The Stereoscopic Art Installation *Eccentric Spaces*

Águeda Simó
University of Beira Interior
Portugal
aguedasimo@gmail.com

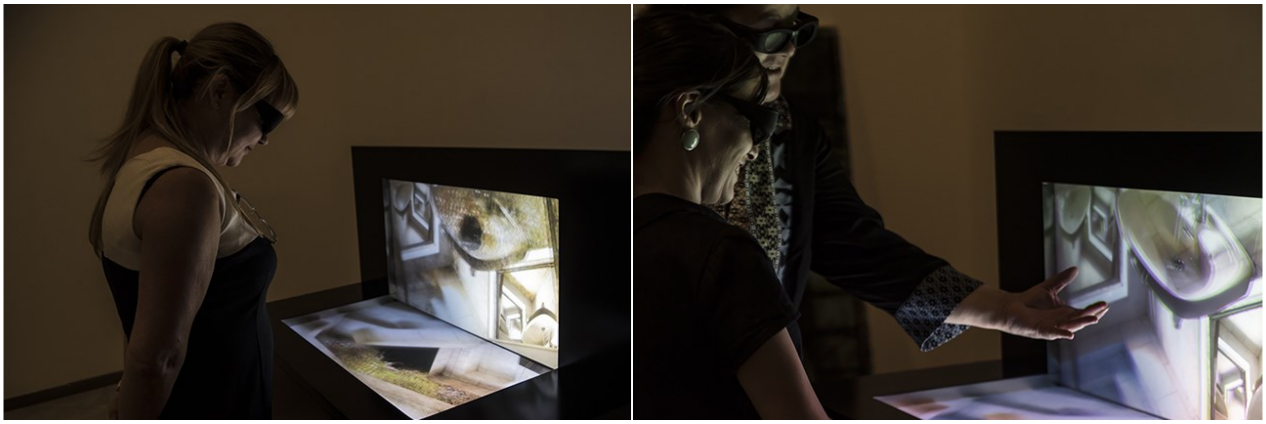

Figure 1: The stereoscopic video art installation Eccentric Spaces. © Author.

ABSTRACT

Stereoscopic techniques help to perceive spatial depth; hence they are used to create realistic representations of the three-dimensional world. They can also be used to manipulate spatial dimensions and create alternative spaces that challenge our understanding of visual reality. The video installation Eccentric Spaces is part of an art project that combines stereoscopic live action video with a Holobench-type display to depict alternative spaces that appear physically real.

CCS CONCEPTS

Applied computing → Arts and humanities → Media arts

KEYWORDS

Stereoscopic art installations, stereoscopic visual displays, stereoscopic live action video, stereoscopy.

ACM Reference format:

Águeda Simó. 2018. The Stereoscopic Art Installation *Eccentric Spaces.* In *Proceedings of SIGGRAPH, Vancouver, August 2018 (SIGGRAPH), 2 pages.* DOI: 10.1145/3230744.3230802

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the Owner/Author. Copyright is held by the owner/author(s).

SIGGRAPH '18 Posters, August 12-16, 2018, Vancouver, BC, Canada
ACM 978-1-4503-5817-0/18/08.
10.1145/3230744.3230802

1 INTRODUCTION

The challenge of representing the three-dimensional world on a two-dimensional surface has been addressed throughout history using different concepts and techniques. In Modern art, artists reexamined the nature of visual reality and created alternative kinds of space drawing concepts from mathematics, physics and philosophy [Henderson 2012]. In this respect, stereoscopy has contributed to the development of modern concepts and techniques to represent visual reality [Bantjes 2017] and offers exciting possibilities to create alternative spaces as it allows the exploration of spatial effects that would otherwise be impossible to achieve [Simó 2018].

2 STEREOSCOPIC TECHNIQUES AND DEPTH ILLUSION

Stereoscopic techniques are fascinating because they create immaterial entities that appear tangible and physically real. They can create the illusion of depth without any other visual cues. However, depth perception is a complex neurological process in which our visual experience and memories along with pictorial cues are important factors that cannot be separated when representing spatial dimensions [Dövencioglu et al. 2013]. Thus, the stereoscopic deconstruction and re-construction of a known, familiar physical space, such as a room, can only work if stereoscopic techniques and pictorial cues are carefully merged together; otherwise pictorial cues can override stereopsis and the illusion of depth could be lost. Interestingly, the stereoscopic synthesis of the three-dimensional space, because it need not operate according to the laws of physics such as balance and gravity, allows to create solid objects that seem to float in space [McLaren 1946]. Furthermore, stereoscopy allows the contraction and expansion of depth and its revelsal. Such properties make stereoscopic techniques a unique tool to manipulate spatial dimensions and create alternative kinds of space.

