Anisotropicities and inverted spaces of presence

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Abstract

The presentation features the author's series of interactive VR and AR installations audiovisual environments where human presence scale is juxtaposed with virtual representations of 'subverted materiality'. Several interconnected assumptions about space in contemporary physical sciences and sociology are used as inspiration for metaphors in spatial audiovisual gestalts.

Keywords

Immersive Analytics, Anisotropic metaphors, Manipulative aesthetics, Mental maps, Shared space

Introduction

Physicists use the term anisotropy to describe direction-dependent properties of materials (such as density, absorbance, refractive index etc.) when measured along different axes. Examples of anisotropy effects are the difference in speed of light, spectral characteristics, or electrical resistance on different axis. Cosmologists use the term to describe the uneven temperature distribution of cosmic microwave background radiation.

The series of author's works, created between 2002 and 2024 have a common investigative motivation: to explore the potentials proprioceptive audiovisual Gestalts focusing on illusory space (e.g. metaphors of integrated 'AV-spacetime puppetry', 'simulated anisotropy'), interaction and notation for audiovisual environments. [1] The works also collide several sociological concepts of space and indirectly refer to ideas by various authors such as *'dispositif'* by Foucault, role of shared space in knowledge creation, discussed by Lefebvre. [2] [3] [4] Another aspect is the technological augmentation of space, manipulation, and emergent behaviour in hybrid spaces. [5][6] Again, these artworks use these references are neither as purposeful illustrations nor critique of specific social phenomena but does not evade to expose oneself to expanded semantic ambiguity, common to many artworks, through intense non-verbal multimedia experience. This practice is also related to the emerging research area of Immersive Analytics, which is considered a fusion of recent developments in visualisation, auditory displays, computing, and machine learning. [7] These works operate and balance in the continuum between the extremes of purposeful serviceability of immersive analytics and the accidental multiplicity and ambiguity of explorative aesthetics.

Featured work series

These works created in the period between 2002 and 2024 are interactive installations – either self-running or sometimes navigated by the author as performance. They involve stereoscopic 3D projection and multi-channel sound and the material consist of several scenes with always some varying elements, as they are generated in real time.

Anisotropic view of presence (2009-2024)

The installation uses several sets of stereoscopic video / depth cameras and spatial sensors (Stereolabs ZED, Microsoft Kinect V2, Intel RealSense) in the room, that capture visitors' presence in a volumetric manner.

In an exhibition setting, human visitor bodies and space between them are 'inverted' by video processing and overlay of computer graphics - the solid visible bodies turn 'transparent', but the 'empty space' between the visitors regrows into a dense simulated 'metaphysical fabric'.

Figure 1: 'Anisotropic view of presence ', screenshot of installation

As the visitors notice in a 'virtual mirror' that their bodies are reduced to transparent silhouettes, the room between the people also reveal a presence of pulsating 'hybrid tissue', the structure of which is determined by metaphysical codes. Visitors can observe the traces left in the space by the movement of their own bodies and by previous visitors. In these synthetic 'landscapes', visitor's visual and acoustic perception takes part in an imaginary 'surgery on space'.

Active visitors through their gestures and poses can trigger chains of events, representing a relation between statistical probability and human intent. The semantics of space are 'revealed' as varying stages of complexity.

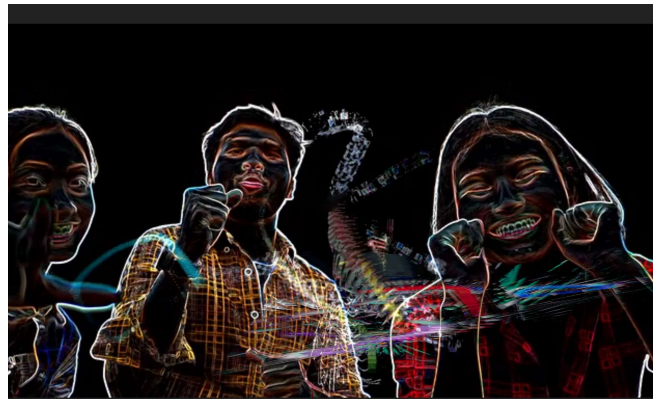Figure 2: 'Anisotropic view of presence ', screenshot of installation

