Carroll, *The Philosophy of Horror*, Routledge, London 1990, pp. 59-88.
[13] E. Studt, *Virtual reality documentaries and the illusion of presence*, cit. p. 183.

capacity to inhabit an intermediate "as if" space – one that is neither wholly real nor wholly unreal[14].

For this reason, we propose to understand fictional experiences along a continuum that ranges from classical forms of fiction – such as literature, theater, and cinema – to highly immersive experiences like those enabled by VR. What differentiates these forms is not the mere presence or absence of fictionality, as some "virtual realists" suggest. Rather, it is the varying degrees of sensory involvement on the one hand, and the ontological depth of the worlds they disclose on the other.

3. Virtual Reality, Emotion, and Fiction

Regarding the first point, as we move along this spectrum toward virtual environments, the integration of a first-person perspective and the activation of multiple sensory modalities become increasingly pronounced. In traditional forms of fiction, the body remains relatively passive, and the senses are only partially engaged. Reading a novel typically stimulates sight and imagination, while watching a film engages sight, hearing, and imagination. In both cases, proprioception and tactile feedback are absent. By contrast, VR maximizes perceptual involvement, creating a compelling illusion of spatial presence and agency within a virtual environment: «When wearing a virtual reality headset, various features increase the sense that one is really there compared to other visual media such as film. Turning one's head does not take one away from what is happening. Directional audio gives the sense that one is really surrounded by the virtual world»[15].

This heightened sensory involvement tends to amplify emotional responses, making virtual experiences not only more intense but also more affectively convincing[16]. The stronger the bodily and perceptual integration, the more powerful the emotional resonance of the fictional experience. However, even in highly immersive VR experiences, absorption in the virtual world is never complete. A residual distance between the user and the virtual environment persists. There remains a non-positional, peripheral awareness that what we are undergoing is virtual. As it has been argued by Carroll, when

[14] Cfr. D. W. Winnicott, *Playing and Reality*, Tavistock Publications, London 1971.
[15] A. Fisher, *Emotion and ethics in virtual reality*, in "Australasian Journal of Philosophy", CIII/2, 2025, pp. 1-18, p. 8, doi:10.1080/00048402.2025.2515848.
[16] Cfr. M. Meehan, B. Insko, M. Whitton, F. P. Brooks, *Physiological measures of presence in stressful virtual environments*, in "ACM Transactions on Graphics", XXI/3, 2002, pp. 645-652, doi:10.1145/566654.566630.

it comes to fiction the cognitive basis of our emotions lies not in belief in the reality of fictional characters or events, but in the thoughts that we entertain non-assertively:

> emotional response does not require the belief that the things that move us be actual. We can be moved by prospects that we imagine. With respect to fictions, the author of such works presents us with conceptions of things to think about – e.g., Anna Karenina's suicide. And in entertaining and reflecting upon the contents of these representations, which supply us with the contents of our thoughts, we can be moved to pity, grief, joy, indignation, and so on[17].

More recently, Rodogno refers to such processes as «non-serious» cognitive modes and claims that the key difference between beliefs and these non-serious modes lies in how they relate to the norm of truth: a belief that *p* ought to be abandoned if one learns that *not-p* is true. This normative requirement, however, does not apply to non-serious cognitive modes[18].

This solution to the so-called "paradox of fiction" allows us to claim that the emotions directed toward fictional characters and events (Anna Karenina in the eponymous novel; HAL 9000 in *2001: A Space Odyssey*; or the asteroid threatening Earth in *Don't Look Up*) are neither genuine but irrational, as Radford suggested[19], nor merely «quasi-emotions», as claimed by Walton[20]. We are capable of genuine emotions not only when we believe that the objects and events we encounter belong to our everyday reality, but also when we imagine certain situations or immerse ourselves in fictional worlds: we may feel elated at the thought of visiting Iceland, repulsed by imaging a decaying body near us, or moved by Anna Karenina's fate. Nor should we assume that our emotions toward fictional products are irrational. If that were the case, we would also have to regard as irrational our non-emotional evaluations of non-existent things – which we clearly do not[21]. On this basis, we can understand that, because of our background awareness that the experiences we undergo in virtual environments are fictional, we withhold certain action-oriented responses while still fully experiencing the other dimensions of our emotions.

