Take a Deep Breath.
Virtual Reality and Real Anxiety

FEDERICA CAVALETTI & GIANCARLO GROSSI[1]

1. "Imaginary" Virtual Reality: Dystopian Scenarios and Paranoid Narratives

The fear of technology works as a sort of Leitmotiv in dystopian narratives, whose codes are extremely recognizable and easy to find not only in movies, comics, and science fiction novels, but also in literature and philosophy. Among the technologies that feed dystopian visions of the future, a special role is played by *virtual reality* (VR), which we broadly identify with any set of devices providing immersive, multisensory, and multimodal experiences, by separating the user from "real reality" and absorbing her/him inside the representation. Since the first exploratory studies dedicated to VR, which spread and had a certain influence especially during the Nineties[2], the illusory possibility of immersion, achievable through the development of head mounted displays (HMDs), CGI software, tactile gloves, and controllers, was connected with the concept of cyberspace, coined by cyberpunk science

    [2] H. RHEINGOLD, *Virtual reality. The revolutionary technology of computer–generated artificial worlds and how it promises to transform society*, Simon & Schuster, New York 1992; J. STEUER, *Defining vir-

fiction writer William Gibson in the 1984 book *Neuromancer*[3]. In this book, cyberspace is defined as a "consensual hallucination experienced daily by billions of legitimate operators"[4], and the ability to operate within this space is described as essentially depending on the neuronal connections of the brain with the matrix. The hallucinatory nature of the shared environment delivered by VR devices fits well with an "apocalyptic" or "post–apocalyptic" view even in the philosophical field. Such view was proposed by Jean Baudrillard by means of his idea of *simulacrality*, which fundamentally concerns the inability of the post-modern image to refer to something other than itself, in a condition where we mistake the *map* for the *territory*[5]. The idea of a collective hallucination is also hugely present in the most famous cinematic epic narratives produced on the cusp of the XXI century: it is quite interesting, for instance, to note how the *Matrix trilogy* (A. & L. Wachowski, 1999–2003), a saga that massively influenced the common dystopian idea we have of the cyberspace, explicitly quotes Baudrillard himself. In an equally hallucinatory reading of the trilogy[6], Slavoj Žižek as well pointed out the correspondence between the virtual world of *The Matrix* and the fundamental fantasy of the paranoid subject: namely, the suspicion that, behind the symbolic order of our society, a further order is concealed, which would work as the main cause of any contingent outcome or acciden-

---

tual reality. Dimensions determining telepresence, «Journal of Communication», Autumn 1992, 42, 4, pp. 73–93.

[3] W. GIBSON, *Neuromancer*, Ace, New York 1984.

[4] Ibid., p. 51.

[5] J. BAUDRILLARD, *Simulacra and Simulation*, University of Michigan Press, Ann Arbor 1994.

[6] S. ŽIŽEK, The Matrix. *Or, the two sides of perversion*, «Philosophy Today», 43, 1999, pp. 1–14.

tal event that does not correspond to our previsions. The idea that our daily life can be, basically, a planned hallucination, which has its origins in Philip K. Dick's science fiction and nowadays leads to TV series such as *Westworld* (HBO 2016), is at the very core of this paranoid phantasy. In a more willingly conceptual way, David Cronenberg's *eXistenZ* (1999) had already reflected on the fight between "realist" and "anti–realist" terrorist movements around the hallucinatory and illusory possibilities opened by an immersive videogame. By considering these two positions, we can already observe the polarization of the debate between *techno–enthusiasts* on the one hand, which in the virtual space find the opportunity of an augmented social and relational experience, and *techno–phobes* on the other, which consider the same digital environment as a platform for control and surveillance practices.

In this introduction, we outlined the imagery most commonly surrounding virtual reality, mainly characterized by paranoid narratives, anxiety towards novelty, and *technophobia*. Is it possible, however, to conceive an alternative scenario, in which a different connection can be configured between VR and such negative emotional reactions? Leaving aside the described imagery and narratives of the new medium, how does the "real" virtual reality concretely works nowadays? Our main goal in the next sections will be to overturn the anxiety of new technologies by taking into account the use of VR devices precisely in the medical treatment of anxiety.

