

# Darkness, Interrupted

Caitlin Watson

Kliment Halsband Architects, New York, NY

watson@kliment-halsband.com

## Summary statement

Using the International Dark Sky Association's Dark Sky Reserve guidelines as a base, this project proposes the design of an astronomical observatory and researchers' housing in Death Valley National Park as a vehicle for exploring issues of cultural memory and bodied human perception. It considers the role of the built environment in preserving core aspects of our humanity and the potential for architecture to participate in crafting territories of resistance through envisioning alternative paths for future development.

## Topic

For ancient cultures, astronomy was crucial for astrological divination, tracking time, navigating, and telling stories. The night sky was the subject of intense observation, artistic representation, and religious ritual. While astronomy is no longer explicitly religious within modern Western culture, it remains a means of searching for answers about our origins and our place within the expanse of the Cosmos.

Koyré argues that modern man "lost his place in the world, or, more correctly perhaps, lost the very world in which he was living and about which he was thinking..." He describes this process as "the destruction of the Cosmos."<sup>1</sup> Inspired by the seemingly infinite potential of the celestial sphere, we have built up cities which project the heavens onto the landscape. However, man's attempts to fabricate orderliness through modern planning have destroyed our physical connection both to the sky and to our sense perception. The new urban lightscape has effectively erased the stars from our lived experience. This disruption of the natural order has drastic ecological implications, but it also poses less quantifiable threats including a broad cultural displacement and the loss of a direct experience of the night sky as an integral part of our shared human heritage.<sup>2</sup>

## Context

Although Death Valley has one of the darkest night skies in the National Park system, visibility has been seriously threatened by light pollution from Las Vegas and the surrounding area (Figure 1). The park service has begun taking steps to reduce local light pollution and has established a proprietary Lighting Management Plan to this end.<sup>3</sup> With its status as a National Park and UNESCO Biosphere Reserve, Death Valley's mission aligns with the core values outlined in the Starlight Reserve Concept of protecting cultural and natural conditions related to the darkness of the night sky.<sup>4</sup> The Concept maintains that a Reserve should place education about the

---

<sup>1</sup> Alexandre Koyré, *From the Closed World to the Infinite Universe* (Baltimore: The Johns Hopkins Press, 1957), 2.

<sup>2</sup> Fabio Falchi et al, "The New World Atlas of Artificial Night Sky Brightness," *Science Advances* 2, no. 6 (June 2016).

<sup>3</sup> Dan Duriscoe et al, "Guidance for Outdoor Lighting: Death Valley National Park," *Death Valley Lighting Management Plan*.

<sup>4</sup> The Concept "recognizes that light pollution must be considered as an imminent threat to the environment" and that "the preservation of dark skies is a necessary part in the safeguarding of natural and cultural properties worldwide." "Starlight Reserve Concept," UNESCO-WHC, IAU, UNWTO, OTPC-IAC, and CIE (March 2009): 5.

importance of darkness and its value as part of human tradition as one of its primary goals. This emphasis ultimately shaped the programming and development of the proposed project.



Figure 1. Map showing spread of light from Las Vegas to Death Valley. Image by the author.

The observatory will harbor two telescopes and will be headed by a lead astronomer acting as Director of Operations and Public Outreach and her husband, the Director of Archiving and Experimental Research. Each year they will accept up to 5 teams of researchers for use of the first telescope. The second is reserved for public programming. Regular guided tours will bring visitors through the observatory site, giving them a chance to experience the Reserve at peak darkness and to learn from the astronomers in residence.

Dark Sky Reserves are comprised of three radiating zones. The proposed core zone is the Racetrack Playa. No outdoor artificial lighting will be permitted in this area. The buffer zone surrounds the core, protecting it from damaging light, air, and noise pollution. A Visitor's Center and Astronomers' Housing are positioned within this zone at Teakettle Junction. The external zone provides additional isolation from major sources of encroaching light emission. This area extends all the way to Las Vegas, and cities within it are encouraged to adopt their own lighting management plans, slowly expanding the territory of the Reserve outward.

### **Astronomers' Housing**

The new facility at Teakettle Junction grows out of the landscape and is composed of concrete mixed with the earth removed to pour its foundations, linking it materially to the desert. The program includes a parking area and gallery for visitors in addition to living spaces for visiting researchers, a communal gathering space, and the permanent research and equipment archive.

