

Solar fictions : A practical approach to simulate the sun's path around a white cube

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The objective of the research was to provide a device where the viewer can perceive the sun's path corresponding to the rotational motion of the Earth in a white cube. Projection of light through apertures on the walls was the symbolic image of this movement. How to design a device with parallel ray of light and a single rotating source to simulate the sun's path?

Technical and aesthetic challenges were:

- The creation of a light spot with parallel rays. The sun's rays appear parallel to our eyes due to the distance; the rays of artificial light diverge due to diffraction. The aesthetic intuition in the project is that the parallelism of rays suggests the distance of the source.
- The creation of four synchronized moving lights to have the impression of the rotation of a single sunlight around the white cube.

After testing several systems, four movable mirrors seem to be the best solution for both purposes.

To design a spot with approximately parallel rays of light, the first idea was to create a light with a big parabolic mirror in order to have parallels rays like in the optical theory, but it was too complicated to realize and to motorize. The optical project manager has pointed out that only 5 meters away from the projection surface, the rays seem quite optically parallel to our eyes. Two meters away from the source the reflectance on a plan mirror multiplied the length of the ray before it passes through the slit in the wall and touch the projection surface, which is equivalent to the length of 5m recommended.

The second objective was to design a system with four rotating lights sources, the solution found was to place an articulated plan mirror at a distance of two meters from

the light source and to articulate this mirror. The mirror was powered by 2 axes; one for the height of the azimuth and another for the East-West direction. The first motor was located around the X-axis and placed horizontally in the middle axis of the mirror, the second motor was located around the Y-axis and placed vertically in the center of the source at two meters away from the mirror.



Fig. 1: Parallels installation, 2012

The feeling of a unique mobile source rotating far away around the installation seemed to give the viewer the illusion present in the white cube of the simulation of the sun's path. The synchronization of the mirrors gave the viewers the sensation that they were embedded in the device like in a space and time continuum.

Parallels is an artistic installation created by Marie-Julie Bourgeois, artist researcher, in the EnsadLab research group from 2009 to 2012 and presented during the exhibition "leurs lumières"(1) in 2012.

(1) "leurs lumières" (Their lights) Catalogue of the exhibition from October 13rd to December 16th 2012, Centre Culturel de Rencontre, Abbaye de St Riquier, Baie de Somme, France, Curating by Jean-Louis Boissier.