



A R E T R O S P E C T I V E

JAMES
TURRELL

Michael Govan and Christine Y. Kim

With essays by
Alison de Lima Greene
E. C. Krupp

Featuring photography by
Florian Holzherr

Los Angeles County Museum of Art
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James Turrell: A Retrospective

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Roden Crater Project,
view toward northeast

NOTE Captions for objects in the
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of the complete entries in Works
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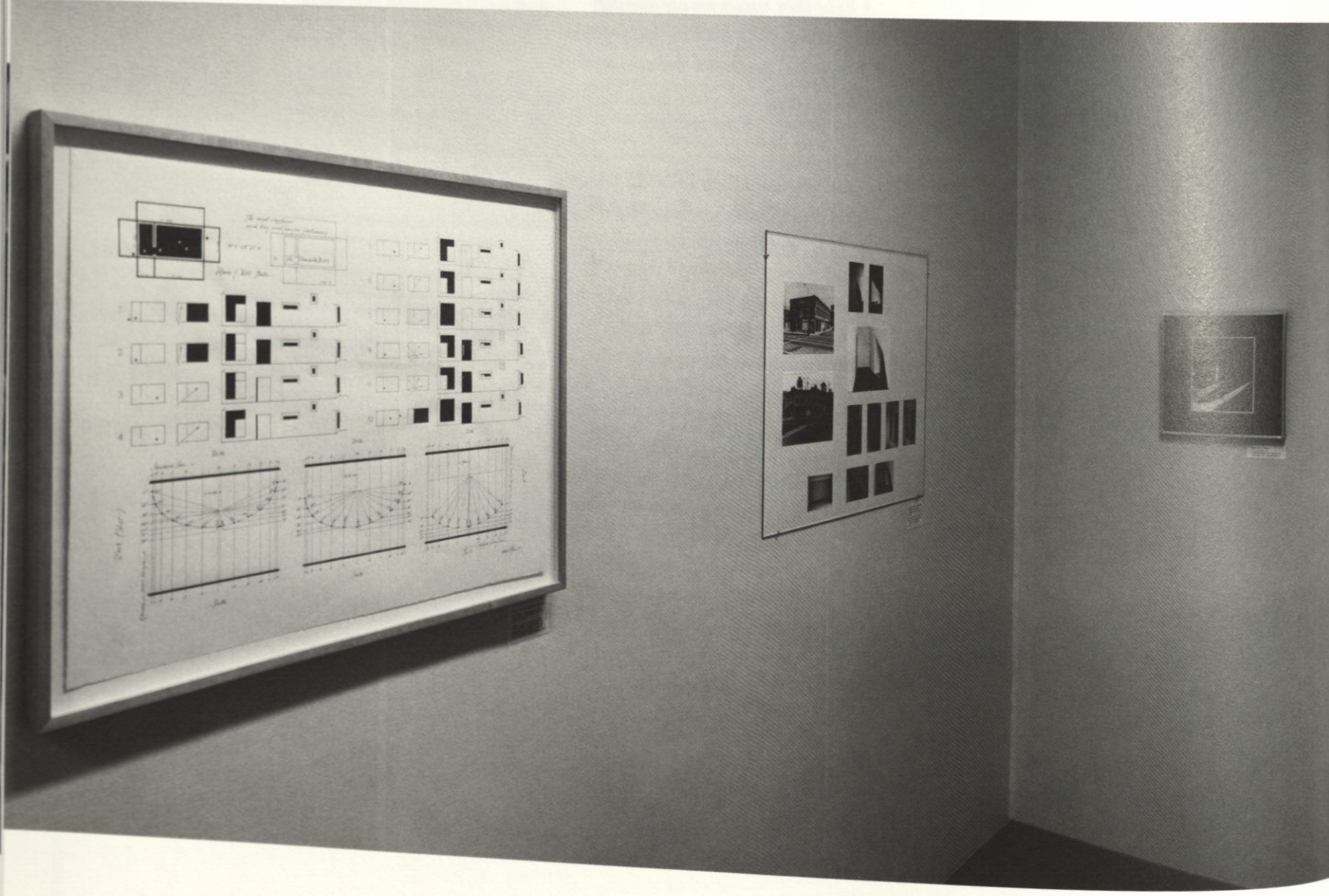
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CHAPTER ONE

THE CAVE WALL

*My work is about how we construct reality.
The real illusion is that we aren't aware
of how we give reality to things. We have awarded
them concreteness or reality and are unaware
of how we've done that.*

James Turrell



1 In the myth of Plato's Cave, Plato invokes Socrates as a narrator to describe a group of people who have been chained to the wall of a cave all their lives facing a blank wall. They watch shadows projected on the wall and begin to ascribe forms to these shadows. Socrates explains that the shadows are as close as the prisoners get to viewing reality. He describes how the philosopher is a prisoner who is freed from the cave and comes to understand that the shadows on the wall do not make up reality at all, as he can perceive the true form of reality rather than the mere shadows seen by the prisoners.

2 Barbara Haskell and Melinda Werts, *James Turrell: Light and Space* (New York: Whitney Museum of American Art, 1980), 15.

3 *Ibid.*

IN 1966 JAMES TURRELL leased the former Mendota Hotel at the corner of Main and Hill Streets in the Ocean Park section of Santa Monica, and built a studio from the outside in: he sealed off the two main spaces from all external light by painting the windowpanes and began to work with projecting light onto the walls. This Mendota period (1966 to 1974) birthed a number of Turrell's approaches to light that relate to his consideration of the studio's walls as akin to the walls of Plato's Cave, in which prisoners believe the shadows they see on the cave wall are real because they cannot turn around and understand that what they perceive as reality is actually an illusion.¹

Using a Leitz slide projector, modified by replacing the standard light mechanism with a tungsten light and later a more powerful quartz-halogen source, Turrell developed a series of works he called the Projection Pieces and categorized them into two types: Cross Corner Projections and Single Wall Projections. The first of these works was *Afrum* (a Cross Corner Projection that Turrell later retitled *Afrum-Proto*), which he presented at his first solo exhibition at the Pasadena Art Museum in 1967. Turrell described

Afrum as "a rectangle projected across a corner in such a way that from a distance there appeared to be a cube floating off the floor, yet in some manner attached to the corner of the space."² He explained, "From a distance this shape had solidity, but appeared to be literally composed of light. Still at a distance, but moving to the side, one could further substantiate this impression because the cube seemed to reveal itself in perspective. Advancing toward the image, the image would eventually dissolve to the point where you saw not the object in space, but the actual light on the wall."³ Achieving what Turrell calls the "thing-ness" of light, the projections appear as independent three-dimensional objects with varying relationships to the spaces they occupy, whether hovering like *Afrum*, leaning against the wall, sitting on the floor, or seemingly shooting through the ceiling.