The researchers' rooms have bedside skylights which can be opened in the afternoon on their waking. The units are oriented toward the nightrise with a clerestory window diffusing northeastern light across a simple work surface (Figure 2). Light monitors direct southern light to

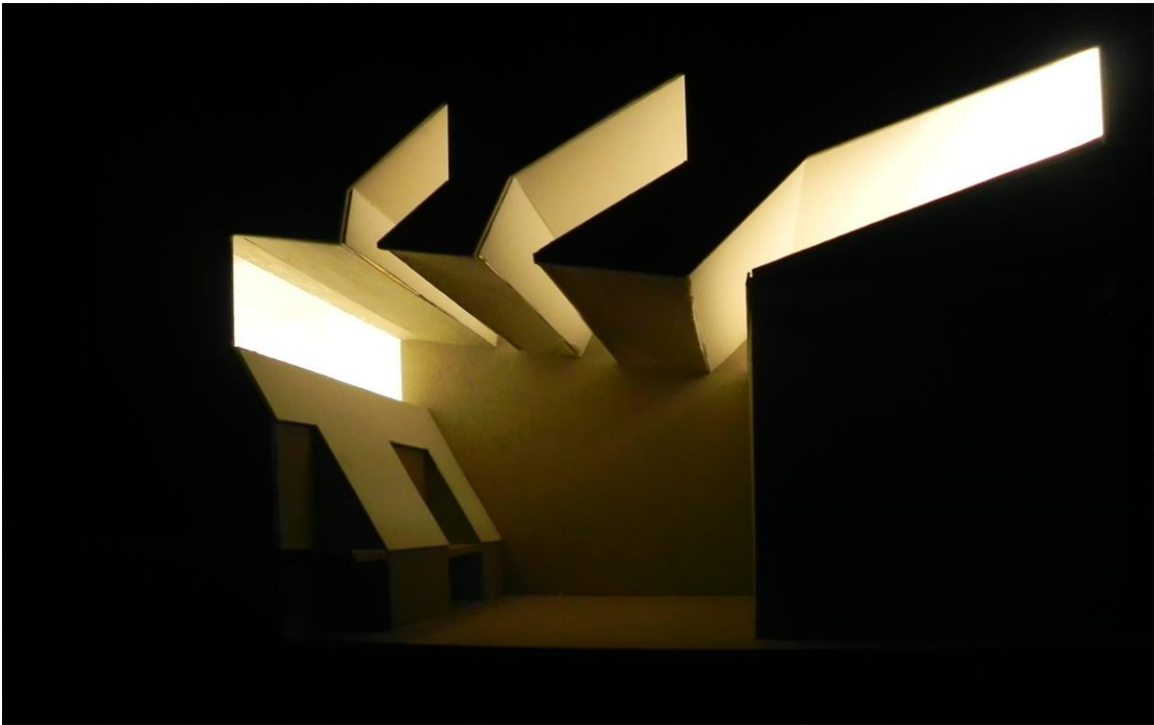


Figure 2. Section through researcher's room, oriented to nightrise. Image by the author.

