The Post-virtual Reality: From the Interactive Experience to the Connective Experience

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Abstract. This paper aims to problematize the concept of "virtual reality" in light of the hypothesis that there is a contemporary transformation of the nature of the interaction between the spectator and the artwork. New technologies such as Google Tilt Brush, seem to require a new reading of this relationship, whose complexity suggests surpassing the limits of the notion of interactivity. In this sense, we present an alternative concept of "connectivity", which seeks to cover the three effects that we point on this transformation: the destabilization of conventional notions of time and space; the shuffling of notions of subject and object; the advent of a new form of fruition, which we propose to call "post-virtual reality".

Keywords: Virtual reality · Augmented reality · Interactivity · Fruition
Google Tilt Brush

1 Presentation of the Problem

Despite all the debate around the concept of "virtual reality"[1], which unfolds in the two sharp edges of the "virtual" and the notion of "reality", it seems increasingly complicated the task of characterizing certain technological devices from that expression. At the same time, the advancement of these technologies and their new potential[2] suggests a significant differentiation between them and the first resources, giving rise to a series of totally unpredictable ways, which tend to change the contours of the contemporary relationship between the human and technique.

From an experience of interactivity, further characterized by a fundamental distinction between human element and the machine, and, therefore, by the description of an action that suggests the first always as the irradiator pole or action receiver[3], what

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[1] Expression that will appear in this text also by the abbreviated version "VR".

[2] Potentialities that resonate in the most varied spheres of life: in the arts, in the elaboration of games, in our practical life – our displacements in space, our work –, in education, in the medical area; there are several examples in which devices applications of the so-called "virtual reality" have emerged today. In this sense, large technology conglomerates, such as Google and Facebook, have shown considerable interest in the area, channeling specific efforts to promote it within their productive processes. An example of this was the creation in early 2016 of Google's VR project division.

[3] On the subject of action, described in the context of contemporary experiments between art and technology, see [1].

we seek to discuss here, even briefly, is the hypothesis that this relationship might be described from various contours: no longer as an experience of interactivity, but as an experience of "connectivity". What would this distinction mean, in turn, and why this distinction is necessary to rethink, in theory, all about this extremely diverse constellation that today we insist on calling "virtual reality"?

We start here from the notion that new so-called resources would be enabling a diverse experience of fruition, never before experienced: something that seems to transform our familiar notions of time, the relationship with our surroundings, and, more than that, our own exercise of perception. Unlike perspectives that seek to escape from the thematizations between the concepts of real and virtual, as in the works of Lévy [2], online and offline, addressed by Beiguelman [3], these devices seem to go beyond as they invite us to think of even more acute transformations. In this sense we could even read them, without exaggeration, as the emergence of a new dwelling condition, that is marked by the dissolution of the boundaries between subject and object, spectator/user and environment. These relations would ground no longer in the exchange between one and another – and, therefore, in recognition of their separate dimensions – but in a dynamic capability of reinventing their concepts and the relationship between them: in place of this scenario of "interactivity", we propose the concept of "connectivity" [4].

Before exposing, however, the reasons why we present this proposition, let us make a very brief overview of some notions that exploit the concept of "interactivity" and then introduce our hypothesis itself. As a way to delineate it, albeit in embryonic way, we will present the representative case of Google Tilt Brush, a resource recently launched by Google and that seems to offer new frontiers for thinking the interaction and the creation in the contemporary relationship between arts and technology. Once this is done, then we will pass to the theme of "connectivity" as an important operative concept in order to reread the peculiarities of a new dwelling condition brought about by such devices.

2   The Experience of Interactivity

It is true that Benjamin [5], reflecting on the effects of the cinema on the sensory body of the viewers, already announces there, to some extent, the ability to think, for example, the movie theatre as an ambience capable to establish a dwelling condition that is diverse from the one experienced by modern life. Benjamin calls our attention to a type of fruition of the image that is different from the one experienced until then: the technical reproducibility in the arts, mainly represented by the photography and film, destabilizes the traditional model of the contemplation – which is based on a mainly rational association – and transforms it to an immediately sensory perception model. This notion is founded by Benjamin to point out what he calls "disruptive effect" of cinema, able to "target" the viewers in its most immediate layer, in a primarily aesthetic effect, not rational.

Likewise, it must also recognize that Benjamin's interpretation of the relationship between spectator and film technology reflects a certain idea of communication as mechanical transmission of messages, an idea that delimits quite clearly the boundaries

between the subject that perceives and the perceived thing. This relation, to some extent, is described as almost without possibilities of intervention by the spectator itself, that, when is "targeted" for such images would not be able to do anything more than to react in a certain way to its effects. Not much beyond a relation between stimulus and response.