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[17] N. Carroll, *The Philosophy of Horror*, cit., p. 88; cfr. N. Carroll, *The Philosophy of Motion Pictures*, Wiley-Blackwell, Oxford 2008.
[18] Cfr. R. Rodogno, *Social robots, fiction, and sentimentality*, in "Ethics and Information Technology", XVIII/4, 2016, pp. 257-268, p. 261, doi:10.1007/s10676-015-9371-z.
[19] Cfr. C. Radford, *How can we be moved by the fate of Anna Karenina?*, in "Proceedings of the Aristotelian Society, Supplementary Volume", XLIX, 1975, pp. 67-80.
[20] K. Walton, *Fearing fictions*, in "Journal of Philosophy", LXXV/1, 1978, pp. 5-27.
[21] On the contrary, fictional narratives are widely recognized as valuable means of reflecting on our world and learning life lessons (cfr. G. Sacco, *Il paradosso della finzione: un nuovo ruolo per un antico dilemma*, in "Rivista di estetica", LXXXVII, 2024, pp. 243-258).

This affective force is thus fully compatible with the gap between the virtual and the real. One might therefore argue that VR does not displace imagination, but it relies upon it. Imagination is not absent from virtual experience. It operates as a latent structure that makes the environment perceived by our senses intelligible as fiction. Even in its most perceptually compelling forms, VR remains a mode of heightened fiction, more sensorily engaging than reading a book, going to the cinema, or attending a play, yet never ontologically equivalent to lived experience in the world. The persistence of this "space between" – the world of imagination – and the fact that we never fully *become* our virtual avatar, does not preclude the possibility of strong emotional reactions. However, strong episodic emotions felt in VR experiences do not necessarily translate into prolonged affective responses. As noted by Fisher:

> Of course, our emotional reactions towards virtual reality are not always stronger than analogous reactions towards fiction. One common use of virtual reality is for training purposes. Pilots and surgeons employ virtual reality to practice skills in a risk-free environment. Yet neither the pilot who crashes in the flight simulator, nor the surgeon who fails when practicing a difficult surgery, is kept up at night with guilt at the virtual lives lost[22].

Complex evaluative emotions – such as shame, guilt, indignation, anger, or admiration – extend well beyond immediate bodily resonance. Their emergence depends on several contributing factors: the comparison between one's own situation and that of others, the recognition of shared background conditions, and the subtle awareness of differing social expectations concerning status, among others[23]. Within the realm of fictional experience, it is therefore unsurprising that novels or films may exert a lasting emotional impact, whereas VR, taken in isolation, may risk exhausting its force in the immediacy of the moment. This, however, as we shall argue, does not preclude the possibility of a fruitful collaboration between VR and other narrative forms.

The "space" – however thin – between us and the immersive scenario may be also due to technical limitations inherent to current VR systems:

> We still feel a bulky headset strapped to our head. Our visual field is not fully covered by the screen, such that we see beyond the edges of the displays immediately before our eyes. We might see pixels as being in a grid-like display as we experience the "screen door effect" – a common perceptible element in current virtual reality. Consequently, we typically remain vaguely aware that we are in virtual reality, dampening our emotions compared to analogous

[22] A. Fisher, *Emotion and ethics in virtual reality*, in "Australasian Journal of Philosophy", cit., p. 6.
[23] Cfr. A. Ben-Ze'ev, *The Subtlety of Emotions*, MIT Press, Cambridge-London 2000.

> real events. The pilot plunging towards the ocean in a flight simulator may feel fear, but likely not the same terror as if they were *actually* about to crash[24].

This observation allows us to move to the second point. At first glance, VR appears to offer a more immersive and engaging experience than cinema. While the cinema viewer can easily avert their gaze from the screen and find themselves back in the theater, the user immersed in a virtual environment is bodily involved: their entire perceptual field is occupied by a simulated world that responds to their movements. This kind of immersion is not only sensory but also ontological: VR is not merely a tool or a medium, but a place of presence. Yet it may be argued that this apparent intensification of presence coincides, paradoxically, with a reduction in the ontological depth of experience.

As Stanley Cavell notes, in realist films what we see is a world that has been, a photographed reality from which we are excluded – but it is precisely this exclusion that generates a form of reflective presence. The cinematic world, though passive and inaccessible, retains its ontological consistency: «the reality in a photograph is present to me while I am not present to it; and a world I know, and see, but to which I am nevertheless not present (through no fault of my subjectivity) is a world past»[25].