2. "Real" VR Systems and their Technical and Experiential Novelty: Immersion and Presence

"Real" virtual reality (VR) is a recent form of media technology whose uses are rapidly expanding not only in

the artistic domain but also in several professional fields.

The core components of a VR system are the following: a VR software that creates, manages and handles the rendering of the images; a head–tracking device that monitors the head movements of the users and updates their point of view as it would happen in the real world; and a display device, i.e. the hardware used to show the images, for instance a head–mounted display, a proper screen or surface, and so on[7]. The main novelty of VR systems consists in their technical ability to produce *immersion*, and hence to trigger in the users a sense of *presence* in the virtual world.

The connection between these two concepts, often blurred and underspecified in the current literature, requires a quick explanation. According to one of the most influential current theories[8], the sense of presence is the *subjective correlate* of the *technical property* of immersion, and it arises from the combination of two forms of illusion: place illusion (PI) and plausibility illusion (Psi). Immersion is the property of a computer–generated environment which provides its users with naturalistic sensorimotor contingencies[9]. In such an environment, the actions and perceptions of the users have the same effects that they would

---

[7] B. SPANLANG et AL., *How to build an embodiment lab. Achieving body representation illusions in virtual reality*, «Frontiers in Robotic and AI», 1, 2014, pp. 1–22.

[8] M. SLATER, *Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments*, «Philosophical Transactions of the Royal Society», 364, 2009, pp. 3549–3557. M. SLATER, M.V. SANCHEZ–VIVES, *Enhancing our lives with immersive virtual reality*, « Frontiers in Robotic and AI», 3, 2016, pp. 1–47.

[9] J.K. O'REGAN, A. NOË, *A sensorimotor account of vision and visual consciousness*, «–Behavioral and Brain Sciences», 24, 2001, pp. 939–973. A. NOË, *Action in Perception*, MIT Press, Cambridge (Mass.) 2004.

have in a real one. Thus, at the experiential level, the virtual world generated by the computer substitutes the users' actual surroundings. When this happens, users experience the illusion of being inside the virtual environment (PI); moreover, they perceive the events happening in that environment as plausible and react realistically to them (Psi). In sum, when high levels of presence are achieved, users tend to behave in a virtual situation as they would do in the corresponding real one[10].

3. VR Systems in the Psychiatric Practice: Two Opposing Models of Application

In the psychiatric practice, the immersive potential of VR systems proves effective in the treatment of those pathologies that lead patients to difficult interactions with their environment: examples include phobias, different forms of post–traumatic stress disorder, anxiety, and depression[11]. The ways of employing VR in this context, however, are manifold and suggest the need of a first rough categorization.

Based on the recent literature, it is possible to identify two main and complementary models of application of VR in the treatment of such disturbances: one is grounded in the principle of *exposure*, the other in the principle of *isolation*. The two models rely on two interconnected yet distinct properties of the new technology, thus interpreting its use in alternative ways.

---

[10] M. SLATER, op. cit.; N. DE LA PEÑA et AL, *Immersive journalism. Immersive virtual reality for the first–person experience of news*, «Presence», 19, 4, 2010, pp. 291–301.

[11] D. FREEMAN et AL., *Virtual reality in the assessment, understanding, and treatment of mental health disorders*, «Psychological Medicine», 47, 14, 2017, pp. 2393–2400.

3.1 The *Exposure* Model

In the exposure model, it is the *reproductive capacity* of VR to be exploited. Such capacity allows to replicate actual stressful situations in the form of images, thus creating realistic yet controlled settings in which the subjects can immerse themselves without any risk of harm.

In this model, the VR system affords the possibility to monitor and improve the patients' reactions to a specific real–life stress-inducing situation by customizing and regulating the features of the corresponding virtual one. The exposure procedures build on the general assumption that directly confronting the stimuli or events provoking stress, fear or anxiety can help subjects to control and eventually overcome such negative emotional reactions.