Direct symptom of that seems to be the very importance that Benjamin attributes to the film and its ability to release the public of their lethargy simply because of a shock effect of its moving images on the sensory apparatus of the spectators[4]. Saved all the great importance of Benjamin's reflection, what seems to announce here is therefore a fundamentally dual interaction model – spectator and screen, human and machine – that will be reproduced by several researchers of the image, evidently with interesting variations, but that, in most of the cases, ends up culminating in a still dualistic reasoning. The terms may vary: "interaction" is, at times, replaced by "interactivity"; in others, it appears to be equivalent; however, it would not be an exaggeration to say that, in general, there is a certain tendency to draw clear boundaries between a human element and a technological element and, from a more accurate perspective, on converging them to a supremacy of the first one. The action tends to be bound fundamentally to this human dimension.

In a slightly different context, characterized by the advance of the electricity and the consequent advent of the electronics, Ascott [7] explores the topic of human-machine inspired by the fundamental view of the Norbert Wiener's cybernetics [8], noting, instead, the possible changes that the computer could bring to artistic experimentations. Although spectator and machine appear here under a perspective still quite definitive, with clearly defined roles, it is certain that an important space of unpredictability in the relationship between them is opened, something that the prospect of Benjamin's disruptive effect does not seem to admit. This would allow us to say that, for Ascott, there is a more open concept of interaction, a perspective that gives us some gaps within which we may trace the high level of participation of current technologies as performers or even action producers [1].

The experimental efforts in the second half of the twentieth century, particularly after the 60's, will thus be strongly marked by the presence of new technologies, exploring, in good part, the interaction potentialities offered by them: interaction that could have effect among the spectators themselves or even between the spectator and the artwork. Admittedly, the Bauhaus, decades earlier, would be an important inspiration for this, but the proliferation of computer and video, and the ease of access to them would lead the experimentations to consequences never before imagined. The presence of these new technologies in performance, happenings and even in conventional arts, would lead to an absolutely multifaceted scenario, disfiguring the classic separation between "fine arts": the new genres of video art, art installation, dance theatre, and cyberart are other important examples, creating many possibilities for reconfiguring the very idea of interaction or interactivity with such devices.

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[4] More on this model of the fruition of the technological image, also called "distracted attention", in Benjamin [6].

In order to organize this panorama, Julio Plaza undertakes a specific reflection on the notion of interactivity and what he calls the "degrees of openness of the artwork" to the reception. Plaza attributes "a plurality of meanings" to the first of the three degrees, a plurality that would allow a certain freedom of interpretation by the spectator. These degrees grow according to the opening of the artworks to participation: in the second degree, the artwork can be manipulated or even modified by the spectator, although this happens in accordance with certain restrictions. To the third degree of openness, however, it is reserved a particular way of interactivity, with a more active participation, which Plaza exemplifies with artworks constructed in interaction with the computer. As asserted by him in these last cases, "the interactivity is not only a technical and functional convenience; it implies physically, psychologically and sensitively the spectator into a practice of transformation" [9]. As we see with this analytic perspective, Julio Plaza seems to cover the various modes of interaction "author-artwork-reception"[5], although ultimately, he still seems to situate the action on the human element: no wonder his model is based on the degree of "activity" of the spectator.

In a similar effort, Edmond Couchot calls into question the relationship between author, artwork and spectator. He says that the exercise of the latter, in the digital interactive art, no longer would be reduced to the role of contemplating, but to the role of expanding the artwork, of "enlarging it" and, ultimately, of providing the very existence of it, insofar as, without interaction, the artwork would remain as a "not perceptible computational potentiality". The production of the artwork would thus take shape in a real verbal, visual, gestural or tactile dialogue between author and enjoyer [10], an idea that later would be developed by Couchot in his concept of "second interactivity" [11].

These examples of reflections on the concept of interaction and interactivity seem to constitute a way of thinking that reinforces one aspect of frontality between the subject that watches and the artwork watched, although there is a major effort to point out the attempts of "openness" of contemporary artworks. The direct consequence of that – which justifies our discussion – is that newly presented technologies tend to explode this logical interaction: they no longer seem to function according to these models, not even within the concept of "interaction" or "interactivity". But how particular would these technologies be to require new models of interpretation? That is what we intend to discuss in the next section of this paper.