What the viewer sees on screen is only a portion of an implicit totality: I can ask what lies off-frame, behind a wall, beyond a threshold. In other words, the cinematic image implies a horizon, a "beyond" that continues to exist even if it is not visible. It is this tension between what is given and what remains hidden that renders the filmic world continuous with everyday experience.

In contrast, even when the experience in VR is fully enveloping, it makes no sense to ask about what is not visible if what lies "behind" or "beyond" has not been programmed. There is no horizon transcending what is seen, only a sum of constructed presences. Here, the phenomenological insights offered by Husserl (1907) and Merleau-Ponty (1945) are especially relevant: every real object always appears as incomplete, as possessing unseen sides that can be uncovered through bodily movement: to see is always also to anticipate what is not yet given to vision[26]. In VR, however, bodily movement does not open the object to indeterminacy; rather, the body moves within a fully predetermined world. The

[24] A. Fisher, *Emotion and ethics in virtual reality*, in "Australasian Journal of Philosophy", cit., p. 9.
[25] S. Cavell, *The World Viewed: Reflections on the Ontology of Film*, Harvard University Press, Cambridge (MA) 1971, p. 23.
[26] Cfr. E. Husserl, *Thing and Space: Lectures of 1907* (1907), transl. by R. Rojcewicz, Kluwer Academic Publishers, Dordrecht 1997; M. Merleau-Ponty, *Phenomenology of Perception* (1945), transl. by D. A. Landes, Routledge, Milton Park 2014.

virtual object, while simulating three-dimensionality, lacks true phenomenological flesh, because it never exceeds its current appearance.

One might object, however, that virtual environments – like those of videogames – do in fact suggest a form of independence and horizon. As Krueger and Roberts note: «players influence these worlds, and their narratives and character arcs, by how they play. They inhabit this shared domain with non-player characters (NPCs) and do things with and to them»[27]. Such responsiveness does indeed generate a sense of co-presence and of inhabiting a shared world, as if the NPCs «have "lives" of their own»[28]. Yet this apparent independence differs from the phenomenological openness of real objects or even of cinematic worlds. In VR, the world never exceeds its programmatic horizon: what appears to us as the spontaneous agency of NPCs or the responsiveness of the environment is in fact the execution of scripts, however complex. The virtual world may simulate contingency, but it never truly surpasses what has been coded. The sense of independence we attribute to NPCs is therefore a projection sustained by interactivity, not an ontological openness.

In this sense, VR – despite being technologically more sophisticated and sensorially more immersive – reveals itself as ontologically poorer than cinema (of course leaving aside animation). It is, we might say, a presence without depth, or a fullness without a horizon. Whereas film implies a world that continues beyond the image, VR shows only what has been foreseen by the code. As a result, the more the subject is absorbed, the less they can treat what they see as a world, and the more they find themselves enclosed in an interactive fiction devoid of transcendence. The paradox, then, is this: the more we are immersed, the less we are in the world.

4. Embodied Empathy and the Limits of Immersion: A Critical Reading of *Carne y Arena*

Alejandro G. Iñárritu's *Carne y Arena* (2017) was a groundbreaking multisensory installation that invited participants to physically and emotionally engage with the traumatic experiences of Latin American migrants crossing the U.S.-Mexico border. The work placed participants barefoot in a cold, dark space, where light, sound, and virtual imagery simulated the confusion and vulnerability of a desert crossing under threat.

[27] J. Krueger, T. Roberts, *Real feeling and fictional time in human-AI interactions*, in "Topoi", XLIII/3, 2024, pp. 783-794, doi:10.1007/s11245-024-10046-7.
[28] *Ibid*.

Gunshots, helicopters, shouts, and virtual bodies encircled the viewer, generating a powerful emotional and bodily reaction. The installation did not merely show the experience – it attempted to stage it, inviting an affective response that was immediate, visceral, and immersive.

The declared aim of the installation was to stimulate empathy by immersing the viewer in a scene of trauma. However, as philosopher Paolo D'Angelo argues, this form of virtual experience tends to replace imagination with identification[29]. In doing so, it risks reducing both empathy and catharsis to mere emulation. Rather than imagining the condition of another person – an act that entails symbolic mediation and interpretive effort – the participant is led to experience their own emotions in response to a simulated threat. The virtual installation becomes an affective machine, one in which the intensity of emotional reaction takes precedence over the meaning of the situation represented. As D'Angelo suggests, this shift may result not in a deeper understanding of the migrant's condition, but in a narrowing of perspective: the focus shifts from the objective reality of the other to the subjective sensation of the self. In this way, the emotional reality of the participant may obscure the social, political, and material complexities that define the migrant's lived experience.

