

Structural Montage for Immersive Cinema – an Experiment in Transposing Fulldome to VR

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Abstract

For the experiment presented here, we have transposed an immersive film that was designed using the structural montage approach, a film for large-scale, public viewing in a fulldome planetarium theater, into a personal viewing sphere on a virtual reality headset. The goal was to test the technical constraints and perceptual conditions that arise in the VR format for an existing fulldome film. How do the reduced resolution in both the image and audio components affect the immersive experience? How does the reduced angle of view and fixed screen distance change the perception of the film? The poster includes workflows for image transposition from a fulldome, “fisheye” master to a equirectangular, “lat-long” format suitable for headmounted display and the conversion of a pre-mixed, 5.1 surround soundtrack to a binaural stereo mix.

Structural Montage

Structural montage explores the concept of montage, the process of selecting, editing, and piecing together separate elements in the visual arts, poetry, and literature, but especially in the forms of cine-installation and immersive cinema. Our notion of structural montage addresses the basic principles of cinematic montage in relation to a three-dimensional, architectonic or virtual screen as a spatio-temporal experience. Immersive cinema affords an expansion of the signification structure of a film from a contained image plane outwards into a boundless projection space. The narrative can unfold based on the viewer’s own, directed attention, engaging the body and memory in the act of watching the film. The expansion of the cinematic event into an immersive field of spatial simultaneity and ambiguous sequentiality facilitates the creation of a non-linear and poetic, embodied experience.

Immersive cinema is a frameless cinema experience that can extend from the hemispherical projections of Omnimax and planetarium fulldome theaters to the spherical image space of virtual reality. In each of these formats, viewers experience a motion picture space that occupies their entire visual and acoustic perceptual field. Expanding on single-screen editing techniques, structural montage develops a rhythmic, associative montage for immersive formats within the plane of the image. It emphasizes a spatialized structure of elements over linear temporality as the axis of composition. The immersive film *Moonwalk*[1] exemplifies the structural montage approach. An experimental film about the Moon, *Moonwalk* was designed for planetarium projection. In the film, images of the Moon fully occupy

the round volume of the dome’s hemispherical shape. Form and content intertwine.

In *Moonwalk*, time-based cells are distributed in a dynamic collage around the screen, taking advantage of the vastness of the dome’s apparent image space to engage the entire body in viewing. Cells are displayed simultaneously as well as sequentially in time and surround the viewer on all sides. Spatialized sound and peripheral vision help guide the eyes around the dome.



Fig 1. *Moonwalk*, 2010, Clea T. Waite fulldome digital video, ©tw 2010.

Fulldome and virtual reality cinema experiences become significantly more immersive when sound is used to support and intensify the overall spatial impression of the event. For our VR experiment, we created a three-dimensional, binaural, headphone remix from *Moonwalk*’s finished 5.1 surround audio soundtrack, the standard for fulldome theaters, to complement the VR image. For ISEA 2016, we present our results in transposing sound and image of the fulldome film *Moonwalk*, designed for large-scale and public viewing, into a personal viewing sphere on a virtual reality headset, *Moonwalk_VR*[2].

References

- [1] Clea T. Waite, *Moonwalk*. Experimental. Fulldome digital video. 5.1 surround. Dur. 22min. 2010.
- [2] Clea T. Waite, *Moonwalk VR*. Experimental. 360 digital video. Binaural stereo. Dur. 22min. 2015.