



Proceedings of the Annual Design Research Conference 2019

Edited by Laura Harper

Published in Melbourne Australia, by Monash University, 2020

ISBN: 978-1-921994-52-4

The bibliographic citation for this paper is:

Sarosh Mulla and Aaron Paterson. "Penumbra Reflections." In *Proceedings of the Annual Design Research Conference 2019: Real/Material/Ethereal*, edited by Laura Harper, 496-503. Melbourne: Monash University, 2020

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Penumbra Reflections

Abstract

This paper examines the design and ongoing implications of an architectural exhibition entitled Penumbra Reflections. Based on the tectonic use of architectural media and experimenting with distorted spatial representation, Penumbra Reflections draws on ideas of penumbral shadow, the partial shadow that occurs between the umbra - the darkest part of the shadow, and full illumination.

Central to the project is a super-sized Claude Glass – a convex black mirror which was used by Picturesque painters in their editing and documentation of the natural landscape. Traditionally a small, hand held black mirror the glass was used to purposefully distort the reflection of a space to conform with pre-existing ideals of beauty. Enabling artists to alter and fictionalise their interpretations of realist landscapes. The device had a profound impact on the representation of the New Zealand landscape throughout the period of colonisation in the late 18th and early 19th Centuries, which in turn has had a profound impact on the definition of Architecture in New Zealand.

Penumbra Reflections brings the Claude Glass to an architectural scale by creating a vast three metre diameter convex black mirror, located within an aluminium framework design to explore the architectural grid as a system of organisation in the work of [...]. Enlarged, the mirror not only reflects space, but also meaningfully occupies and distorts it. Animating the installation, four projections viewed in the distorted face of the Claude Glass create two penumbral zones of half shadow, similar to that witnessed in a lunar eclipse.

[...] is a collaborative office engaged in critical practice research. The studio carries out architectural projects commissioned by private owners, as well as actively engaging in self-generated projects, often with a view to distilling and shifting the architectural preoccupations that occur in the built work. Large scale exhibitions have become the primary format of this reflective practice as they provide opportunities to interrogate spatial design tools at full scale, but without the regulatory constraints overlaid on permanent projects.

The most recent of these exhibitions, entitled *Penumbra Reflections*, was held in 2018 at Objectspace, New Zealand's most prestigious gallery for the exhibition of architecture and design. This paper describes the manner in which design themes present in [...]s work became collected and translated into the spatial experience presented within the gallery, as well as the ongoing implications of the exhibition for the built projects of the practice.