D'Angelo's critique draws on a classical Aristotelian insight: in both *Poetics* and *Rhetoric*, Aristotle insists that pity requires both a possible similarity and a certain distance. Tragic identification works not through fusion with the character, but through the recognition that "this could happen to me" – but is not happening to me now. Immediate emotional identification, in this view, short-circuits the symbolic distance necessary for moral reflection and aesthetic catharsis.

Yet this critique can be countered if we resist the assumption that immersive experience is incompatible with symbolic and imaginative engagement. There is no intrinsic contradiction between bodily immersion and the representational logic of fiction. A virtual experience such as *Carne y Arena* does not claim to fully reproduce the migrant's reality – it offers, rather, a partial, situated, and symbolic gesture. The danger lies not in the work itself, but in how it is framed and received. If the viewer mistakes the immersive simulation for the totality of a migrant's life-world, the result is indeed a collapse of understanding into sensation. But when the experience is presented – and understood – as one fragment among many, as an affective point of entry into a broader human condition, it can instead activate moral imagination rather than short-circuit it.

[29] Cfr. P. D'Angelo, *La tirannia delle emozioni*, Il Mulino, Bologna 2020, pp. 7-13.

VR, in this light, can be seen not as a substitute for imagination, but as a catalyst for it. While it cannot convey the full existential or political weight of migration, it can evoke bodily vulnerability, fear, and helplessness in a way that makes those experiences more thinkable. For a viewer who may find it difficult to abstractly imagine the physical discomfort of being threatened, exhausted, and exposed, the installation may render certain experiential details vivid enough to open a space of reflection. It does not speak for the migrant, but instead prepares the viewer to recognize a shared vulnerability, a fragile corporeality that is common to both self and other.

From this perspective, *Carne y Arena* aligns well with Aristotle's definition of pity in the second Book of the *Rhetoric*:

> Let pity be [defined as] a certain pain at an apparently destructive or painful event happening to one who does not deserve it and which a person might expect himself or one of his own to suffer, and this when it seems close at hand; for it is clear that a person who is going to feel pity necessarily thinks that some evil is actually present of the sort that he or one of his own might suffer and that this evil is of the sort mentioned in the definition or like it or about equal to it[30].

The conditions Aristotle mentions in this passage are two: first, the emotion is directed at people who suffer misfortunes from which we do not feel immune. Second, the people to whom the emotion is directed must appear not to deserve the evils that afflict them. Pity is not aroused at the sight of just anybody affected by destructive or painful events. Rather, it is directed at people with whom one feels some affinity. Similarity can take different shapes. Aristotle mentions age, character, dispositions, social status, and birth[31]. These are not meant as exhaustive or prescriptive; they are examples of factors that help us perceive others as belonging to the fabric of our life and experience. Even if we are not personally acquainted with someone, if we feel that they are similar to us in some relevant way we are motivated to imagine that what is happening to them might also happen to us[32]. From this perceived similarity our own sense of vulnerability is engaged.

At the same time, Aristotle notes that pity can be blocked by character traits or social conditions. Those who distrust others and believe most people are evil will not see their suffering as undeserved. Those who are arrogant or feel invulnerable – by virtue of youth, wealth, or power – cannot imagine that the misfortune of others might befall them as well. Conversely, the young, though inexperienced, may be capable of pity precisely because

[30] Arist., *Rhet.* II, 8, 1385 b 13-18.
[31] Cfr. Arist., *Rhet.* II, 9, 1386 a 25-26.
[32] Cfr. Arist., *Rhet.* II, 9, 1386 a 26-27.

they trust others and measure them by their own innocence: «they are inclined to pity, because of supposing [that] everybody is good or better than the average; for they measure their neighbors by their own innocence, with the result that they suppose them to be suffering unworthily»[33].