3   The Post-virtual Reality: The Experience of Connectivity

The discussion about "art forms" – if we can precisely use this mode of expression – or even about "categories" in the arts, tends to become considerably more explosive when it counts as a special ingredient: the participation of new technologies of image, in particular, digital devices that in many cases seek to reposition or, in the limit, reread certain traditional practices. It was and still is the case, for instance, of the use of

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[5] Expression that gives the title to his paper [9].

software or electronic interfaces in the production of new sound styles[6] or the example of insertion of video technologies in the creation of new scenic forms, seeking to bring together traditional elements within the known formats of theatre, film or performance[7].

But it is about the painting that we would like to present an interesting case suggesting the disruption of the frontality boundaries, which seems to mark the relations between art and technology as they are experienced nowadays. We bring here the example of Google Tilt Brush[8], a device released by Google in April 2016 which has fostered a number of experimentations in the visual arts, design, and even in the diverse and dynamic world of games. Armed with virtual reality glasses and a number of resources that are available by the device software, the user has at his or hers disposal a wide range of work tools with which he can draw on the immersion space offered by the glasses, with the possibility of adding diverse 3D visual effects to this new ambience: brightness, movements and colors in the most different shades[9].

The repercussion of the device and its potentialities has generated a number of initiatives, both inside and outside Google. Among the most important of them, it is the creation of an artist residency program, the Tilt Brush Artist in Residence (AiR), which assembled more than 60 artists, according to the company, "from a variety of disciplines", including "graffiti artists, painters, illustrators, graphic designers, dancers, conceptual artists, creative technologists and cartoonists"[10].

Another interesting result of this movement is the emergence of what could point to as a new kind of artistic practice, which has brought together traditional operating modes, and the dynamics and infinities of features offered by the device. An emblematic case about this is the meeting of graffiti conducted by Opposable VR in Bristol[11], United Kingdom, or, above all, the works of the artist Anna Zhilyaeva, which bring together Google Tilt Brush effects to the paper, the canvas, the brush or the crayon[12].

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[6] This is the case of free improvisation experiments, which seek to break the limits of the idea of musical note, exploring, much more, its dimensions as "sonorities". More in [12, 13].

[7] On the participation of digital technologies in the contemporary performing arts, see [1].

[8] It is worth checking the homepage of the device, with information and videos on the modes of operation and some potentialities of the resource. Available at: <https://www.tiltbrush.com/>. Accessed on: 09 May 2017.

[9] The Google Tilt Brush homepage highlights: "Painting from a new perspective. Tilt Brush lets you paint in 3D space with virtual reality. Your room is your canvas. Your palette is your imagination. The possibilities are endless". Available at: <https://www.tiltbrush.com/>. Accessed on: 09 May 2017.

[10] As Google describes in the Youtube page dedicated to AiR. Available at: <https://www.youtube.com/watch?v=LBJPIgNXUDI>. Accessed on: 09 May 2017.

[11] Meeting held in December 2015, even before the official launch of Google Tilt Brush, in April of the following year. A brief video of the meeting can be viewed on the Opposable VR channel on Youtube. Available at: <https://www.youtube.com/watch?v=jtoLmZwbyG0>. Accessed on: 09 May 2017.

[12] About Zhilyaeva's artworks, access her Youtube channel, available at: <http://www.youtube.com/channel/UCKEfXMw7538wvuulXy_RNcQ>. Accessed on: 09 May 2017.

The advent of Google Tilt Brush can lead us to many issues, but the most evident one, and the central point of our paper, is to investigate the nature of the experience of the device user, as an artist, a "builder" of the artwork or an enjoyer of it.

On the one hand, in relation to the artist's work, we can glimpse a certain recovery of the gestures of drawing and traditional painting[13], something that the computer, from its keyboard or its mouse, had reduced to the mere touch of buttons. The "new painting" seems to be emancipated from the fingertips, arms, and a static body of the painter, to remake the most daring gestures, able to describe themselves, the very strength of the created images. We could perceive, in this case, a certain reconfiguration of the painting as a body performance, brought to the limits by the intensity of the contemporary works of Ushio Shinohara or Franck Bouroullec, for example.