Turrell created thirty-six individual iterations of the projections, which are illustrated completely in the *Projection Piece Drawings* (1970-71) as well as partially in two portfolios of aquatint prints. *First Light* (1989-90) and *Still Light* (1990-91) examined the effects of the projections, with the latter emphasizing "the misty atmospheric effect of the projection" by

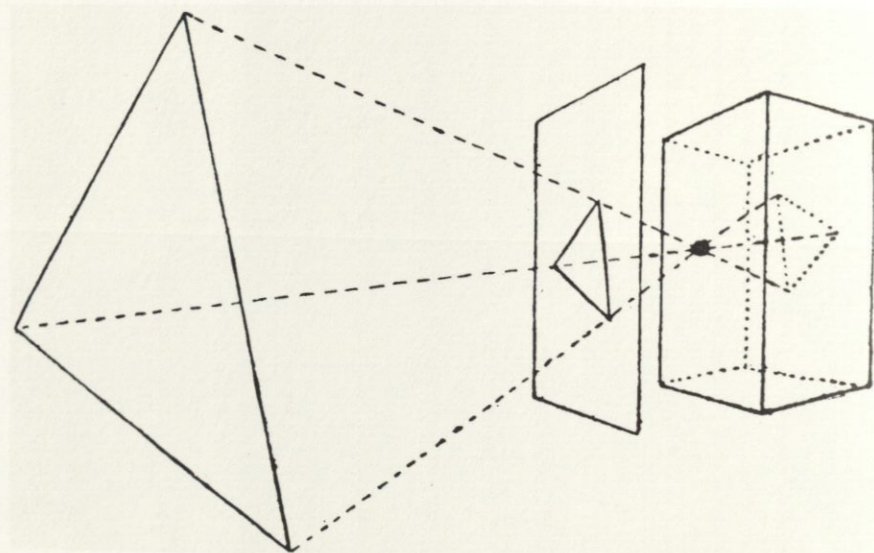


FACE 50 Installation view of *Jim Turrell* at Stedelijk Museum, Amsterdam, September 4-May 25, 1976

ABOVE Photograph of Mendota Hotel, Ocean Park, Santa Monica, CA, 1974

TOP John Cage, date unknown, courtesy of the John Cage Trust

BOTTOM Robert Bass, Turrell, Choyoshi Kawai on the roof of the Mendota Hotel, Ocean Park, Santa Monica, CA, 1970



⁴ James Turrell: *Projection Works, 1966-69*, text by David Anfam (London: Albion, 2004), 57.

⁵ Turrell collaborated with Len Pincus, a Hollywood movie-projection designer and manufacturer, to design and build the specialized projectors.

⁶ Haskell and Wertz, *James Turrell: Light and Space*, 29.

⁷ *Ibid.*, 30.

⁸ Craig Adcock, *James Turrell: The Art of Light and Space* (Berkeley: University of California Press, 1990).

⁹ Richard Andrews, "1982 Interview with James Turrell," in *James Turrell: Sensing Space* (Seattle: Henry Art Gallery, 1992), 41.

using the "purest, most light-catching form of etching, one which could dispense with line, and instead allow for the subtle allover tonal effects present in the light works."⁴ In 1968 Turrell began using colored xenon light for the Projection Pieces. The hue of the projected light increased or decreased the apparent solidity or volumes of the shapes.⁵

While the Projection Pieces employed a static, controlled light source from a projector in a dark space, the Mendota studio also provided a sealed environment within which Turrell could create a type of camera obscura. Turrell had seen John Cage's silent compositions performed at Pomona College in the early 1960s and he was inspired by how art heightened one's perception of what otherwise might be considered banal or empty space. In 1969 Turrell created a series of works entitled Mendota Stoppages by cutting holes in the studio's walls and opening up the sealed windows. These architectural apertures allowed sunlight to enter during the day and street and car lights to enter at night. The light, shadows, color, and movement created by the cuts "resulted in an interior space that was generated by its relation to light in the space outside of it."⁶

In essence, the studio was Turrell's first "sensing space," or "a space that responds to a space outside with a logic or consciousness formed by its look into that space."⁷ "The big thing," recalled Turrell, "was that the interior space was created by the light and not by the physical confines of the room. The physical limits of the room remained the same and just the addition of different looks onto the outside world or onto areas of different sources of light completely changed the space. The space was no longer empowered by architecture, but was totally structured by the light."⁸

In 1974 Turrell lost his lease at the Mendota and left Ocean Park along with other artists, such as Richard Diebenkorn, Charles Garabedian, and Sam Francis. He could no longer afford the increasing rents and moved elsewhere, to his airplane hangar in Torrance and then to Sedona and later Flagstaff, Arizona. The Mendota years "had been a very important period" remarked Turrell. "A storefront artist's existence is as near to artist-in-the-garret or artist-in-the-loft as a Californian can come...I don't think it'll ever exist again. Not in Southern California...what a great place."⁹

CHRISTINE Y. KIM

L. P. Clerc, *Perspective Rendering by the Camera Obscura*, from *Photography: Theory and Practice*, 1957

Westside Properties
1735 Westwood Boulevard, Suite 100
Los Angeles, California 90024
478-3504

April 18, 1974

NOTICE TO QUIT AND DISPOSSESS PROPERTY
Commercial Store Located at
2669 Main St., Santa Monica, California

Tenant: James Turrell

Owner: Westside Properties #3
Lowell J. DeMers, General Partner

Mr. & Mrs. James Turrell
c/o 209 Hill St.
Santa Monica, Ca.

Dear Mr. Turrell:

Be advised that this letter gives you notice to dispossess, quit and surrender the premises located at 2669 Main St., Santa Monica, California, on or before May 22, 1974, for reason the owner is going to possess and use these store spaces.