A theoretical model that is still largely referred to in the field is the "emotional processing" model proposed by Foa and Kozak in 1986[12]. In this model, fear and anxiety are connected to information structures archived in memory, in which given situations or objects (e.g. bees) are associated with physiological and behavioral reactions (e.g. accelerated heartbeat) and interpretive meanings (e.g. being stung), resulting in negative emotional responses. The purpose of exposure is to intervene on such structures in order to weaken the dysfunctional associations provoking fear and anxiety and to replace them with new ones, so that the usual negative outcomes can be corrected and transformed into neutral or comfortable states (hence "emotional processing"). This is done by evoking a given fear or anxiety memory and then by providing informa-

---

[12] E.B. FOA AND M.J. KOZAK, *Emotional processing of fear. Exposure to corrective information*, «Psychological Bulletin», 99, 1, 1986, pp. 20–35.

tion that is incompatible with the existing related structure. In the short term, the physiological habituation and the decrease in arousal – normally observed within single exposure sessions – contribute to dissociating the trigger situation or object from their most immediate responses (e.g. the subject is in presence of bees but her/his heart is beating normally). In the long term, the repeated confrontation with the trigger situation or object in the absence of its associated meanings (e.g. the subject is in presence of bees but she/he is not stung) facilitates the integration of corrective information that contrasts the emergence of negative emotions.

It is clear that literally exposing the subjects to their specific source of stress can be problematic. For this reason, as already observed by Foa and Kozak in their 1986 article, representational media can be highly effective in recreating the required situation or object and their efficacy is likely to be directly connected to their capacity to recreate the latter realistically. It is not surprising, then, that VR is currently being used widely for this purpose.

Therefore, in the exposure model technology delivers trigger environmental stimuli that attack the subjects but at the same time enhance a progressive elaboration and overcoming of the related stress reactions. The repairing function of technology expresses itself in providing a testing ground, a simulated situation through which the patients can pass in order to regain control of the corresponding one in real life. Due to this mechanism, the exposure model can be described as a transitive model, which brings the patients out of reality only in order to bring them back into it.

A VR–based therapeutic system that exemplifies the exposure model is *Bravemind*[13]. One of the first fields of

---

[13] A thorough description of this VR system and its uses can be

application of VR in psychiatry was the military field[14]. In this context, it is crucial to have tools to assess the soldiers' psychological stability as well as to restore it in case of traumatic events undermining it. The use of virtual environments is acknowledged as particularly effective in the treatment of various forms of post–traumatic stress disorder. Currently, one of the most prominent experts in the field is Albert "Skip" Rizzo, who has developed together with his team a system called *Bravemind*.

Launched in 2005 and constantly perfected from then on, *Bravemind* is a flexible and highly customizable system. Indeed, it features several different environments, so that patients can select the one that best fits the location of the target traumatic event. Moreover, the events in the selected environment can be regulated as they unfold: this allows medical doctors to increase or decrease the intensity and the complexity of the virtual experience according to the reactions of the patients. At the moment, *Bravemind* is being used in more than sixty medical centers, more or less connected to the military field.

3.2 The *Isolation* Model

The isolation model functions in a completely opposite way. In this model, indeed, the creative capacity of virtual reality is at stake. Such capacity is not used to reprodu-

found at the dedicated webpage: http://medvr.ict.usc.edu/projects/bravemind/.

[14] J. EDWARDS AND T.D. PARSONS, *Virtual reality applications for neuropsychological assessment in the military. Historical antecedents, current developments, and future directions*, in R.L. KANE, T.D. PARSONS (eds.), *The Role of Technology in Clinical Neuropsychology*, Oxford University Press, New York 2017, pp. 175–235.

ce actual stressful experiences, but to generate alternative and often imaginary ones. The real–life disturbing environments that the patients normally inhabit are substituted with simulated ones, which are specifically developed to promote a sense of peacefulness. The patients are encouraged to leave behind their concrete surroundings and to isolate themselves in the virtual ones.