This Aristotelian framework clarifies how *Carne y Arena* operates. The installation activates pity not through literal identification, but through an analogy that remains partial: "I am not him, but a reversal of fortune is always possible. This could happen to me". That minimal gap is precisely what preserves the viewer's capacity for critical distance and ethical thought. The work does not collapse the boundary between self and other; it renders it porous, allowing the participant to feel how thin that boundary can be. The broader curatorial context in which *Carne y Arena* is presented plays a crucial role in preserving the difference between identification and empathic understanding. The immersive portion of the installation is embedded within a wider exhibition structure that continually reaffirms the partial and symbolic nature of the VR experience. Visitors are first confronted with real, tangible elements – such as the border fence and the personal belongings of migrants (shoes, clothes) – and are made to wait in a holding area[34]. Finally, the video portraits of real immigrants encountered on the way out return the audience to the presence of actual individuals, reminding them that the virtual characters they have just walked alongside stand for real lives, real histories, and real suffering. This context restores what the simulation might otherwise flatten: the complexity of the real, and the recognition that the suffering of others is always in excess of our capacity to grasp it.

Even within the central VR sequence, however, imagination plays a pivotal role. The experience is not confined to a raw reproduction of reality; it is punctuated by symbolic and magical-realist motifs that mark the passage from mere simulation to art. These interventions – such as the sudden mirage of a long table appearing in the desert, upon which floats the specter of a sinking boat alluding to the Mediterranean migrant crisis, or the fleeting vision of a beating heart whenever the viewer passes through a virtual body[35] – signal a shift beyond literal realism. By introducing such symbolic elements into the immersive sequence, Iñárritu ensures that *Carne y Arena* cannot be reduced to a

[33] Arist., *Rhet.* II, 12, 1389 b 8-10.
[34] Cfr. Benjamin B, *Carne y Arena part 1 - VR by Alejandro G. Iñárritu with Emmanuel Lubezki, ASC, AMC*, 30 June 2017, online: https://theasc.com/blog/the-film-book/carne-y-arena-vr-masterpiece-innaritu-lubezki [accessed 1 September 2025].
[35] Cfr. B. Davis, *Can VR Really Make Us Feel Empathy? Alejandro G. Iñárritu's 'Carne y Arena' Proves That's the Wrong Question*, 29 March 2018, online: https://news.artnet.com/art-world/alejandro-g-inarritus-carne-y-arena-comes-to-dc-1255907 [accessed 1 September 2025].

simulation of trauma but instead affirms itself as an aesthetic composition, one that not only makes us feel but also invites us to imagine. In this sense, rather than replacing traditional forms of fictional representation, *Carne y Arena* extends them, offering a sensorial threshold through which moral imagination is awakened, not extinguished.

5. From Empathy to Efficiency: Immersion and Emotional Conditioning in Safety Training

A parallel set of issues emerges when VR is applied to workplace safety training. In recent years, VR has increasingly been adopted as a training technology in industrial contexts, particularly within high-risk sectors such as chemical, energy, construction, and mining, where occupational safety represents a primary concern[36]. A key advantage of VR in this context is that it enables workers to rehearse dangerous tasks in a controlled environment without exposure to real hazards. VR not only immerses participants in realistic scenarios, but also lets them experience the possible consequences of failing to follow safety procedures. The aim is to improve their decision-making when faced with real-life risks on the job[37]. These programs typically recreate accidents or hazardous situations – such as chemical spills, machinery malfunctions, or fires – by combining multiple sensory cues: alarms, flashing lights, rumbling sounds, and spatially convincing environments. Training modules rely on gamified logics of challenge, performance, and reward. Scoreboards, instant feedback, and auditory signals are frequently employed to sustain motivation and intensify user engagement. In such scenarios, the worker is no longer a detached observer of a demonstration but an active participant, with body and emotions directly implicated in the unfolding events. The aim is to expose participants to fear, stress, or bodily tension in order to reinforce memory and shape safer behaviors[38].

[36] Cfr. S. Grassini, K. Laumann, *Evaluating the use of virtual reality in work safety: A literature review*, in "Proceedings of the 20th Congress of the International Ergonomics Association (IEA 2018)", 2020, doi:10.3850/978-981-14-8593-0_3975-cd.

[37] Cfr. K. Patil, S. K. Ayer, S. Bhandari, *Virtual reality: A tool for enhancing emotion-driven decision making in hazardous construction environments*, in "SSRN", 2023, doi:10.2139/ssrn.4583786.

