Reviews

Daniele Rossi
Realtà virtuale: disegno e design
Aracne editrice
Canterano (Roma) 2020
136 pp.
ISBN 978-88-255-3370-5

Daniele Rossi's book, entitled *Realtà virtuale: disegno* e *design*, tackles a highly topical issue. The methodology of virtualization of reality perceived through an HMD (Head-Mounted Display) system, i.e. a device equipped with a stereoscopic optical system for the dynamic fruition of a digital scene, is reaching its full maturity. Let us not forget, in fact, that the first essay dealing with this subject was written by Ivan E. Sutherland in 1965 [Sutherland 1965] and the first working system was presented by him a few years later [Sutherland 1968], just after the invention of the first digital drawing instrument [Sutherland 1963]. But on closer inspection, the systems used until a few years ago showed many criticalities that prevented their complete and ideal use, well described in this volume. And it is no coincidence that the author used, as the cover image, a figure that well exemplifies one of the qualitative improvements that is guaranteeing the rapid diffusion of the system: a digital mannequin with a controller in its hand, which materializes in another position thanks to a teleporting process.
This is not a technical-didactic manual–as Rossi reminds us in the introduction–but "a text to accompany and introduce some problems concerning apparently peripheral issues" [p. 11]. That is to say, the intention is to offer a brief overview that touches on the subject of virtual reality in its various aspects relating to the definition, the syntax of dynamic visualization, the diachronic evolution of the total vision paradigm, the peculiarities of the immersive tool, and its "narrative potential"–as defined in the title of the last chapter by Rossi himself [p. 89]. Two appendices are added to these themes: one by Federico O. Oppedisano, on the theme of the relationship between cinema and VR, and one by the same author on some suggestions regarding the best practices to adopt in setting up a virtual scene. The afterword, by Franco Cervellini, underlines some of the book's points of interest, followed by the bibliography and the sources of the illustrations.
The first chapter [pp. 11-23] opens with the need to define terms that are still full of ambiguity today–such as 'image-based VR' and 'model-based VR'. The many neologisms with the prefix VR, in fact, with their relative more or less direct declinations–one thinks of 'Augmented Reality' and 'Mixed Reality'–have often produced disorientation in those who approach this subject for the first time, but also in those who have been dealing with it for some time. In the second chapter [pp. 25-35] Rossi tackles, in general terms, the syntax of VR, offering comparisons with other forms of narration, such as photography and cinema. The static nature of the frame, even in the dynamism of filmic contents, is clearly different from the actual dynamism of a user observing through a virtual helmet, in which the