The assumption underlying this model is that fear and anxiety can be suppressed by removing the subjects from reality and by shifting their attention towards calming images and stimuli. In this sense, the use of VR put forward by the isolation model can be traced back to three different sources or parallel practices.

First, the model bears some similarity to the technique of guided imagery, of which it can be interpreted as a media–supported implementation. Guided imagery is an integrative health technique that consists in helping a person in the mental visualization of specific images, for various therapeutic and training purposes. When undergoing guided imagery, subjects are typically led to focus on soothing images that help them to release stress and achieve a state of quiet[15]. In the isolation model, VR can be seen as a tool to support the patients' imaginative effort, by actually presenting them the images that the therapist would like them to evoke and explore.

The guided imagery technique has long been employed in the domains of psychology and psychiatry, where it has been used for instance in the treatment of generalized anxiety and post–traumatic stress disorders. Moreover, it is a common component in several yogic, mindfulness,

---

[15] P.R. GIACOBBI et AL., *A scoping review of health outcomes examined in randomized controlled trials using guided imagery*, «Progress in Preventive Medicine», 2, 7, 2017.

and meditative exercises. Indeed, as will become clearer in the next section of this paper, these and other disciplines inspired by ancient Eastern traditions constitute a second important reference for the isolation model.

Lastly, this model and particularly its concrete instantiations can be connected in a broader sense to the mainstream Western understanding of mental wellness and relaxation, which very often translates into ideas of evasion and escapism. Such ideas have very precise iconic representations: tropical islands, mountain springs, sunsets on the beach, and related imaginary scenarios. And it is exactly such scenarios that most VR applications referable to the isolation model transform into visible images and environments[16].

In sum, in the case of this second model, the repairing role of technology consists in building up a self–referential shelter, in offering safe environments in which serenity can be easily achieved. Importantly, such environments are meant more as a finish line than as a crossing point: patients are instructed to leave their real world in favor of alternative ones, without any clear direction as to how to reintegrate into the former. Moreover, as observed, these environments often hint in an escapist direction by taking on the traits of stereotypical scenarios of evasion, of places which nobody would like to come back from. Thus, the isolation model can be considered an *intransitive* model.

---

[16] Among others, one very eloquent example can be find in the following study, assessing the effects of a relaxing VR system that brings users on a tropical island: J. FREEMAN et AL., *Relaxation Island. Virtual, and really relaxing*, «Proceedings of Presence», 2004. Relaxing VR systems for commercial purposes are flourishing as well, also in connection with other domains and sectors typically connected to wellness, i.e. spas. RelaxVR, for instance, proposes various scenarios to be used in spas, ranging from the seashore to forests and flower fields. See the company's webpage: https://www.relaxvr.co/virtualrealityspas.

A thorough discussion of a recent instantiation of the isolation model, the immersive videogame *Deep*, will be conducted in the next section of this paper. In order to fully understand *Deep* and its functioning, however, we propose to first analyze a famous digital artwork, which the immersive videogame bears a striking resemblance to, to the point that we hypothesize a genealogical link connecting the two. We refer to *Osmose* (1995), the pioneering work Char Davies carried out in the middle of the Nineties, as she was experimenting in the field of new media art with immersive images and VR devices.

4. A genealogical model: Char Davies' *Osmose*

Char Davies's most famous artwork *Osmose* (1995) exploited a stereoscopic head mounted display and a motion–capture vest with breathing and balance sensors in order to turn the user into an "*immersant*"[17]. With this term, Davies intended a subject diving into an immersive liquid virtual space generated in real time by her/his own bodily behaviour. In particular, the intuitive control the user reaches in terms of breath and balance is key in order to move inside the virtual space. As explained by the artist:

> The interaction or user interface of Osmose has been designed to be body–centered, based on the intuitive, instinctual,