[38] The connection between affect and learning is well documented. Experiences marked by strong emotions are more likely to be retained in long-term memory and recalled with greater clarity and detail than neutral events. Moreover, the emotions attached to past experiences influence future decision-making, guiding individuals to repeat or avoid certain behaviors (Cfr. W. James, *The principles of psychology*, Henry Holt and Company, New York 1890; V. Mancuso, F. Bruni, C. Stramba-Badiale, G. Riva, P. Cipresso, E. Pedroli, *How do emotions elicited in virtual reality affect our memory? A systematic review*, in "Computers in Human Behavior", CXLVI/6, 2023, doi:10.1016/j.chb.2023.107812; D. Kahneman, P. P. Wakker, R. Sarin, *Back to Bentham? Explorations of experienced utility*, in "The Quarterly Journal of Economics", CXII/2, 1997, pp. 375-406, doi:10.1162/003355397555235).

Broadly speaking, this type of safety training takes two complementary forms. On the one hand, workers can be trained to operate in high-risk environments, experiencing firsthand the consequences of mistakes without real-world repercussions. On the other, VR can place them in scenarios where neglecting safety procedures endangers not only their own well-being but also that of their colleagues.

***Figure 1**: a machine repair error results in the simulation of severe hand injury. Source: https://www.youtube.com/watch?v=cLA0VvYHxn4 [accessed 1 September 2025, screenshot taken at 00:14].*

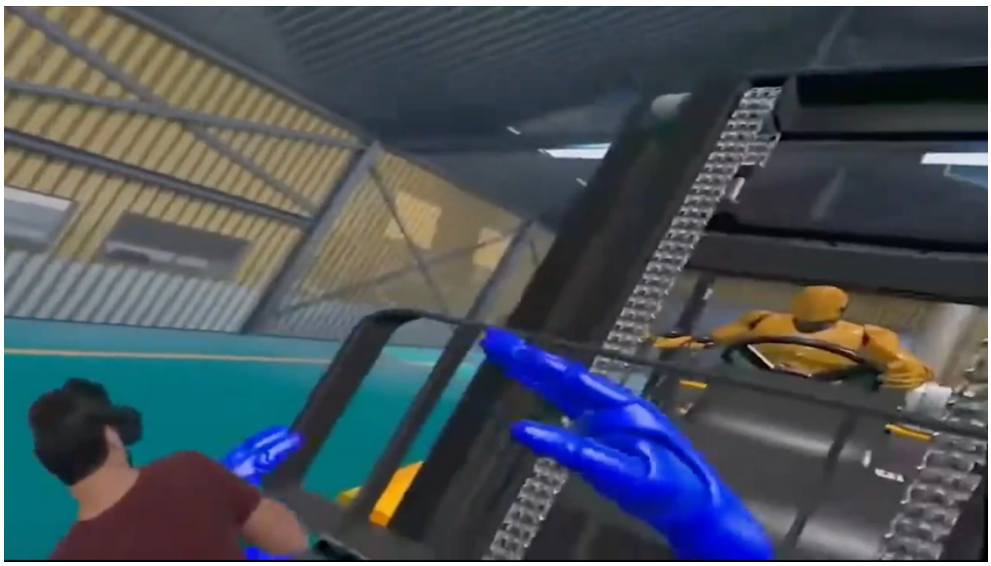

***Figure 2**: a warehouse training module simulates the risk of being struck by a forklift due to inattention. Source: https://www.youtube.com/watch?v=kz3js9VamOo [accessed 1 September 2025, screenshot taken at 03:30].*

***Figure 3**: a safety training simulation of working at heights, where a falling component injures a worker below due to insufficient precautions. Source: https://www.youtube.com/watch?v=e5EEpvRedso [accessed 1 September 2025, screenshots taken at 00:42 and 00:44].*

The examples shown in the images – screenshots taken from demonstration videos produced by companies specializing in virtual safety training – illustrate how these two forms of training are put into practice. Figures 1 and 2 both exemplify the first mode, in which workers experience the consequences of mistakes on their own "bodies". In Figure 1, the worker is placed in a machine repair scenario: when the repair is carried out incorrectly, the VR simulation shows the user's own hands caught and mangled in the gears. The bright red overlay heightens the visceral impact, giving the illusion of directly bodily harm. In Figure 2, taken from a warehouse training module, the perspective shifts to that of a pedestrian worker inattentive to an oncoming forklift, dramatizing the risks of distraction in shared spaces. Both are instances of "shock-based" training, where the consequences are felt as if they were happening directly to the participant. Figure 3, by contrast, corresponds to the second mode, which highlights the broader repercussions of unsafe behavior on others. Here, the scenario focuses on the risks of working at heights. The designed safety operator confirms that a colleague is working in secure conditions, yet the precautions are inadequate: while repairing a pipe, a component breaks loose and falls, striking another worker below. Unlike the previous examples, where the danger affected only the user's own body, here the emotional impact comes from witnessing the harm inflicted on someone else. The simulation makes clear that responsibility lies with the participant for having failed to ensure proper safety measures.