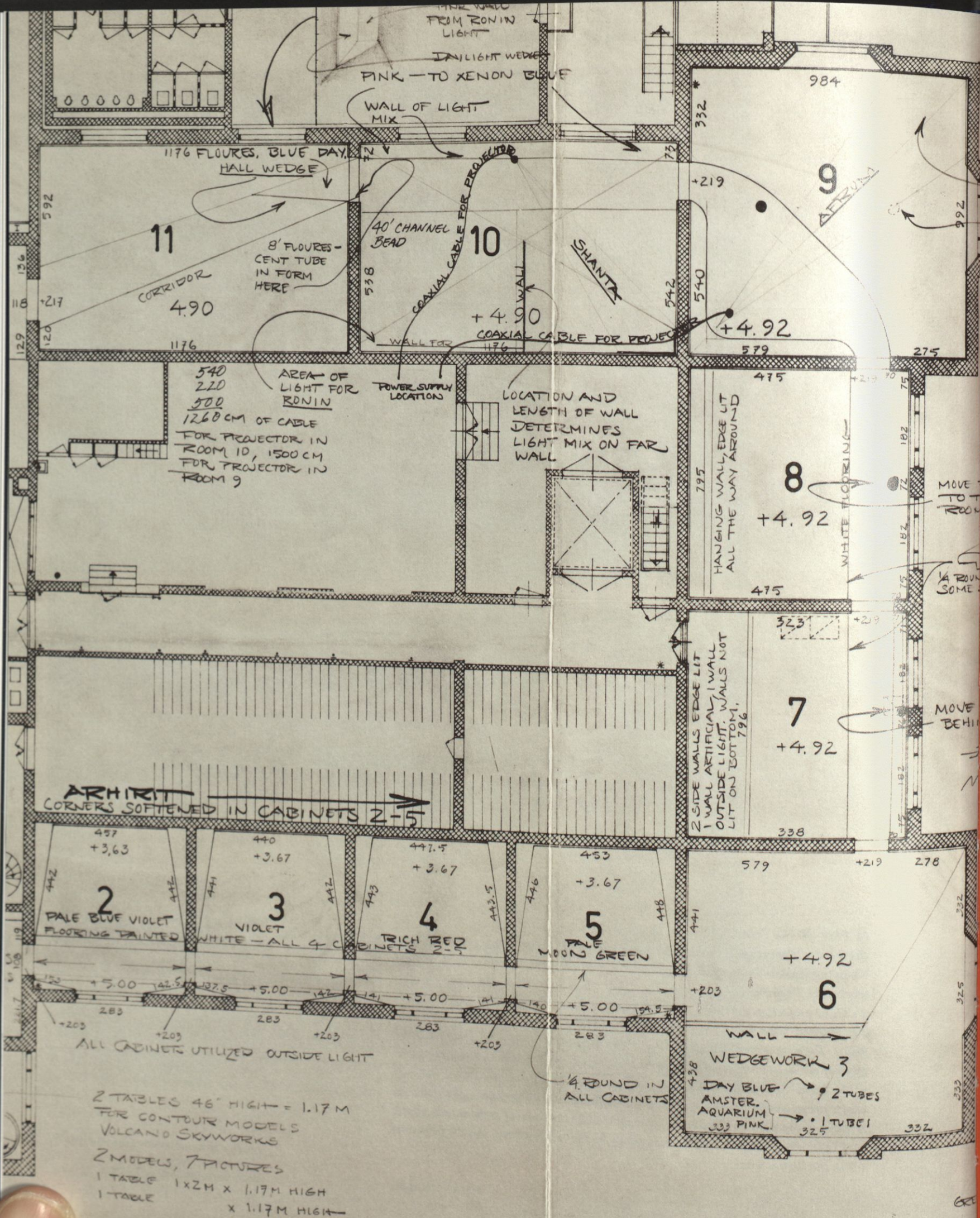
Respectfully submitted,

Lowell J. DeMers

Westside Properties #3
by Lowell J. DeMers,
General Partner

LJD:sh

Susan Honnold
Susan Honnold, Witness

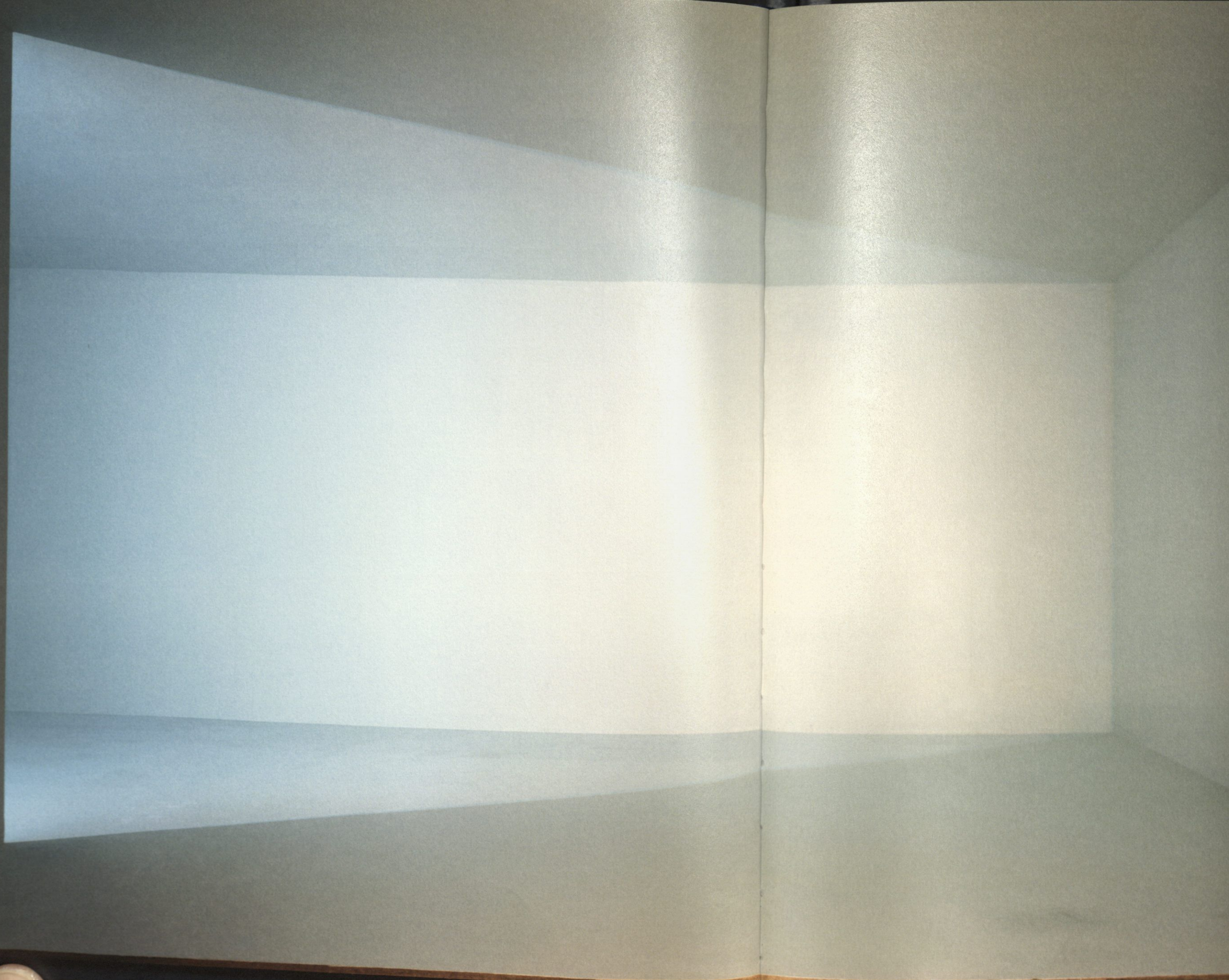


CHAPTER TWO

CREATING A CAVITY

The Cartesian space of three dimensions is, as all mathematical spatial concepts, a model which has evolved from the range of experiential reality as Descartes knew it. But if you are flying a plane his concept holds true for very short distances only. If you fly [between widely separated points], you will realize that the curved space of Riemann, in which the triangle can have more than 180 degrees, comes closer to reality. But even in this case you tend to think, wrongly, that the mathematical model covers reality. We superimpose the model on reality, and believe that the model actually is reality. The space we experience subjectively through our observation is more bizarre. It is a space that comes close to dreams.

James Turrell



By angling the non-abutted edge of the partition wall and positioning the fluorescent source at an angle to the end of the wall, the image of the light that shone from one side of the partition created a transparent screen which stretched from the edge of the partition to the point where the image lay along the side wall.