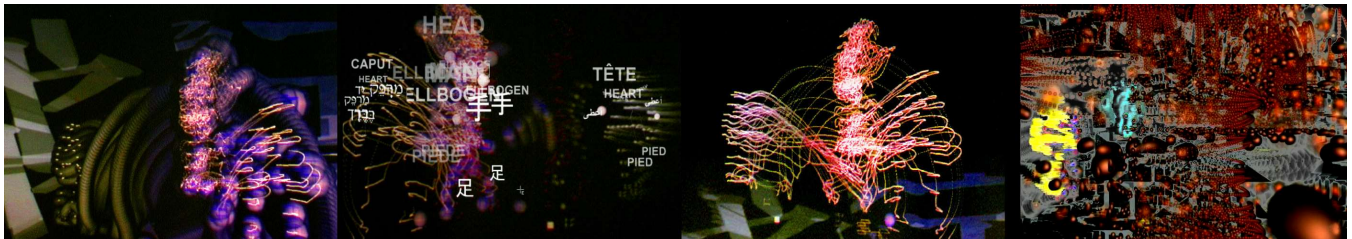Figure 3: 'Anisotropic view of presence ', screenshot of installation

Figure 4: 'Simulacrum Populi ', 4 screenshots of installation progression

Simulacrum Populi (2002 – 2004)

Metaphorical representation of human presence in biological, mental, and technological environment through imaginary hybrid meta-molecules – where adversary civilisations are tempted to consider each other as 'bio-memetic viruses', that 'infect' their habitat.

Etudes of Virtual Scenography for theatre (2005)

Audience was wearing 3D glasses for portions of the theatre piece, where actors occasionally appearing in front of scenery, moving within or behind of the VR scenery, thus extending and reversing the stage towards the audience.

Figure 5: 'Virtual Scenography for theatre ', 4 screenshots of scenery progression

Parallel/Land/Scapes (2004-2024)

Synthetic landscape-like scenes are generated form a large database of images and video sequences featuring stereo-scopic time-lapse video of skyline, weather, and vegetation changes, building site progress, overlayed with generative computer graphics. The work implies a statement that in the technologically mediated world, the visible reality, and human inner, mental experience of space through artificially made maps diffuses into a paradoxical composite image.
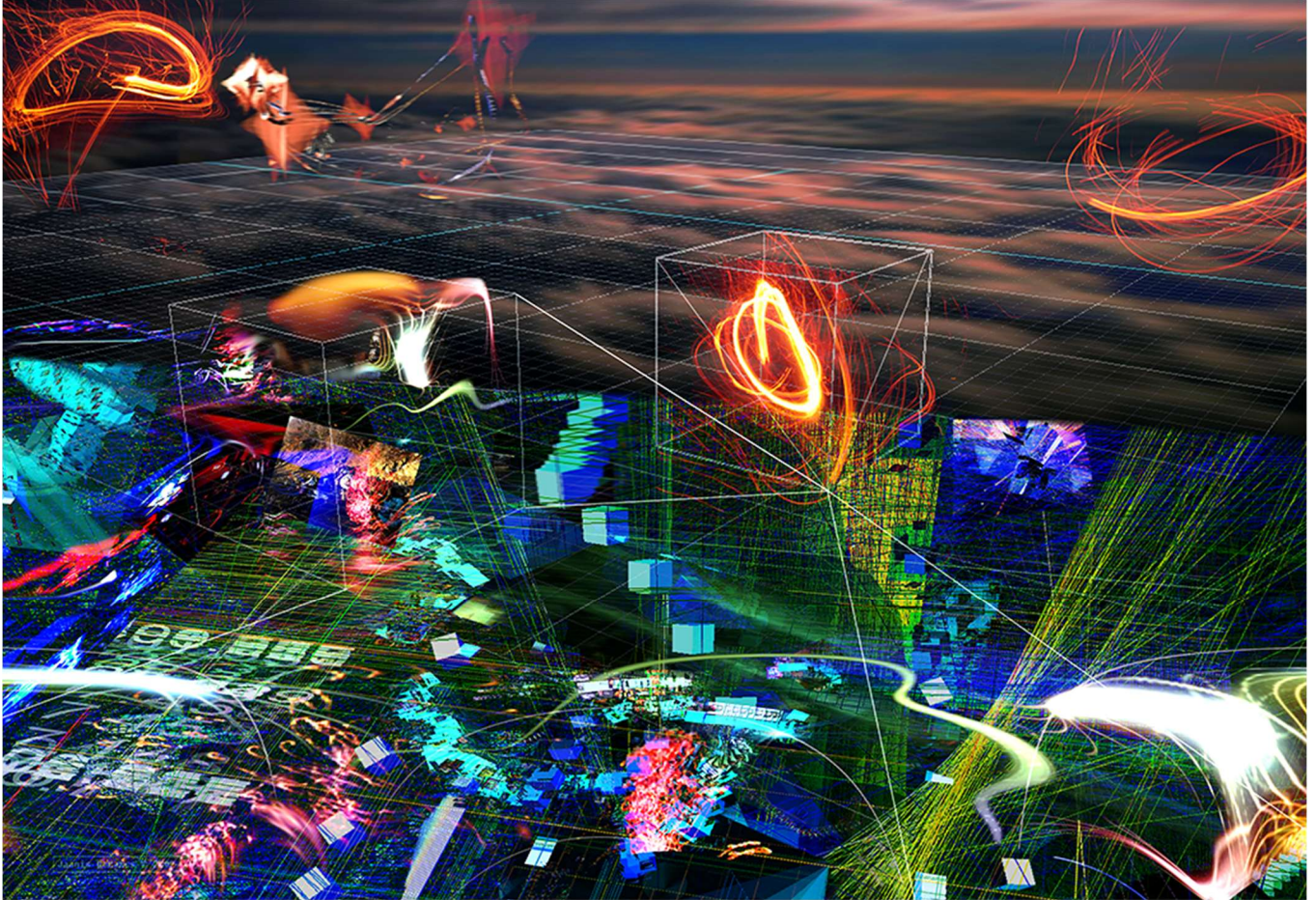
Acknowledgements