On the other side, but very close, there is the point that interests us and that could be described as a transformation of the relationship between artwork/spectator, also taken to its extreme by the device: this transformation would be characterized especially by a dissolution of frontality between these instances, a dissolution that would even confuse them in the end. Thus, as a result of this dissolution, we would point three other effects: the destabilization of conventional notions of time and space; the shuffling of concepts of subject and object; the advent of a new form of fruition, which challenges the expression "virtual reality". Each of them is briefly discussed below:

1. The destabilization of conventional notions of time and space: when we experience artworks like the ones of Steve Teeple (known as Teeps) or Tamiko Thiel, artists of Google AiR Program, we are immersed in a condition in which the cardinal points seem to get completely overwhelmed, bringing what Massimo Di Felice characterizes as a "loss of sense of place" [15].
   This spatial disorientation, accompanied by the result of a time confusion, is related to what Di Felice characterizes as an "atopic form of dwelling"[14], an expression that here is very timely. In environments built by these artists, we are immersed in "atopic" spatiality and temporality in the sense of "a-topos", or "out of place", "paradoxical", even "strange". The loss of these references would lead us, ultimately, to a certain physical discomfort, a common reaction among those who first experience the 3D glasses.
2. The shuffling of concepts of subject and object: the separation that traditionally outlines the relationship between the spectator and the oil on canvas that he contemplates, in the constructed experiences, seems to migrate to another condition in which the action provoked by the artwork merges with the action of the spectator-subject himself. Therefore, the operation dynamics of it with the various

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[13] As Borges Junior briefly pointed out in [14].

[14] According to Di Felice, the digital technologies provide new ways of inhabiting the contemporary world, completely influencing our perceptions of time and space. These devices would not only be an "extension" of our bodies, as McLuhan asserts [16], but rather elements endowed with "action", in constant relation with humans and other organic and inorganic entities. As Di Felice adds: "The atopic form of dwelling is thus characterized as a 'transorganic' form of the being that begins to experience its own essence and existence itself through a hybrid and *protean* form capable of changing the spatiality and its perception by the dress of an interface or software" [17]. Italic by the author.

elements of the artwork is the founder and characterizer aspect of this experience. In this sense, placed next to that ambience and, at the same time, literally "inside" it, the boundaries between spectator and artwork, subject and object, which mark the notions of "interactivity" – especially those that we have just briefly discussed –, fog in favor of a relationship that seems to describe otherwise something that is also able to express the action of non-human elements: those that, in some way, leave some kind of "trail" [18].

There arises another kind of interaction, a "connectivity" [4]. Distinctly from "interactivity", which presupposes a relation *between* elements of different natures (organic and inorganic, e.g., human and computer; artist and work), the concept of "connectivity", referring precisely to the universe of digital networks, refers to a condition in which the original nature of such elements is converted into a third and only format: information, capable of bringing together organic elements to inorganic elements and convert them into a nature not exclusively organic or inorganic, but hybrid, which we call "transorganic" [4]. In so far as everything is transformed into "connected information", the notion of interactivity seems to make no further sense, for it denotes an idea of "distinction" *between* two entities, presupposed separated. In this new condition, space and time are converted in that format, in which physical spaces and bodies merge to the informative nature of the ambiances offered, for instance, by Tilt Brush. The result is a symbiotic relationship between the various elements, clearly distinct from each other (humans, technological devices and territorialities), but whose relationship suggests the overcome of the duality subject/object, and thus the mere logic of stimulus/response. The relation of "connectivity" becomes more complex and, therefore, leads to a problematization of the own roles of the artist, artwork and spectator.

3. The advent of a new form of fruition: these artworks signal thus for the emergence of a new feeling, which destabilizes the very traditional notion of fruition, without limits between "inside" and "outside", referring, in turn, to Edgar Morin's "*principe hologrammatique*": the whole and the parts are not defined by clear boundaries, they amalgamate themselves and belong to each other, without losing, however, its specificities [19]. Thus, we propose in this paper, the passage of a dimension of "interactivity" to a perspective of "connectivity": these artworks, from the way they articulate the spectator and the technological devices as well as the way they operate the notions of space and time, suggest us no longer an interaction of elements of a diverse nature, artwork/spectator or artwork/artist, but another relation, "connective", that transforms the "ecology of interactions" [4].

In this new context, older dilemmas between online and offline, real and virtual, do not fit since the connectivity condition seems to break such extremes: it emerges there another form of reality, a "post-virtual[15] reality" that no longer distinguishes material and immaterial and therefore orders us an intensification of feeling, able to activate in us much more than just the vision. The vision is constituted in the primal sense of what can be called "Virtual Reality" or, ultimately, of "Augmented

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[15] "Post-virtual" which here is re-signified and is not related to other examples of employment of the term, as in [20].