JAMES TURRELL

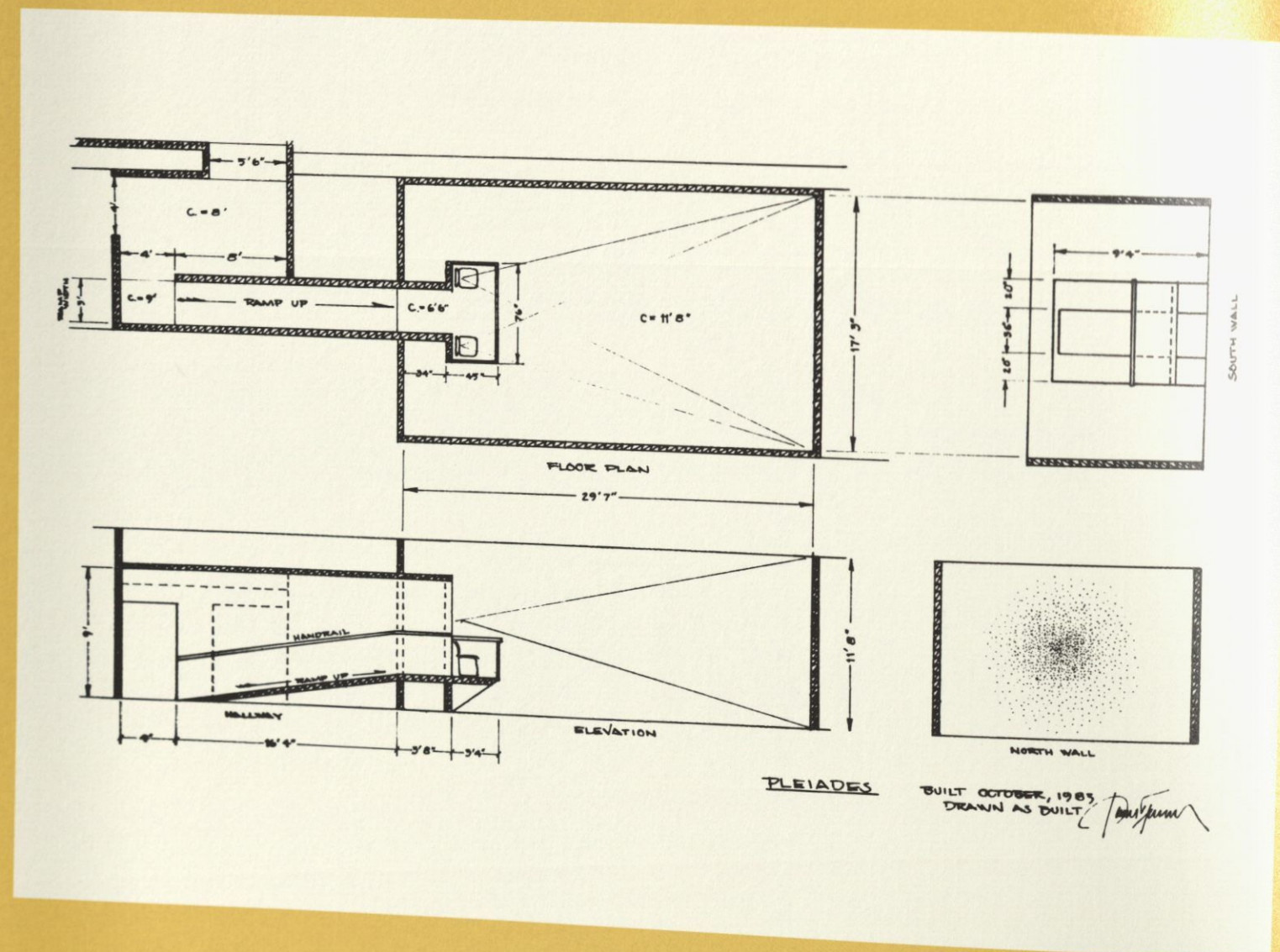
Wedgework 3, 1969, installation view from James Turrell: Light and Space, Whitney Museum of American Art, New York, October 22, 1980–January 1, 1981, photograph by John Cliett, NYC

C H A P T E R F O U R

BLIND SIGHT

Blind Sight refers to a condition, brought on by trauma or dysfunction, which inhibits people with sight from actually seeing. I am interested in the seeing that occurs within. In the lucid dream there is a greater sense of color and lucidity than with the eyes open. I am interested in a place where the imaginative seeing and the seeing of the external world meet, where it is difficult to distinguish the seeing from within from the seeing from without. The image is of no interest other than it triggers the seeing from within. This seeing occurs near the edge of the cone area of the retina and it moves towards the rod area, which generates seeing over which you have complete control.

James Turrell



PAGE 94 *Pleiades*, 1985, installation view
at Mattress Factory, Pittsburgh, PA

ABOVE Floor plan from *Pleiades*, 1985,
Mattress Factory, Pittsburgh, PA

THE LONGER YOU STAY in these pieces, the more the difference between having your eyes open and having your eyes closed is diminished. You see similar things whether your eyes are open or shut. After a while, the lighting that takes place in the space affects the color sensation you have when you first close your eyes. These pieces are their source in the kind of color vision you have when you first close your eyes and see a kaleidoscope of colors for a moment or so. In a very pure space, it's hard to cleanse your eyes of these sensations.

JAMES TURRELL

James Turrell began to incorporate perceptual phenomena that occur in utter darkness into his work with the series known as the Dark Spaces. First conceived in the early 1970s, the works are directly related to his work as part of LACMA's *Art and Technology* program. Collaborating with Robert Irwin and scientist Ed Wurtz in 1968–69, Turrell had conducted experiments with dark anechoic chambers in order to investigate the effects of sensory deprivation. His college studies in the psychology of perception also influenced these works.

Turrell had noticed that our perception varies in common situations as well. At dusk a red flower will appear darker and blacker, while a blue one will appear brighter. This is because when light is present, our sight relies on the cones of the retina (photopic vision); in darkness, it depends upon the rods (scotopic vision). When the shift between cones and rods occurs, human vision is compromised, leaving us virtually color blind. And in total darkness, the body's other senses become triggered and awareness is heightened. In the absence of light, an artwork becomes "about your seeing," Turrell noted. "It is responsive to the viewer."¹

Phenomenologist Gernot Böhme wrote of Turrell's Dark Spaces, "Light is not the only precondition of visibility. Darkness is another ... light and darkness are asymmetrical. Light is a precondition for seeing at all, whereas darkness (interacting with light) is a precondition for our seeing *something*."² This concept is also at work in Ad Reinhardt's *Black Paintings* (1954–67), which are particularly significant to Turrell. After viewing the large, square, black canvases for an extended

period, the viewer is able to perceive geometries of grids, often with a subtle pattern of reddish squares lined with bluish and greenish tones along the vertical and horizontal bars. Turrell, who saw Reinhardt speak at the Pasadena Art Museum in the mid-1960s, admired how the artist "brought color out of darkness," and how the *Black Paintings* rely on each viewer's physical act of seeing them.³

Turrell's Dark Spaces reflect his fascination with total darkness, which he likens to "a picture plane pulled over your head like a T-shirt."⁴ Stressing the absence of light rather than its material presence, the works typically consist of an unlit corridor that leads to a completely sealed and darkened room of undeterminable dimensions. The viewer sits in complete blackness for at least seven to fifteen minutes. The eyes adjust slowly, and a faint glow starts to appear. Because the light (from a very low-wattage incandescent bulb) is so faint that the room never becomes truly visible, the mind struggles to determine what the eye is seeing. In Turrell's words, "It becomes difficult to differentiate between seeing from the inside and seeing from the outside."⁵

Critic Kenneth Baker described his experience of viewing the Dark Space *Pleiades* (1974), which was first installed at the Mattress Factory in Pittsburgh, in a 1985 article for *Art in America*:

Taking a seat, you are enveloped in darkness and silence, relieved only by the faintest hint of milky light hovering cloudlike somewhere in front of you. Compulsively, you focus on what little light you can see. Since it is too dim to "place" spatially, and since you can get no sense of the shape of the space around you, the nimbus of light begins to play strangely upon your optic nerves. It starts to pulse, to move towards you and lose its definition as something distinct from the activity of your own sensory apparatus. Gradually, aided by the total silence of the soundproof space, it dissolves your normal sense of your body as a boundary dividing what you see from what enables you to see it.⁶

For Turrell, the Dark Spaces "are my favorite spaces... just like it is when you are in meditation except that you are doing it with your eyes open and you're taking the conscious awake state... closer to a theta or an alpha state."⁷

CHRISTINE Y. KIM

1 Julia Brown, "Interview with James Turrell," in *Occluded Front: James Turrell* (Los Angeles: Fellows of Contemporary Art and the Lapis Press, 1985), 15.

2 Gernot Böhme, "The Phenomenology of Light," in *James Turrell: Geometry of Light*, ed. Ursula Sinnreich (Ostfildern, Germany: Hatje Cantz, 2009), 72.

3 James Turrell, interview with Christine Y. Kim, March 28, 2012.

4 *James Turrell: The Light Inside* (Järna, Sweden: Kulturforum, 2012).