---

[17] CH. DAVIES, *Osmose. Notes on being in immersive virtual space (1995)*, «Digital Creativity», 9, 2, 1998, pp. 65–74. For a theoretical perspective on Davies's works, see L. MCROBERT, *Char Davies' Immersive Virtual Art and the Essence of Spatiality*, University of Toronto Press, Toronto 2007; O. GRAU, *Virtual Art. From Illusion to Immersion*, MIT Press, Cambridge (Mass.)–London 2003, pp. 193–207; M.B.N. HANSEN, *Bodies in Code. Interfaces with Digital Media*, Routledge, New York 2006, pp. 107–136.

visceral processes of breathing and balance. Through breath, the immersant is able to rise and fall in space with ease and precision. By subtly altering the body's centre of balance, the immersant is able to change direction. The use of these methods has been largely inspired by my own experiences of scuba diving and has many implications for the work as a whole, both on an instrumental level and in terms of metaphor[18].

From a representational point of view, this virtual world originated from the embodied experience of the immersant follows an anti–cartesian spatiality, which overcomes any distinction between inner and outer, figuration and abstraction, us and the world. Davies's main goal was to set our subjectivity free from any dualistic dimension inherited by Western culture, embracing the original unity between perceiver and perceived. Although she explicitly declared her theoretical debt with reference to the philosophy of space proposed by Gaston Bachelard, "reaffirming the interrelationship, the interplay, between exterior physical world–space and the interior spiritual space of self"[19], it is not surprising that scholars such as Mark B.N. Hansen read her artwork with reference to Maurice Merleau–Ponty's conceptual framework[20]. In particular, the French philosopher's phenomenological theorization of the "body schema"[21] – which anticipates his later ontological notion of the "flesh"[22] – and its being dynamically constitutive of the

---

[18] CH. DAVIES, *Osmose*, cit., p. 68.

[19] Ibid., p. 70.

[20] M.B.N. HANSEN, *Bodies in Code*, cit.

[21] M. MERLEAU–PONTY, *The Phenomenology of Perception*, Routledge, London 1962.

[22] M. MERLEAU–PONTY, *The Visible and the Invisible*, Northwestern University Press, Evanston 1968.

spatiality of the world was compared by Hansen to the disturbed mental state of "psychasthenia", the psychological impossibility to perceive the boundaries of the self that the user would concretely experience in *Osmose*[23]. Despite so, what the first users of Davies's artwork reported to have felt was a deep sense of peace and serenity, experienced in a dreamlike state[24]. From this perspective, it is evident that there is a strong connection between virtual reality and the therapy for anxiety: especially when both of them lead to a sense of plenitude and complete satisfaction. It is therefore now interesting to analyze what is at stake when the structure and functions of *Osmose* itself, taken from an artistic and philosophical background, are transferred inside a medical field. Which is what *Deep* precisely does.

5. *Deep VR*: a Paradigmatic Instance of the Isolation Model

Released in 2015 by Owen Harris and Niki Smit, *Deep* is described as a «meditative and psychoactive VR game […] that can relieve stress, anxiety and mild depression»[25]. Compared to *Bravemind* shortly discussed above, this videogame is based on completely different premises and mechanisms, and it also addresses a different and broader sphere of possible users.

Instead of replicating existing situations in a realistic way, *Deep* proposes the users to immerse themselves in a

---

[23] Ibid., p. 126–136.

[24] The neurobiological implications of this state have been properly analysed in L. MCROBERT, *Char Davies's Immersive Virtual Art*, cit. pp. 109–142.

[25] http://owenllharris.com/deep.

fantastic submarine environment as occurred in Davies's *Osmose*. The difference consists in the fact that the aim of the videogame is not to offer a metaphysical art space, but rather to ease and prevent stressful states by creating a dream–like and safe environment. Hence, *Deep* exemplifies a therapeutic use of virtual reality that refers to what was defined here as isolation model.

The functioning of *Deep* is regulated by diaphragmatic breathing techniques deriving from yoga and meditation. The diaphragm is a muscular and membranous structure that separates the thoracic and abdominal cavities. In good psychophysical conditions, the diaphragm promotes smooth, regular, and deep breathing that can be felt in the abdominal area. States of stress, apprehension and nervousness, however, can disturb and inhibit this type of breathing by triggering muscular contractions in the chest and in the shoulders. When this happens, the breath gets faster and discontinuous.