Figure 6: screenshot from 'Parellel/Land/Scapes'

References

[1] Emile Ellberger, Germán Toro Pérez, Linda Cavaliero, Johannes Schütt, Giorgio Zoia, and Basile Zimmermann, "Taxonomy and Notation of Spatialization." (TENOR 2016: International Conference on Technologies for Music Notation & Representation, 2016).

[2] Michel Foucault, "Of Other Spaces (Des Espace Autres)". (March 1967) *foucault.info*

[3] Henri Lefebvre. *The right to the city*. In E. Kofman & E. Lebas (Eds.), Writings on cities (pp. 147-159). (Cambridge, MA: Wiley-Blackwell 1996) (Original work published 1968)

[4] Henri Lefebvre, *The Production of Space* (Blackwell, 1991).

[5] Christian Stiegler, *The 360° Gaze - Immersions in Media, Society, and Culture* (The MIT Press, 2021).

[6] Antoinette Rouvroy, *The End(s) of Critique: Data Behaviourism versus Due Process* (Routledge, 2013).

[7] Richard Skarbez, Nicholas F. Polys, J. Todd Ogle, Chris North and Doug A. Bowman, "Immersive Analytics: Theory and Research Agenda". Frontiers in Robotics and AI 6 (Sep 10, 2019).

Author Biography

Jānis Garančs is an artist and immersive media researcher exploring perceptual phenomenology of spatial audiovisual expression. After initial training in classical fine arts and music in his native Latvia, he further studied video and computer art at the KKH (Royal Institute of Arts) in Sweden, and audio-visual media at the KHM (Academy of Media Arts) in Germany. Since 2000 his primarily work medium is interactive multimedia installations and performances, mainly using immersive media: stereoscopic imagery and multi-channel audio. He has contributed to various international media art community events as artist and presenter in events like Ars Electronica, Transmediale, ISEA, Expo 2000 World Exhibition and in venues such as Centre Pompidou / Paris; BNMI / Banff; SAT / Montreal; V2 / Rotterdam; ICA / London, RIXC / Riga. During 2024 he is also a Visiting Researcher at Aalto University, Finland, and has been involved in several international research projects and is a co-founder of the RIXC Centre for New Media Culture in Riga.

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