In the context of occupational safety training, emotion is explicitly instrumentalized: what in *Carne y Arena* functions as an affective threshold for moral imagination is here reduced to a tool of behavioral conditioning.

Yet the embodied intensity of such training remains embedded in a strictly instrumental and productivist framework. It may be situated within what Boltanski and Chiapello describe as «neomanagement»: a managerial approach in which corporate goals are pursued not through explicit coercion but through apparently benevolent strategies that prompt workers to self-regulate, thereby extending control into their personal and emotional lives[39].

The experience is also highly individualized. The VR viewer is, by design, alone. While one can imagine future projects that allow multiple participants to interact as avatars – much like videogames already do – at present the VR participant remains isolated within the headset. This structural solitude is mirrored in occupational applications of VR, where risk is framed as the responsibility of the individual worker, while broader collective dynamics fade into the background. Such individualization is not without social consequences, for it reinforces a binary relation between worker and company while obscuring collective identities ad solidarities – "there is me and the firm", but no longer a shared class of workers.

Moreover, immersive safety training abstracts away key features of real work environments. It omits the coordination with others, the shared timing of collective actions, the simultaneity of multiple bodies in a space of danger, and the social dimension of managing risk as a group. In real emergencies, decisions are distributed, embodied, and intersubjective: people act together, help each other, and sometimes hinder each other. A purely individualized simulation cannot replicate this complexity.

To be sure, abstraction is not without value – like all symbolic representations, VR isolates relevant elements and focuses attention on them. But when taken in isolation, or presented as the primary mode of training, such immersive experiences risk reducing the irreducible complexity of real situations. As with *Carne y Arena*, the problem lies less in the medium itself than in the temptation to mistake a partial and symbolic construction for the totality of reality.

[39] Cfr. L. Boltanski, E. Chiapello, *Il nuovo spirito del capitalismo*, Mimesis, Milano-Udine 2014, pp. 127-146.

6. Conclusions

Both *Carne y Arena* and VR-based safety training demonstrate that authentic emotions can be elicited by simulated events. Fear, stress, and vulnerability may be felt as real, even though the situations themselves are constructed. Yet a crucial difference separates the two domains. Iñárritu's installation openly presents itself as art – a symbolic and interrogative experience, framed within a broader curatorial and discursive context. Occupational VR training, by contrast, is presented as operational instruction, where emotions are functionalized as instruments of behavioral conditioning. The risk, in both cases, does not lie in immersive experience as such, but in the absolutization of a fragment: the illusion that "because I felt fear, I now understand the migrant's condition – or the risks of the workplace – in their entirety".

It is telling that the very first action required of visitors to *Carne y Arena* is the signing of a waiver acknowledging the possible risks of the experience: «physical, mental and health damages (such as, for example, nausea, disorientation, dizziness, vertigo, seizures, motion sickness, general physical discomfort, headaches or anxiety), pain, suffering, temporary or permanent disability, and/or emotional blockage»[40]. This acknowledgement underlines the seriousness of immersive encounters and the extent of their possible impact on participants. A comparable level of transparency should be expected in VR safety training, where workers are likewise exposed to simulated accidents and potentially distressing situations – not only physical side effects, but also emotional strain.

For immersive VR to fulfill its potential – whether in the artistic or corporate sphere – it must be embedded in a broader framework. Such a framework should be reflective and narrative, situating immediate emotions within a field of meaning, and relational, restoring the intersubjective and social dimensions that individual immersion risks eclipsing. Designing interactive environments that foster collaboration rather than competition – through genuine co-presence and shared responsibility – would shift the emphasis away from isolated performance. Only under such conditions can immersive VR serve not as a substitute for understanding, but as a catalyst for imagination, critical reflection, and collective responsibility.

[40] A. D'Aloia, *Virtualmente presente, fisicamente invisibile – Carne y Arena di Alejandro Iñárritu*, 8 January 2018, online: https://www.fatamorganaweb.it/virtualmente-presente-fisicamente-invisibile-carne-y-arena-alejandro-inarritu/ [accessed 1 September 2025] (transl. by the authors).