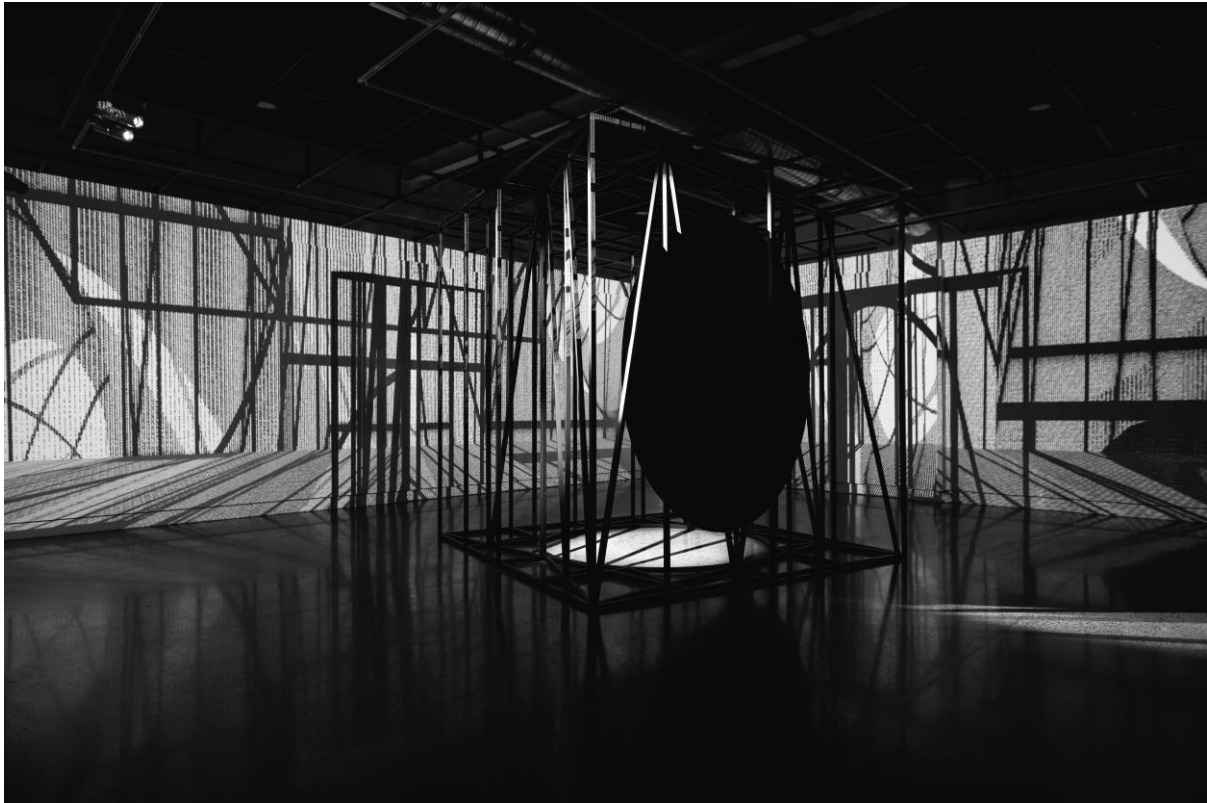


Figure 1. Penumbra Reflections at Objectspace.

The exhibition is underpinned by the notion of penumbral space. The penumbral space of architectural practice is thought of as a field for emerging ideas. It is a notional place of half-light on the edge, where ideas can be gently developed without the full scrutiny of the profession's legal boundaries. It is a space where new opportunities can be tested, broken and reformulated in the service of future projects without genuinely ruinous consequences for failure. From this perspective *Penumbra Reflections* focuses on how shadow effects can influence the occupation and representation of spatial environments. Uncanny and purposefully distorted representations of shadow are employed to create a penumbral space between a measurable grid and the ephemeral shadow within the gallery. Viewers are placed between the imagined future of architectural representation and the demonstrable physicality of the constructed reality. Distortion in representation and reality are embraced as sources for new architectural readings of the space.

Distortion is brought to the forefront in the creation of a giant Claude Glass. Traditionally the Claude Glass was a small hand held convex mirror with a black reflective surface used by Picturesque tourists in their appreciation and documentation of landscape scenes. The Claude Glass purposefully distorts the reflection of a space to conform to pre-existing ideals of beauty. As a tool in the European reimagining of the New Zealand environment following colonisation, the Claude Glass has had a profound impact on the representation and cultural appropriation of space in New Zealand.



Figure 2. Close up of Claude Glass surface reflection.

Within *Penumbra Reflections* the Claude Glass is brought to an architectural scale. It is foregrounded as a spatial device that meaningfully occupies space and which reflects all occupants of the space. Visitors to the exhibition find themselves distorted in its reflection along with the surrounding projections. Centrally located within the gallery, a latticed framework supports the giant Claude Glass. The framework is composed of two overlaid and twisted three-dimensional grids with diagonal braces. The latticed volume of this frame alludes to the use of overlaid grids as a system of organisation in the work of [...], as well as the consistent pursuit of multi-layered occupiable facades. The distortions of a Claude Glass change perception of the grid giving it a fluid quality.

At its base a large circular form interrupts the grid. The interruption in the gridded form creates a focal area within the structure, directly in front of the Claude Glass where visitors can stand and observe the distorted reflection. On the western wall of the gallery animated projections slowly shift and fade over each other. The light and shadow displayed on this wall is a complex composite of projected light, physical shadow and simulated shadow. Adding to this complexity is the introduction of projected textures and patterns drawn from screen printed drawings created in the design of the exhibition.

These patterns are applied as animations over a virtual model of the physically exhibited construct. Simply put, the objects that physically sit within the gallery have been digitally modelled prior to their fabrication and this digital model is used to simulate their likely shadow. This simulated shadow is overlaid on the textures and patterns in the animation. The result is that what is seen in the gallery is actually both a projection of light and shadow. The marginal incongruity of the simulated shadow with the physical shadow of the gridded structure and Claude Glass produces another blurry penumbral edge between reality and simulation.



Figure 3. Projections generated from simulations.

The viewer occupies an architectural volume that is defined by the slippage and quietly shifting penumbral shadows and reflections. The usually measurable and reliable format of a Cartesian grid is set up in the form of the framework and then terrorised at every turn.

A post medium practice

The installation critically subverts the will of the software to precisely simulate reality in favour of, slippage, distortion and subjectivity. The same movement happens with the physical objects created. For example, the Claude Glass included within the installation is a device of purposeful misrepresentation. It distorts the spatial reality in which you inhabit. Similarly, the metallic powder coatings on the frame shimmers brightly when viewed on a highly acute angle with glancing projections, however these same surfaces look dim and static when viewed perpendicularly. The position of your eye, relative to the frame and the light dancing over its surface is critical to your perception of *Penumbra Reflections*. This results in different viewers seeing the exhibition in different ways.