Most yoga and meditation practices share the idea that it is possible to restore a state of psychophysical relaxation by restoring the associated mode of breathing, i.e. deep diaphragmatic breathing. *Deep* endorses this assumption and presents itself as a training tool to master this type of breathing.

The users of this videogame, indeed, are induced to practice deep diaphragmatic breathing by means of a simple but effective biofeedback principle. In a system regulated by this principle, selected parameters of the system itself change according to how the users' physiological parameters change. In *Deep* specifically, users are equipped with a VR headset (Oculus Rift) and with a sensor–controller mounted on a belt to be worn around the waist. The sensor–controller monitors the activity of the diaphragm of the users and allow them to move in the environment by using their breath. In order to help the users to beco-

me aware of their respiratory activity, a circular shape is shown in the middle of their visual field, which expands and contracts in a way that analogically reproduces the expansions and contractions of the diaphragm.

The users' movements are as smooth and effective as their breathing is. Optimal control of movement is reached when the users' respiratory activity conforms to the standard derived by the yogic and meditative techniques, i.e. when a regular and deep diaphragmatic breathing is performed. As a consequence, what gradually leads the users to conform to the suggested respiratory modality is the need and also the pleasure to explore the virtual environment.

Deep manifestly exemplifies some of the constitutive traits of the isolation model described in the previous section. First, instead of reproducing an existing portion of reality, it creates a brand new and dream–like underwater environment. Second, in referring transparently to meditation and yoga, it confirms the influence of such ancient Eastern disciplines on the isolation–based applications of VR. The originality of *Deep*, in this sense, consists in taking advantage not only of these disciplines' mental visualization techniques, but also of their breathing techniques, which become the core working principle of the videogame itself. Finally, *Deep* is also emblematic of the escapist risks connected to the isolation model. A quote from the videogame website, curated by one its creator Owen Harris, is probably eloquent enough in this sense: «He [Harris] sought to create a digital zen garden, a place he could *escape* to at the end of a tough day to unwind and relax»[26]. How does Harries face the next tough day, after recovering from the previous one?

---

[26] Ibid.

6. The Bio–Aesthetics of Breathing

The virtual environment created by *Deep* and the intimate relationship that it establishes with our sentient biological body lead us to some considerations. First of all, in relation to the way the sensible experience is driven and reorganized by VR devices; secondly, in relation to the way in which media propose themselves as a technical extension of our own vital functions; finally, concerning the identification process that takes place inside the "*couplage*" of anthropic and technological environments structurally hybridized. Our intent is to consider the intervention on the breath, which we see as a metaphorical canalization of this elementary biological function within an immersive digital representation, not only in a bio–technological sense, but also in a bio–aesthetic one. Drawing from Pietro Montani[27], indeed, we define bio–aesthetics as the way sensibility is increasingly governed by its canalization and reorganization within technological media devices.

From this perspective, we can analyze the deontology of the breath proposed by this experience as a first threshold overcome in the process of mechanization of the human body: as a matter of fact, *Deep* works as a technology of the self[28], an exercise that shapes the breathing function by following yogic rules and techniques. Consequently, to this breath control corresponds the effectiveness of movement in the virtual environment and the overcoming of anxiety states. In this way a defined shape is given to the

---

[27] P. MONTANI, *Bioestetica. Senso comune, tecnica e arte nell'età della globalizzazione*, Carocci, Roma 2007.