5 James Turrell, interview with Christine Y. Kim, March 28, 2012.

6 Kenneth Baker, "Meg Webster and James Turrell at the Mattress Factory," *Art in America*, May 1985, 179.

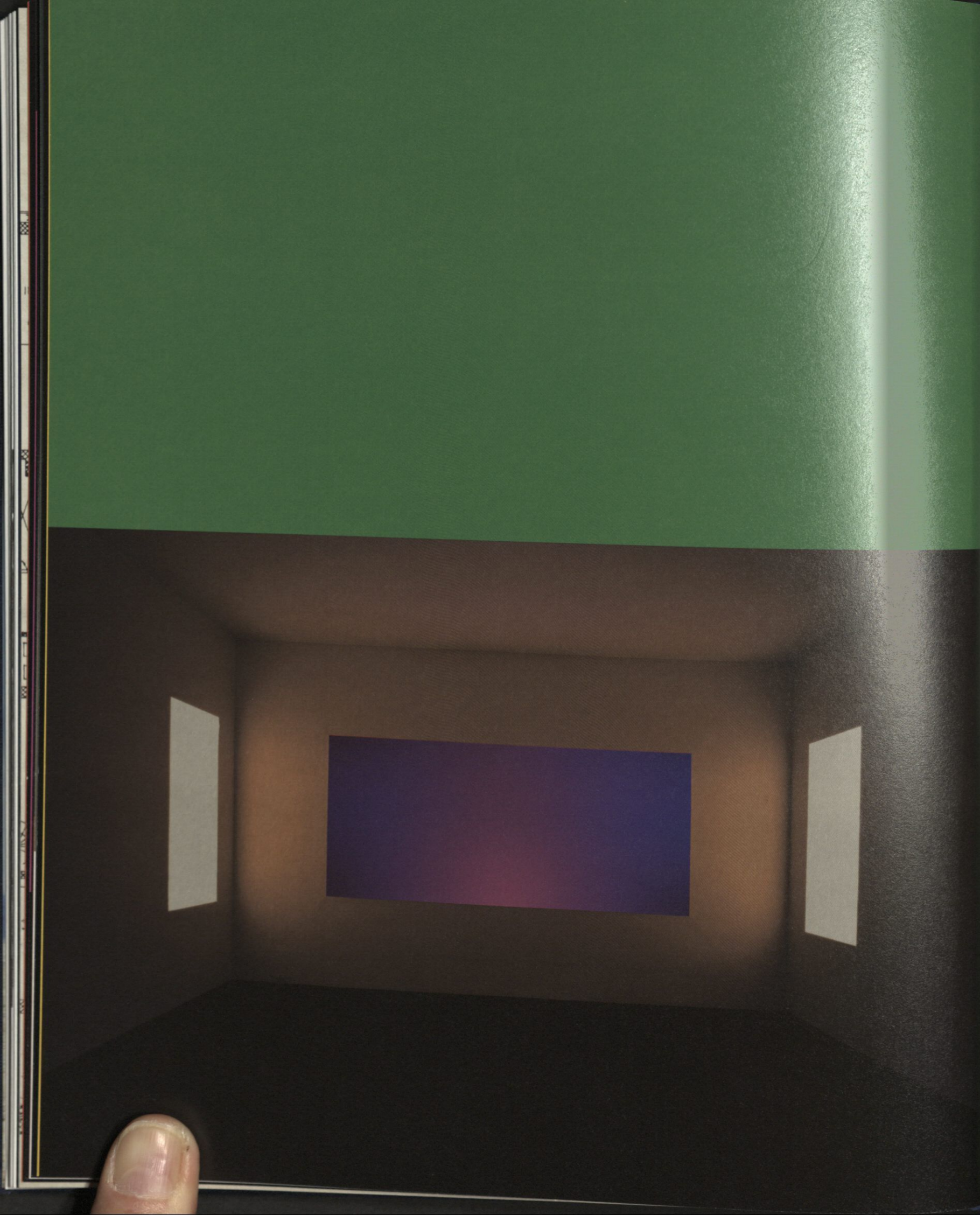
7 *James Turrell: The Light Inside*, 25.

CHAPTER FIVE

LIGHT OCCUPIES SPACE

These pieces do involve boundaries, demarcations between volumes that are occupied by ambient light, and by spaces that are directly lit....And it's about how your vision can penetrate those boundaries in the same way that near lighting will limit the penetration of vision into a space....It's just like having a porch light on, and you can't see into the night very far, but you can see near things very well. You turn the porch light off and your vision will penetrate into the night.

James Turrell



the notion that art must be complex.¹² While accurately describing the deliberate suppression of content and expression shared by many of the artists identified as Minimalist, Rose also emphasized the freedom implicit in the act of renunciation. Closing with an excerpt from a 1919 essay by Malevich, Rose quoted the Suprematist's rallying cry: "I have broken the blue boundary of color limits, come out into the white, beside me comrade—pilots swim in this infinity. I have established the semaphore of Suprematism. I have beaten the lining of the colored sky, torn it away and in the sack that formed itself, I have put color and knotted it. Swim! The free white sea, infinity, lies before you."¹³

As an experienced pilot, Turrell identified with the exhilaration voiced by Malevich, and he read other writings by the artist with care. As the new year began, he achieved his own liberating breakthrough: after experimenting with flat-flame gas burners to capture illumination within his work, he created *Afrum*. Turrell had found a way to work with light itself:

I started the Projection Pieces in 1966, as a way to work this medium of light....This is not that easy because you can't form it like clay, or carve it like wood or stone. Almost like sound you have to have something that helps you form it, or work it, so I used the projector first. I looked at the wall of the space as though it were the picture plane, a kind of perfect Plato's Cave retina.

I remember a comment from Malevich about how thin the plane could be with paint. In fact, you have almost a dimensionless quality when putting light onto a perfect wall. Using the wall as a picture plane it becomes more painting than sculpture. This was a way for me to start.¹⁴

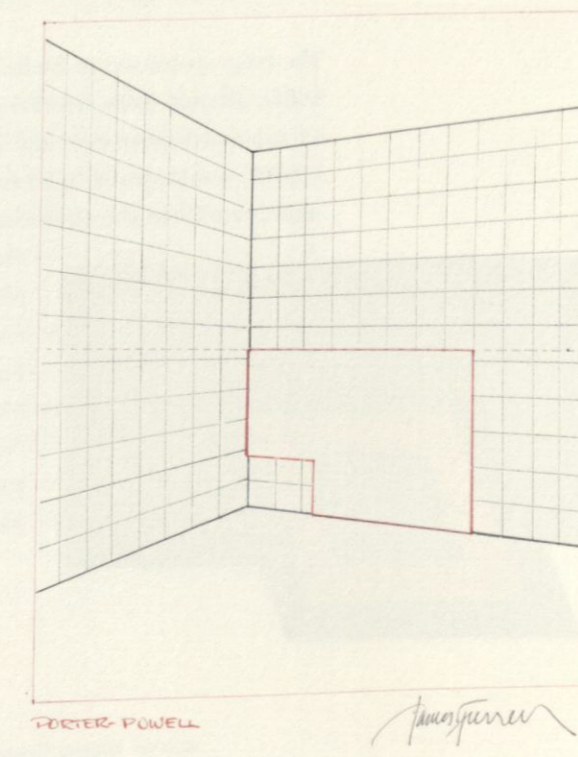
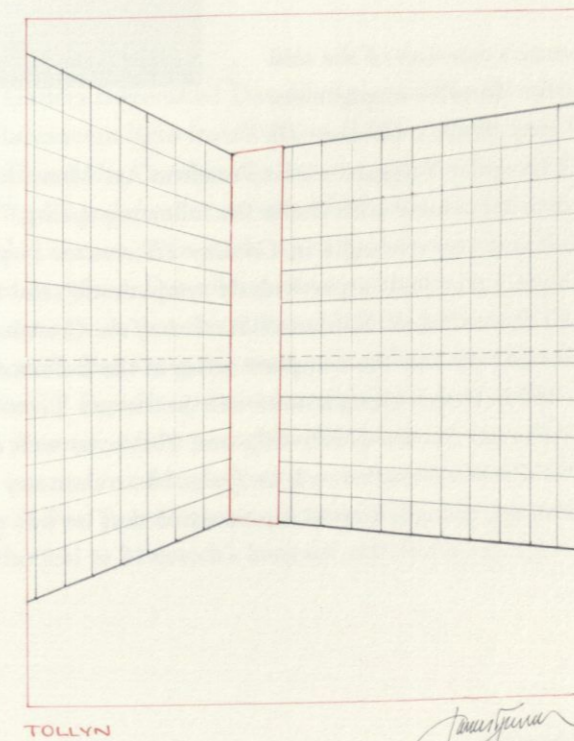
And at that moment, "It was time to stop becoming an artist and start being one."¹⁵ Turrell left school and established his Main and Hill Studio (so named for the intersection of streets) in the former Mendota Hotel in the Ocean Park section of Santa Monica. Over the following year he established important friendships with other artists and the dealer Nicholas Wilder in Los Angeles, he revisited New York, and he became directly engaged in antiwar activism. The most lasting legacy of this year was the extended series of light projections that he produced at the Main and Hill Studio and documented carefully. These fell into two distinct subsets: Cross Corner Projections, like *Afrum*, and Single Wall Projections, which remained essentially planar. In October 1967 Coplans invited Turrell to present selections from this body of work at the Pasadena Art Museum.¹⁶