movement of the head leads him to a totalizing perceptive experience. In the end, the author wonders whether this new mode of observation might not be a prelude to a new grammar, which would also lead to an innovation in cinema-going.
The third chapter [pp. 37-65] outlines a synthetic evolution of 360° vision since its origin at the end of the 18th century. Robert Barker's patent of 1787 opened the evolution of the "*nature à coup d'œil*" [Barker 1796] as the so-called panorama was defined (a term actually used only later) by Barker himself, proposing a completely new architectural typology that allowed to capture the totality of a figure painted on a circular surface. A number of significant examples of panoramic rotundas are exhibited, up to the point of describing the transition from the static image–painted on canvas–to cinematographic projection, using a system of synchronized projectors–such as the one used by Raoul Grimoin-Sanson at the *Universal Exhibition* in Paris in 1900, known as *Cineorama*. In this case the mechanism will have an evident sequel in the *Cinerama*–even nominally similar to the previous one–which will modify the cinemas to exhibit this new figurative modality: the techniques of shooting using several cameras at the same time, evidently corresponded to several cinema projectors to show the film sequence on a development of about 150° of angle. To this is added the description of more or less evolved visors: from *View-Master*, to Morton Heilig's *Sensorama*, to Ivan Sutherland's *Sword of Damocles*, which anticipate the VR systems *stricto sensu* that we are talking about today. In addition to the text, we would like to point out the two experiences, not mentioned in the book, of 'Imax cinemas', with wrap-around theatres whose double-curved screen can be observed with special stereoscopic viewers, and of '3D cinemas', which had their effective large-scale baptism in 2009 with the screening of the film *Avatar* directed by James Cameron. As an indication, we also suggest the coincidence between the anonymity of the nineteenth-century rotundas–which cannot be traced back to relevant designers–and the aforementioned three-dimensional fruition halls, which were also designed and built by technical experts who cannot be identified with well-known architects, therefore devoid of authorship; in the possible long list of machines for dilated vision, we point out only two particular cases with an author's signature: Le Corbusier's *Esprit Nouveau pavilion*–with its two static dioramas with an urban content–and Walter Gropius's *Total Theatre*, whose design included precisely a plurality of screens and projectors that would envelop seated spectators [Sdegno 2019, pp. 107, 108].
The fourth chapter [pp. 67-87] discusses the perceptual characteristics of a virtual reality user, starting from the concept of "dynamic interactive perspective" formulated by Riccardo Migliari [Migliari 2008]. Rossi deals with terms such as motion perception, wayfinding, teleport, immersion, until he proposes a taxonomic list of virtual navigation systems, in order to identify similarities and differences between them and, even better, their advantages and criticalities. In addition, the author has carried out experiments with the University of Camerino group for the exploratory 3D simulation of the Basilica of Loreto, which has allowed a direct comparison with the technologies described and the practical verification of the reliability of these systems.
The last chapter by the author [pp. 89-101] is dedicated to the theme of narration. Daniele Rossi, in this case, questions what kind of narrative can be developed in a virtual scene, recalling that "storytelling needs to be rethought, as immersive VR experiences have greatly expanded the narrative potential" [p. 91]. Direct associations can be made with the world of video-gaming or with cinematography, even if it is indisputable that–as far as the latter comparison is concerned–a substantial aspect of storytelling is missing: within a virtual reality system, in fact, what could be defined as a real 'tyranny of space over time' is exercised, since the synchronic aspect predominates over the diachronic one, which is in fact–at present–completely absent. Let us remember, in fact, that although we move within an environment, time is frozen and we find ourselves perpetually in an 'eternal present', in which the flow of temporality is denied. Promising significant changes between time intervals, therefore, is perhaps one of the main challenges posed to developers of immersive environments. Let us recall, however, that it is precisely the mutual correlation between space and time that has allowed cinema to establish itself widely and to keep alive the interest of the same content for entire generations, while the characteristic of video-gaming–but also of any game [Baricco 2018]–lies in its recursiveness, in achieving an immediate goal and not condensing in the individual's memory a story so significant as to constitute an experience based on memory.
In Oppedisano's appendix some concepts already expressed by the author are taken up and further developed, especially regarding the relationship between VR and cinematography and the topic addressed in the last chapter, that is the narrative aspect of the system.

The author proposes to consider "the production of cinema in virtual reality" as "a new type of filmic representation" [p. 112] adding that this "requires the elaboration of new grammars for filmmakers, capable of creating experiential vocabularies to define alternative narrative models to the traditional ones" [p. 112] even if, at present, there do not seem to be significant developments in this sense.

Finally, Cervellini's afterword–after the technical appendix on the optimization of virtual spaces [pp. 119-127]–because here some concepts of a certain interest are put forward, albeit in a synthetic form: the need to rethink the historical nature of virtual reality, the subjectivity of the VR experience, the hope for a strengthening of the attention on digital contents, warning that the peculiarity of this figurative device "must not aim so much and only at a futuristic prefiguration, but also maximize the reflection on the conditions of the present" [p. 130]. The latter suggestion undoubtedly brings the theme of virtuality back to the center of a more general debate on the cultural aspects of the issue.

Alberto Sdegno

Author

Alberto Sdegno, Polytechnic Department of Engineering and Architecture, University of Udine, alberto.sdegno@uniud.it

Reference List

Baricco, A. (2018). *The Game. Torino: Einaudi.*

Barker, R. (1796). Specification of the Patent granted to Mr Robert Barker […] for his Invention or an entire new Contrivance or Apparatus, called by him *La Nature à coup d'oeil,* dated June 19 – 1787. In *The Repertory of Arts and Manufacture*, pp. 165, 166.

Migliari, R. (a cura di). (2008). *Prospettiva dinamica interattiva. La tecnologia dei videogiochi per l'esplorazione di modelli 3D di architettura*. Roma: Edizioni Kappa.

Sdegno, A. (2019). Geometrie dello sguardo totale. In P. Barbarewicz, F. Cremasco (a cura di). *Landscape rates*, pp. 105-119. Sesto San Giovanni: Mimesis.

Sutherland, I.E. (1963). Sketchpad. A Man-Machine Graphical Communication System. In *Proceedings of Spring Joint Computer Conference*, Vol. 23, pp. 329-346.

Sutherland, I.E. (1965). The Ultimate display. In *Proceedings of IFIP Congress*, Vol. 2, pp. 506-508. <http://citeseer.ist.psu.edu/viewdoc/summary?doi=10.1.1.136.3720> (accessed 2021, November 20).

Sutherland, I.E. (1968). A Head-Mounted Three Dimensional Display. In *Proceedings of Fall Joint Computer Conference*, Vol. 33, pp. 757-764.