Figure 4. Projections over the surface of the gridded frame.

Rosalind Krauss in her text, *A Voyage on the North Sea: Art in the Age of the Post-Medium Condition*,¹ challenges the assumed specificity of traditional art forms like painting and sculpture. Krauss expands the modernist desire for 'pure' art forms and concludes, that as art mediums collide and the conceptual becomes possible, the project of art becomes

¹ Rosalind E Krauss, *A Voyage on the North Sea: Art in the Age of the Post-Medium Condition*, (London: Thames & Hudson, 2000).

broader. MOS Architects embraced the post-medium position in their book *Everything All at Once*² in which they make the case for a design model “where any type of architecture is assumed possible and where multiple discourses continue to emerge”.³ They argue for a practice model that expands beyond architecture, to produce software, scripting animations and installations, as well as built architecture, in their own playful and low-tech way. This is not a rejection of criticality or a ‘post-theory’ position, but an acceptance that architecture is represented through its mediums and that its definition is intrinsically elusive. For MOS, representation through multiple mediums is an important thread that binds together “disciplinary experiments”⁴ with their commissioned built work. The [...] approach to practice is aligned with this ethos with a parallel and complementary evolution of such experiments and commissioned built work. *Penumbra Reflections* is part of a post-medium practice, given it is a temporary installation of shadow that uses multiple combinations of mediums, including lighting apparatus, interpretive models and screen prints based on digital lighting simulations.

The installation *Penumbra Reflections* is an inhabitable drawing device that creates a collage of shadow and light to explore architecture as a consequence of the media used in the design process. We consider the work a preparatory drawing for a future built architecture and a marker in the ongoing development of our design methodology.

Implications on current projects

Since the exhibition of *Penumbra Reflections* several new projects have begun in the office of [...]. Most of these are still either being designed or are under construction. But invariably these projects have been tinted by a penumbral light in their design. In each project the ideas presented in the exhibition are explored in a different way. The way that shadow can be used to blur the spatial boundaries of the architecture has persistently bubbled to the surface in many projects.

For instance the simulation of shadow and lighting effects is pursued through landscape features in one project, while in another project it is explored by varying the reflectivity of the surfaces that enclose the building. In another project the blurry edge of the penumbral shadow is explored in a splay cut timber screen that seems to dissolve at its edges and

² Michael Meredith and Hilary Sample, *Everything All at Once: The Software, Videos, and Architecture of MOS*, (New York: Princeton Architectural Press, 2012).

³ Ibid, 15.

⁴ Ibid.

bleed the top edge of project into the sky above. The visual distortion that occurs when trying to perceive the underlying form is intentional.



Figure 5. Paice Avenue splay cut timber screen under construction.

The use of digital simulation tools in the creation of immersive media studies to understand this complex movement of light and shadow has also become a persistent theme in recent projects. The increasing use of VR and gaming engines such as Unity, have offered fertile ground for experimentation and the creation of further undisciplined drawings.

It is worth noting that the exploration of these ideas through built works is not reliant on scale or budget, but rather has been readily applied in a range of projects from the very large to the very small. The smallest project undertaken by the studio in recent years was a small pergola designed for a current client's mother. In this project the shadow created by the pergola was simulated throughout the year and the structural form was manipulated to allow greater screening of light in summer and greater transparency in winter. The result is a dynamic form which creates a continually changing quality of half-light as the house meets the garden through the day and year.



Figure 6. Penumbra Pergola detail.

Each of the project vehicles used in this line of inquiry have their own parameters, clients, climatic concerns and material palettes. The result is that the ideas of penumbral light, simulated shadows and purposeful distortion of form are approached differently in each outing. No single project provides an answer of sufficient completeness to the design question. Instead, each project contributes fragments of further experience as the studio continues to grapple with these techniques.

New translations

With new projects under construction and the public presentation of *Penumbra Reflections* coming to its first anniversary, [...] has begun preparing for a new exhibition to be opened in May 2020 at the Centre of Contemporary Art Christchurch. The new exhibition will build on *Penumbra Reflections*, but will also attend to new interests born out of the recent built projects. A kinetic wall is planned which will function as a super scaled drawing machine within the gallery. This wall will draw with light within the gallery and will interrupt the digital projection of orthographic views. Alongside the physical occupation of the exhibition gallery visitors will be offered a virtual experience of a short film set within a VR version of the gallery, complete with a simulated version of the physical exhibition. The inevitable slippage between reality and simulation, each with applied spatial effects, will again provide further ground for future built works.