TURRELL'S EXHIBITION OPENED as the Los Angeles art scene was undergoing changes on several fronts. Earlier that year Demetrian had succeeded Hopps as the director of the Pasadena Art Museum, and his first curatorial appointment was Coplans. At the same time, *Artforum* had once again relocated its offices, this time from Los Angeles to New York, confirming the publication's primacy as the leading critical platform where the advocates of Modernism and those who heralded new departures, such as Minimalism and Conceptual Art, could engage in debate. Coplans took advantage of both venues: as Turrell's exhibition went on view in Pasadena, Coplans's catalogue essay appeared in the pages of *Artforum*.¹⁷

Although newly appointed as curator, Coplans had planned the timing of Turrell's exhibition very deliberately. The 1967 summer issue of *Artforum* had featured Michael Fried's "Art and Objecthood" beside Robert Morris's "Notes on Sculpture, Part 3: Notes and Nonsequiters."¹⁸ Personally engaged in the Modernist-versus-Minimalist discourse, Coplans chose to restage this confrontation at Pasadena, presenting Turrell just after a major traveling survey of Jules Olitski's paintings curated by Fried.¹⁹ In contrast to Fried's expansive catalogue essay on painterly chromatics, Coplans's succinct introduction framed Turrell's work in calculatedly neutral terms, first emphasizing the artist's youth and West Coast origins. He continued: "Turrell's images are projected from a slightly modified, but standard, high-intensity projector positioned on the gallery ceiling....His monochromatic images consist of simple geometric configurations, for example a square or a rectangle. In some instances, the overall geometric shape is modified by the removal of a smaller, either similar or dissimilar geometric shape from one corner."²⁰

Coplans insisted on the currency of Turrell's work: "His art corresponds to the notion discussed by the sculptor Robert Morris: '...The better new work takes relationships out of the work and makes them the function of space, light, and the viewer's field of vision.'²¹ In his conclusion, however, Coplans also acknowledged Turrell's departure from Morris's example: "Turrell's means... are purely pictorial. In other words, he uses luminosity not as a sculptor uses material to create three-dimensional form, but illusionistically, that is, in a similar manner to a painter who uses paint on canvas."²²

The exhibition was limited to three works: *Afrum*, created with the same white tungsten light Turrell employed in his initial 1966 projection; and *Tollyn* and *Porter-Powell*, both Single Wall Projections from 1967, created with a slightly cooler xenon light.²³ Installed on the first floor of the museum, each work was



With these visual and aural tools, they monitored the effects of total sensory deprivation and responses to controlled input; they also practiced meditation, biofeedback training, and alpha conditioning with a number of volunteer subjects, recording both physical and psychophysiological responses. Turrell's notes reflected his concern with how this project should be classified: "We are dealing with the limits of an experience—not for instance within the limits of painting. We have chosen that experience out of the realm of experience to be defined as 'art,' because having this label it is given special attention. Perhaps this is all 'art' means....The object of art may be to seek an elimination of the necessity for it."⁴⁴

Turrell added a further aside: "Quote from Blake: 'If the doors of perception were cleansed, every thing would appear to man as it is, infinite.'"⁴⁵ The reference is to William Blake's mystical *The Marriage of Heaven and Hell*, and the next line reads: "For man has closed himself up, till he sees all things thro' narrow chinks of his cavern." The Platonic implications of Blake's "as it is, infinite" immediately appealed to Turrell, and as his subsequent writings attest, he became increasingly engaged with uniting the "in here" and "out there," the immediate and the transcendent.⁴⁶

In the early stages of their collaboration, Turrell, Irwin, and Wortz considered building a two-tiered structure that allowed visitors to pass one at a time from an anechoic chamber into a ganzfeld environment, and Turrell's subsequent Dark Spaces and Ganzfelds can be traced back to this proposal. As their research moved forward, however, the possibility of successfully creating such a structure as part of an exhibition came into question and the project's objectives became less clear. At the same time LACMA's schedule shifted, and the exhibition was broken into two venues. In late May 1969, Tuchman proposed that a major segment of the show be staged as part of Expo '70 in Osaka, Japan, which would postpone the Los Angeles presentation by another year. This change of focus, as well as other pressures, overthrew Turrell's and Irwin's collaboration. On July 20, 1969, Neil Armstrong and Buzz Aldrin set foot on the moon; a few weeks later Turrell walked away from the *Art and Technology* program.

There is a telling coda to this project, however. At Tuchman's invitation, Turrell had traveled to Japan to investigate the possibility of presenting his work independently at Expo '70. Once he discovered that the available spaces were unworkable, he turned his attention to more traditional arts, and undertook an apprenticeship with Tatsuaki Kuroda, a woodworking craftsman recognized as one of Japan's national treasures. After his return, Turrell added a final postscript to his *Art and Technology* notes, voicing not only his frustration with Western habits of thought, but also an appreciation of Zen culture and belief:

*When we want to go into the universe, we can't look at a rock, like the Japanese. We have to actually go to the moon. We're so literal....We have devices, sensors, alpha conditioning machines. The machines are just manifested thought. Technology isn't anything outside us....We just go about it very clumsily and very wastefully. Because we have to actually make all these devices, we have to go to the moon, we can't see the cosmos in a rock, and we can't meditate without having this thing strapped on us.*⁴⁷

THROUGHOUT HIS PARTICIPATION in the *Art and Technology* program, Turrell had continued to work in the Main and Hill Studio. Three major series were begun there between 1968 and 1969: the Shallow Spaces, the Wedgeworks, and the Mendota Stoppages. Building upon the basic vocabulary of the Cross Corner and Single Wall Projections, these series increasingly addressed architecture and the space of the viewer or, as Turrell stated, "the space dealt with was not hypothetical but actual."⁴⁸ By concealing the light source behind a partition wall that floated in front of an end wall, for example, the unstable "zip" of *Tollyn* (1967) became an actual shallow space in *Ronin* (1969). Similarly, *Raethro*, first conceived as a Cross Corner Projection in 1967, is translated into a Shallow Space with *Raethro II* in 1968. *Rondo* and *Raemar* (both 1968) and *The Light Inside* (created for the Museum of Fine Arts, Houston, in 1999) demonstrate the ongoing evolution of the Shallow Spaces. Light becomes a still more palpable presence, now intensely colored. The mural surface becomes increasingly buoyant and ultimately penetrable as well. Turrell explains: "They reverse the illusion that occurred in the Projection series: in the Shallow Spaces, the lighted actual space in three dimensions alludes to two, and the space activated is the space outside that which is directly lighted."⁴⁹

With the Wedgework series, begun in 1969, Turrell angled the constructed wall into space so that light slices across a room. As had become his practice, Turrell again complicated the series as he developed it further. He introduced different chromatic strata, so that light becomes a screen "perceived as a transparent, filmy, glassy surface through which one looks into a space that appears white. The sheet of white itself reveals various color differentiations from its edges inward, depending on the mix of light behind the partition wall. The colors seem to ride on the surface, out in space and not in the space behind."⁵⁰ Turrell would revisit this device in his later Veils, a series begun in 1973, which rotated the configuration of the Wedgeworks ninety degrees so that a veil of light and color falls from the ceiling.