3 IMPLEMENTATION OF THE ARTWORK

Eccentric Spaces (Figure 1) unveils one possible alternative space by exploring ambiguities in space, dimensions and form. It shows an actual room whose dimensions intertwine and recursively unfold—behind and in front of the windows (Figure 2)—as they contract and expand within the stereoscopic space. Because of their peculiar L-shape, holobench-type displays can simultaneously show both front and top-down views, thus, they afford more places of observation than other systems that only use one screen. This property makes holobench-type displays an ideal visual display to showcase a kind of cubist space (i.e., a space with multiple perspectives).

The holobench structure, which houses two short-throw 3D-ready projectors, was made of wood painted black with two screens made of rigid acrylic material. The stereoscopic videos were edited without using any special programs or plugging for stereoscopic video editing. This choice led to many hours of post-production editing. One of the most difficult parts of this process was the spatial and temporal pairing between the horizontal and vertical projections. This work was very challenging because the entire scene, which spreads between both screens, is always changing and includes elements that move from one projection screen to the other. To accomplish such pairing, the videos were scaled down to fit side by side (SBS) on a passive stereo TV set used during post-production (Figure 3), and later returned to their original size (1920x1080).

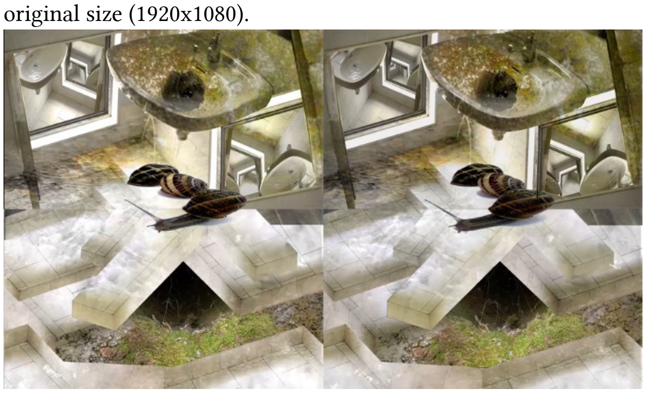

Figure 2: Stereogram. © Author.

The fluid and organic elements that move within the scenery—such as water drops, jelly fishes and snails—were recorded separately from different points of view and integrated in the post-production process using masks and transparencies (Figures 2 and 4). This process involved cutting and reassembling the original moving images in several distinct stereoscopic layers. Every object's convergence and pictorial cues were treated independently and according to the desired depth effect of the entire scene. The differences in interocular luminance and color, and between both the vertical and horizontal projections, were also treated; some flexibility was allowed as long as stereoscopic perception was ensured. This was a delicate and very demanding process, because of the inherent problems of stereoscopic images—e.g. the loss of stereopsis because of vertical disparities or incorrect horizontal parallax—that could lead to a broken perception of the stereoscopic space. Stereogram of Figure 2, shows how the virtual space, that protrudes from the screen and expands behind it, is stereoscopically consistent.

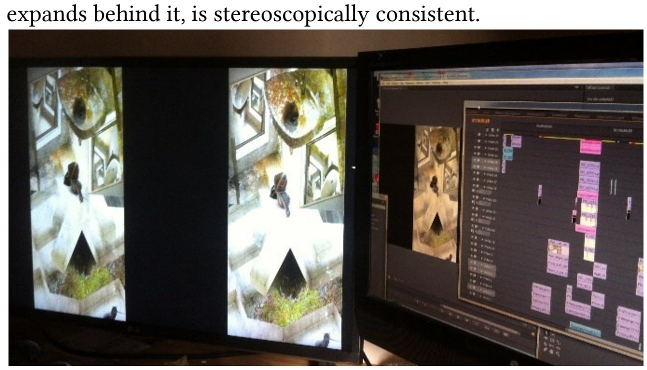

Figure 3: Stereoscopic SBS post-production. © Author.

Figure 4: Video compositing. © Author.

REFERENCES

L.D. Henderson, The Fourth Dimension and Non-Euclidean Geometry in Modern Art. Cambridge: MIT Press, 2012.

R. Bantjes. 2017. Perspectives bâtardes': Stereoscopy, Cézanne, and the Metapictorial Logic of Spatial Construction, History of Photography 41, 3, 262-285.

Á. Simó. 2018. The Virtual Reality Art Installation Endocytosis: Evolving from a Flat Land into a Three-dimensional World, Leonardo 51, 2, 124-127. DOI: 10.1162/LEON_a_01265.

D. Dövencioğlu, H. Ban, A.J. Schofield and A.E. Welchman. 2013. Perceptual Integration for Qualitatively Different 3-D Cues in the Human Brain, Journal of Cognitive Neuroscience 25, 9, 1527-1541.

N. Mclaren. 1946. Stereographic Art, unpublished document, accessed 25 January 2018 <http://online.sfsu.edu/hl/McLarenStereoArt.1946.jpg>.