[28] We intend the term in the sense explained in M. FOUCAULT, *Technologies of the self. A seminar with Michel Foucault*, University of Massachusetts Press, Amherst 1988.

bare life of the breath, which allows a state of technological control of the vital function by the digital device. At the same time, the technology of the self is mediated by an additional device, a visual one: that given by the digital representation of the circular shapes in the middle of the visual field, expanding and contracting following the mechanisms of inspiration and exhalation. Therefore, the breathing exercise becomes rhythmic, mechanical, and creates a self–reflexive habitus only due to the way it is coordinated with the digital representation. In this sense, it is possible to lead to a state of reciprocal hybridization and control between the body and the virtual device. On the one hand, indeed, the digital immersive apparatus becomes both cause and criterion of the most elementary bodily function, conformed to a technologically mediated deontological standard. On the other hand, the device works and is productive only by incorporating human breath as a form of energy. By referring in particular to Gilbert Simondon's theorization of the "associated milieu"[29], we can speak of a process of individuation in which several basic functions (anthropic and technological) converge to an emotional equilibrium point only through their reciprocal hybridization.

Secondly, as anticipated in the conclusion of the previous section, it is also possible to problematize the "evasive" power of the virtual representation inside the idyllic aquatic environment. The latter can be properly seen as an artificial digital paradise that brings the user back to the prenatal stage of the mother's womb. The therapy works

---

[29] G. SIMONDON, *On the mode of existence of technical objects*, «Deleuze Studies» 5, 3 ,2011, pp. 407–424; ID., *The genesis of the individual*, in J. CRARY, S. KWINTER (eds.), *Incorporations*, Zone Books, New York 1992, pp. 297–319.

temporarily, in a condition of well–being and imaginary fullness whose drug–like effect can only be described in terms of a radical alienation[30]. This becomes even more evident if we consider that the apparent self–control and virtual omnipotence experienced by the user leaves intact her ability to face anxiety outside the virtual system. As a matter of fact, this immersion into an illusory and regressive sense of fullness, whose non–existence is exactly what is denounced by states of anxiety, necessary leads to a state of absolute dependence. From which an essential problem emerges: whether we can nowadays speak properly of a medium–specificity of the dependence triggered by VR devices, or rather this dependence is shared by other media, and even by other therapies. Even though anxiety is extinguished in *Deep*, it happens in a simplified and aseptic environment. But what guarantees that the therapeutic effect can work in the complex and contingent "real" reality with the same efficacy that shows in the virtual womb?

In conclusion, going back to the relationship between technology and anxiety from which we started, we can consider *Deep* as a symptomatic phenomenon of some ongoing processes, which cannot be simplified by following neither an apocalyptic and technophobic paradigm, nor an integrated and uncritically technophile perspective. Conversely, these positions seem to be both symptomatic of a progressive hybridization between body and technology, direct experience and media consumption, which can be

---

[30] In this sense, we can find a sort of continuity between the lacanian theories of the cinematic apparatus expressed by 70' scholars such as Christian Metz and Jean Louis Baudry and the same alienating effect that could be found, in a potentiated and reorganized version, in some current virtual environments. See PH. ROSEN, *Narrative, Apparatus, Ideology. A Film Theory Reader*, Columbia University Press, New York 1986.

read in different senses. First, as a form of *naturalization of the artificial*, in which media technologies are hybridized with the most elementary biological actions becoming in some way invisible, commonly perceived as a structural part of the natural experience of the world[31]. Secondly, according to the paradigm (equally influential in the current post–media scenario) of gamification, which regulates the daily training according to methods derived from narratives and structures typical of the videogame, presenting an increasingly evanescent boundary between the objectives proper of the game and those that reverberate on the user's physical and mental abilities[32].

In this exchange, technophobia and technophilia seem to have become two joint and mutually implicated aspects of the same paradigm of immunity: at the same time as we give technological contamination the role of guarantor of security and control over our mental experience, we develop an even greater diffidence towards this same contamination. Ultimately, love and fear for technology are the first elements to be inextricably hybridized in the new virtual reality landscape.

[31] For a conceptualization of this process of "naturalization of the artificial" in nowadays (post)media landscape, see R. EUGENI, *La condizione postmediale. Media, linguaggi, narrazioni*, La Scuola, Brescia 2015.

[32] S. DETERDING, *Gamification: designing for motivation*, «Interactions», 19, 4, 2012, pp. 14–17.