In the Mendota Stoppages, first created in late 1968 and early 1969, Turrell broke the sealed environment that up to that time had defined his work. He removed the walls and thick layers of paint that had covered his windows, inviting in "the freshness that comes from an openness to the outside."⁵¹ Sensitive to the changing conditions from day to night, Turrell carefully oriented the apertures: "The day aspect of the work consisted of two pieces created by apertures opened into the space nearest the street. One piece was made for the winter side of the equinox and the other for the summer side. The night aspect consisted of ten pieces....[and the viewing] took from two to four hours."⁵²

The Mendota Stoppages can be understood in part as a continuation of Turrell's *Art and Technology* research, particularly in regard to his experiments with controlled input and meditation. There was also a strong performative aspect to the progression of opening and closing the apertures, the sequence of which is recorded in the 1969 drawing *Music for Mendota*. One visitor describes Turrell's careful orchestration of the light:

C H A P T E R S I X

SKY LIGHT

*I am involved in the architecture of space.
To some degree, to control light I have to have a way to form it,
so I use form almost like the stretcher bar of a canvas....
When I prepare walls I make them so perfect that you actually
don't pay attention to them. This is true of the architecture
of form I use: I am interested in the form of the space
and the form of territory, of how we consciously inhabit space.*

James Turrell

1 Barbara Haskell and Melinda Wertz, *James Turrell: Light and Space* (New York: Whitney Museum of American Art, 1980), 55.

2 Craig Adcock, *James Turrell: The Art of Light and Space* (Berkeley: University of California Press, 1990), 115.

3 James Turrell, interview with Christine Y. Kim, March 28, 2012.

YOU WILL NOTICE during the change from day to night an intensity of color that you will find nowhere else. If you then go outside you will see a different colored sky. You color the sky. The work is about your seeing not mine. The colors can be intensely sublime and beyond what we would normally see. The amount of light in the space allows for the seeing over several planets and a few stars, but there is a blackness of depth and softness that is unparalleled, because it has no surface. The blackness is a complete black body, absorbing and sucking light. It arises simply out of the contrast between the inside of a space where there is light in relation to a space where there is none.

JAMES TURRELL

As few viewers have visited the unfinished Roden Crater or the recently completed pyramid *Agua de Luz* in the Yucatan, James Turrell's Skyspaces have become the most widely recognized site-specific works by the artist. To date, there are seventy-five of them in private venues and public institutions around the world. A Skyspace is a simple enclosed chamber with benches along its walls and an opening in the ceiling that lets the viewer see the interplay of sky, light, and atmosphere. A viewer who remains in the space for about an hour at dusk or dawn will experience the sky in an array of colors that shift in concert with programmed lighting embedded above the seats along the interior walls. Turrell explains: "These pieces deal with the juncture of the interior space and the space outside by bringing the space of the sky down to the plane of the ceiling. They create a space that is completely open to the sky yet seemingly enclosed."¹ Such works are often described as ethereal, spiritual spaces conducive to meditation and contemplation. In fact, Turrell has likened Skyspaces to Quaker meetinghouses, "where you go inside to greet the light."

Like many Turrell typologies, the Skyspaces grew out of the artist's "nonvicarious" works created at his studio in the former Mendota Hotel. He began with the Structural Cuts series, removing whole sections of the

hotel's bearing walls to open up the space to the sky. As art historian Craig Adcock notes, "This radical fenestration developed out of the small *Sky Window* [1966] that had been used as one of the stops in the Mendota Stoppages....The window exactly met the ceiling and side walls and when pulled down all the way, created a sharp-edged aperture that...looked out into open sky."² In essence, Turrell had framed the sky. The cutout was high enough on the wall to offer an unobstructed vista; it allowed the light shifting over the course of the day and night to interact with the light of the viewer's space inside. Turrell thus had begun to explore the notion of controlling the color of the sky, which dovetailed with his interest in what he calls "prejudiced perception": "It is only because we give the sky its color that I'm able to change the color of the sky through the context of vision."³ Whereas the Mendota Stoppages aimed to control the way light from outside entered the building—in order to force shadows and light occurrences—the Structural Cuts were shaped to give the light the appearance of not having depth or dimensionality. The light and the wall appeared to be on the same plane. The color and quality of the light outside, which varies throughout the day and throughout the year, depended greatly on the quality of the light within the interior space.

Count Giuseppe Panza di Biumo first experienced this effect at the Mendota studio in 1972. He went on to commission a number of works, including a Structural Cut (*Lunette*, 1974) and Turrell's first Skyspace (*Skyspace I*, 1974), for his villa in Varese, Italy. Panza remembered the very first iteration of a Skyspace:

There was daylight coming from the square opening above the front wall, which balanced the artificial light. The sky that we could see was like a surface which appeared as a solid blue material, but at the same time empty. The color was not one seen in paintings; it was material and immaterial at the same time. In the beginning the opening was blue—the sky of Southern California in the fall....After a while the blue became darker and stronger, and the space inside the opening receded and gained depth....We no longer had the feeling of being lost in



an endless space; now something beautiful was nearby and real. Different colors began to appear in a slow but steady succession. The changes were fast enough to keep our attention on the opening. We went through the red, the orange, the bright gold, the dark gold, the dark red, the yellow mixed with the green, the violet, which lasted longer, and finally the black, which became permanent.... We realized that the night had arrived.⁴

Turrell also constructed at the Mendota a prototype of a Skylight. It was built in the floor of the dining room, above the basement. The Skylight series focuses on "light through an opening into a space below," which Turrell likens to "the light that comes down through the leafy canopy of the forest and splashes off the forest floor, underlighting the under-canopy space."⁵ Typically smaller in scale and less complex than Skyspaces, Skylights have been designed primarily for private and residential spaces. Two public Skylights were installed temporarily in France in the 1980s, however: *Hover* (1985) at the Musée d'art moderne de la ville de Paris and *As Above* (1989) at the Musée d'art contemporain in Nîmes.⁶ While the Structural Cuts have openings in vertical walls, Skylights and Skyspaces have apertures in the ceiling, above the horizon line; the forms of the Skyspaces are also more closely related to those found in the Projection Pieces and Shallow Spaces than to those of the Structural Cuts.