Reality". In the post-virtual reality, the feeling is kinesthetic; in it, the art no longer pursues the obligation to mimic the reality, but it is operationalized by the creation of a new reality.

4   Conclusions

What we propose here is much more an attempt to question the concept of "virtual reality", in the face of the advent of a different dwelling condition that has been brought by new technological devices, than a detailed presentation of representative cases of the potential of these technologies.

As a track to this, we chose to question the concept of interactivity and its theoretical suitability as a way of thinking the nature of relations that are made possible by these new devices. We hold, therefore, that such concept – in the way it suggests to guard a distinct separation between artwork and spectator, subject and object, and thus still maintaining a frontality among them – ultimately clash with the numerous possibilities offered by technologies like Google Tilt Brush, and its artistic works, which seems to break through the boundaries of the frontality of the painting. As a result, we point out a destabilization of conventional notions of time and space, and, ultimately, an advent of a new form of fruition, which we describe as an experience of "connectivity", and we relate to the emergence, in these artworks, of another condition that we call "post-virtual reality".

Our effort integrates, in a wider perspective, an attempt to reread the technological phenomena of our time mainly when they seem to exercise a direct action on various fields of modern life. As a scientific work, it is an evolving process that is therefore open and subject to the productive contributions of other reflections.

References

1. Borges Junior, E.: Tecnodionysos: Digital Technologies and Networked Action in the Contemporary Scene. ECA/USP, Sao Paulo (2014)
2. Lévy, P.: Qu'est ce que le virtuel? La Découverte, Paris (1998)
3. Beiguelman, G.: Admirável mundo cíbrido. In: Brasil, A., et al. (eds.) Cultura em Fluxo: novas mediações em rede. PUC Minas, Belo Horizonte (2004)
4. Di Felice, M.: Net-attivismo: dall'azione sociale all'atto connettivo. Edizioni Estemporanee, Roma (2017)
5. Benjamin, W.: Illuminations: Essays and Reflections. Edited by Hannah Arendt and translated by Harry Zohn. Schocken Books, New York (1969)
6. Arantes, O.B.F.: Os novos Museus. Novos Estudos CEBRAP, no. 31, Sao Paulo (1991)
7. Ascott, R.: Behaviourist art and the cybernetic vision. In: Packer, R., Jordan, K. (eds.) Multimedia: From Wagner to Virtual Reality. W. W. Norton & Company, New York/London (2002)

8. Wiener, N.: Cybernetics, or Control and Communication in the Animal and the Machine. MIT Press, Cambridge (1961)
9. Plaza, J.: Arte e interatividade: autor-obra-recepção. ARS, Sao Paulo, vol. 1, no. 2, pp. 9–29, p. 15 (2003)
10. Couchot, E.: A arte pode ainda ser um relógio que adianta? O autor, a obra e o espectador na hora do tempo real. In: Domingues, D. (ed.) A arte no século XXI. UNESP, São Paulo (1997)
11. Couchot, E.: Des images, du temps et des machines dans les arts et la communication. Actes Sud, Paris (2007)
12. Costa, R.: Música errante: o jogo da improvisação livre. Perspectiva, Sao Paulo (2016)
13. Solomos, M.: De la musique au son: l'émergence du son dans la musique des XXe - XXIe siècles. Presses Universitaires de Rennes, Rennes (2013)
14. Borges Junior, E.: Forma espetacular e imagem bipolar: reflexões sobre abstração e concretude na fruição da imagem midiática contemporânea. In: XXXIX Congresso Brasileiro de Ciências da Comunicação, pp. 1–16, p. 13. Intercom, Sao Paulo (2016)
15. Di Felice, M.: Paysages post-urbains: la fin de l'expérience urbaine et les formes de l'habiter. CNRS Éditions, Paris (2016)
16. McLuhan, M.: Understanding Media: The Extensions of Man. Routledge & K. Paul, London (1964)
17. Di Felice, M.: Paysages post-urbains: la fin de l'expérience urbaine et les formes de l'habiter, pp. 268–269. CNRS Éditions, Paris (2016)
18. Latour, B.: Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford University Press, New York (2007)
19. Morin, E.: La Méthode, vol. 5. Séuil, Paris (2003)
20. Beiguelman, G.: Arte pós-virtual: criação e agenciamento no tempo da Internet das Coisas e da próxima natureza. In: Cyber-arte-cultura: a trama das redes. Seminários Internacionais Museu Vale, Vila Velha, pp. 147–171 (2013)