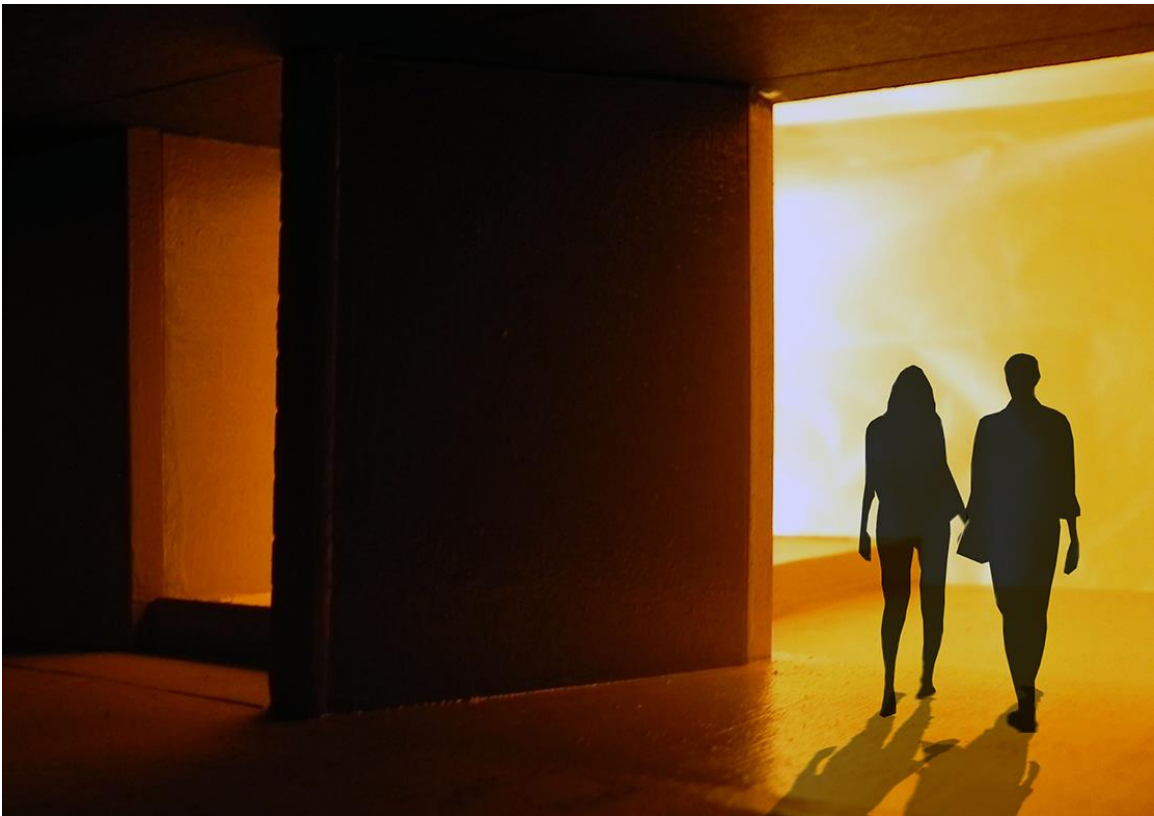


Figure 3. Desert courtyard, oriented to sunrise. Image by the author.



Figure 4. View of starlight through the aperture of the telescope dome. Image by the author.



Figure 5. Visitors in the projection room surrounded by the night sky. Image by the author.

a point just behind this desk, warming the researcher as he sits to write. The walls of the passageway leading from the residential wing to the common space contain cuts angled to reveal sunlight as the researchers leave after waking but conceal it as they return to sleep.

The courtyard is oriented toward the sunset and the distant observatory to the southwest. Its walls and floor are polished and angled to reflect the light and color of the valley, and it is lined with planters that pull the desert up into the space (Figure 3). This is the point of intersection between the astronomers' earthbound reality and their celestial dream walk. The common room serves as an extension of the courtyard into the dwelling. It is anchored and separated from the dining area by a hearth made of black quartz monzonite. The dining room opens up to the night rising as the researchers come together to share a meal before taking a shuttle south to the Racetrack.

Visitors leave their vehicles parked in a small dirt lot and enter the gallery. The exhibition here serves two functions. There is an open gallery exploring the history of astronomy and the role it played in the region's native cultures. Beyond this are a series of enclosed galleries containing installations by artists that examine the bodied perception of darkness through the eyes and other sense organs. Once night has fallen, visitors meet with the Director. She accompanies them to the observatory by electric shuttle. A wall of black stone weaves in and out of the earth, marking the passage to the Racetrack.

### **Observatory**

The Observatory has two domes— one housing the primary research telescope and the other for public outreach and the Director's ongoing research. While the Visitor's Center gallery helps to educate park-goers about the impact of light pollution on their sensory experience, the act of witnessing the heavens first-hand is critical in re-establishing a sense of wonder in the face of darkness.

From the shuttle dock, visitors enter the observatory grounds on foot through a slippage in the black stone wall and follow the Director into the Dual Focus Projecting Telescope dome. Internal lighting conditions are controlled to preserve night vision and to avoid breaking the feeling of occupying darkness. The visitors' path through the observatory follows a continuous wall, and its corners have been rounded so they can navigate simply by dragging a hand along the cool concrete. The Director tells them about the telescope, her research on asteroids, and what is visible in the sky that night (Figure 4). They then continue down a ramp into the next space, where they are left in the dark for 7 minutes, giving their eyes an opportunity to adjust. Slowly they begin to distinguish the curvature of the room. The Director adjusts the telescope, and suddenly the sky outside is projected all around them. The visitors are immersed in the world of the astronomers (Figure 5).

### **Intended Conclusions**

As Koyré and many others have observed, we are a culture in crisis. We have lost not only our place in the Cosmos but our ability to sense the world clearly. Architecture, as a constructed reality, could seem to run counter to any efforts to rebel against such an obfuscation. However, what is being proposed here is an architecture that demonstrates resistance by seeking connection over separation and by providing opportunities for a sensual engagement with and participation in the realities and mysteries of the given world.

Dan Duriscoe argues that the protection of the night sky is an essential component of the "wilderness ethic" mandated in the Wilderness Act of 1964. He notes that, while much contemporary astronomical study is conducted via space-based satellite, "firsthand observations

are exceedingly important to the development of values, philosophies, and matters of a spiritual nature.”<sup>5</sup> This touches on the importance of retaining bodied experience within our increasingly technologically mediated culture. By providing a space for visitors to experience wonder, the Death Valley Starlight Reserve can become a vehicle for cultural change. Through its architectonics and its programming it allows visitors to participate directly in astronomical rituals and the preservation of the sky. Further, it acknowledges that this participation is central to its function. Judith Wasserman notes, “A more social view of the sacred and sacred place is that which holds specific rituals carried out for individual or communal well being.”<sup>6</sup> To this end, the Reserve preserves the ritual of astronomy in order to maintain a shared space for bodied encounters of natural light and darkness.

## References

- Craig Adcock and James Turrell. *James Turrell: the Art of Light and Space* (Berkeley: University of California, 1990)
- David Aubin, Charlotte Bigg, and H. Otto Sibum, eds. *The Heavens on Earth: Observatories and Astronomy in 19<sup>th</sup> Century Science and Culture* (Durham: Duke University Press, 2010)
- John Beardsley. *Earthworks and Beyond*, Third Edition (New York: Abbeville Press, 1998)
- Ray Bradbury. *The Martian Chronicles* (New York: Bantam, 1979)
- Richard Bright. *James Turrell Eclipse* (Germany: Hatje Cantz Publishers, 1999)
- T. Scott Bryan and Betty Tucker-Bryan. *The Explorers Guide to Death Valley National Park* (Niwot, CO: University Press of Colorado, 1995)
- Eric Chaisson and Steve McMillan. *Astronomy Today*, Sixth Edition (San Francisco: Pearson Education Inc, 2008)
- Bill Clark. *Death Valley: The Story Behind the Scenery* (KC Publications, 1992)
- Kermit E. Duckett. *A Laboratory Textbook for Introductory Astronomy*, Seventh Edition (Raleigh: Contemporary Publishing Company, 2007)
- Dan Duriscoe. “Preserving Pristine Night Skies in National Parks and the Wilderness Ethic.” *The George Wright Forum* 18, no. 4 (2001)
- Dan Duriscoe, C. Moore, T. Jiles, NPS Natural Sounds and Night Skies Division. “Guidance for Outdoor Lighting: Death Valley National Park.” *Death Valley Lighting Management Plan*.
- Richard Erdoes and John (Fire) Lame Deer. *Lame Deer Seeker of Visions* (New York: Washington Square Press, 1994)
- Fabio Falchi, Pierantonio Cinzano, Dan Duriscoe, Christopher C. M. Jyba, Christopher D. Elvidge, Kimberly Baugh, Boris A. Portnov, Nataliya A. Rybnikova, and Rocco Furgoni. “The New World Atlas of Artificial Night Sky Brightness.” *Science Advances* 2, no. 6 (June 2016).
- Erin Hogan. *The Spiral Jetta* (Chicago: University of Chicago Press, 2008)
- Kathryn Hume. *Calvino’s Fictions: Cogito and Cosmos* (Oxford University Press, 1992)
- Ruth Kirk. *Exploring Death Valley* (Stanford: Stanford University Press, 1976)
- Alexandre Koyré. *From the Closed World to the Infinite Universe* (Baltimore: The Johns Hopkins Press, 1957)
- Ryan Landfield. “On Astronomy.” Interview by Caitlin Watson. August 31, 2010.
- Juhani Pallasmaa. *The Eyes of the Skin* (West Sussex, England: John Wiley and Sons, 2005)
- Carl Sagan. *Pale Blue Dot* (New York: Random House, 1994)
- “Starlight Reserve Concept.” Developed by UNESCO-WHC, IAU, UNWTO, OTPC-IAC, and CIE (March, 2009)
- Jun’ichiro Tanizaki. *In Praise of Shadows* (New Haven: Leete’s Island Press, 1977)
- Judith R. Wasserman. “To Trace the Shifting Sands: Community, Ritual, and the Memorial Landscape.” *Landscape Journal* 17, no. 1 (1998)
- Richard B. Woodward. *Abelardo Morell* (London: Phaidon Press, 2005)
- Peter Zumthor. *Thinking Architecture* (Basel: Birkhauser Architectural Press, 2006)

---

<sup>5</sup> Dan Duriscoe, “Preserving Pristine Night Skies in National Parks and the Wilderness Ethic,” *The George Wright Forum* 18, no. 4 (2001) 30-31.

<sup>6</sup> Judith Wasserman, “To Trace the Shifting Sands: Community, Ritual, and the Memorial Landscape,” *Landscape Journal* 17, no. 1 (1998), 43.