After the completion of *Skyspace I* in 1974 at Villa Panza, Turrell in 1978 began work on his second Skyspace, *Meetings*, at the Museum of Modern Art's P.S. 1 in Long Island City, Queens. Writer Sebastian Guinness noted the neighborhood's "rusting grated windows and...gloomy fifties architecture...the inner city."⁷ The construction required cutting a hole through thick industrial roofing and removing heavy steel girders, and budgetary issues delayed the process. It would take eight years to finish. In the meantime, Turrell began *Second Meeting* (1985) at the Museum of Contemporary Art (MOCA) in Los Angeles, then the Temporary Contemporary, in a small building that was part of a gas station adjacent to the museum. Frustrated by MOCA's refusal to receive the work as a gift a year later, he sold it and rebuilt it as a permanent, freestanding Skyspace on the grounds of Mandy and Cliff Einstein's home in West Los Angeles. Turrell retained the same twenty-by-twenty-by-twenty-foot dimensions, the interior lined with benches, and the hidden, frosted-glass, linear tungsten lamps on the inner rim of the opening.

With *Second Meeting*, though, Turrell recognized the need for autonomous architecture for the Skyspaces because his ability to cut into extant buildings became increasingly limited—and limiting. He admits, "I think

4 Julia Brown, ed., *Occluded Front: James Turrell* (Los Angeles: Fellows of Contemporary Art and the Lapis Press, 1985), 64.

5 Peter Noever, ed., *James Turrell: The Other Horizon* (Ostfildern, Germany: Hatje Cantz, 1999), 95.

6 The Los Angeles County Museum of Art owns a similar piece, *Siren Muse* (2003), made of painted wood, glass tubing, and gauze.

7 Sebastian Guinness, writing in *Chichu Art Museum: Tadao Ando Builds for Walter De Maria, James Turrell, and Claude Monet* (Ostfildern, Germany: Hatje Cantz, 2005), 126.

8 Julia Brown, ed., *Occluded Front: James Turrell* (Los Angeles: Fellows of Contemporary Art, 1985), 15.

9 James Turrell, conversation with the author, November 2012.

10 *James Turrell: Sensing Space* (Seattle: Henry Art Gallery, 1992), 50.

to the stupas of Asia to those of the ancient Americas—connects land and sky. Turrell took advantage of the underground waters of the cenote to literally link the underworld to the sky in reference to Maya cosmology that describes the origins of the universe as only the sea and the sky.

Water, as a denser version of sky, has been explored in many of Turrell's outdoor constructions—several sited on water or incorporating pools. Water holds light more easily than air. Turrell's Yucatan pyramid, titled *Agua de Luz* (Water of Light), features an elliptical, ringed pool of water at the work's sky-touching top. It surrounds the elliptical opening of a Skyspace within the pyramid's topmost inner chamber, which is itself a smaller version of Roden Crater's East Portal. Like its Arizona counterpart, *Agua de Luz* features a polished silica-bronze flight of slightly elliptically curved stairs that connects inside and outside. Like at Roden Crater, the chamber and stair connects to the waters below, through a long dark tunnel lined up with the opening of the Skyspace. Given its relatively small scale and much steeper incline, the pyramid's tunnel is traversed by stair rather than ramp. Alternately titled *Waters Above, Waters Below*, Turrell's pyramid is a kind of inverse to the sky that the cenote below is to the underworld. Its inner tunnel is aligned such that around a certain day and time (and its opposite in the solstitial calendar), the sun is drawn down from the sky directly into the cenote below, brilliantly lighting the volume of underground water.

Turrell's use of architecture in the landscape accesses light in ways that are largely impossible inside a museum and often takes advantage of the particular aspects of a unique site:

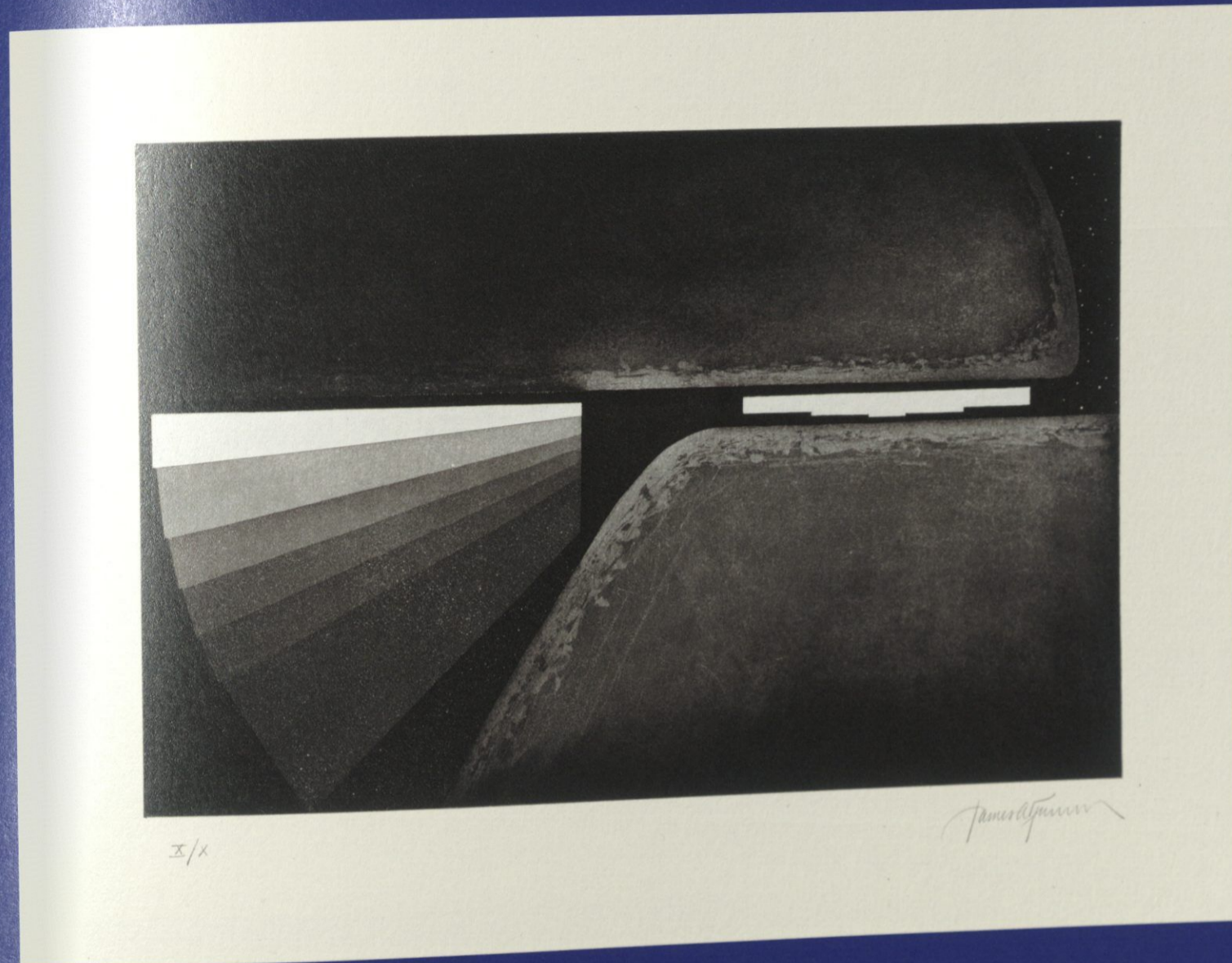
I like to find a site that has unique opportunities for light or the perception of space. If the site is neutral and doesn't have any unique qualities or many possibilities, then I construct an independent piece that could be transferred elsewhere, a more hypothetical piece than one which comes from responding to a specific site. Spaces in general are not neutral to begin with, and some have more complexities than others. The more they have, the less possible it is to make a neutral beginning. In that case, I respond to the site and make a piece that is unique to it. Generally, I would say that the spaces in museums are

not particularly neutral, and they are more adaptable, basically, to painting. Some are reasonably adaptable for sculpture, but that's less common. And it is even less common that they are adaptable to large installation works. By and large, architects have created museums that support a limited view of art... I have more ambition for art than to have it limited to these things.⁹

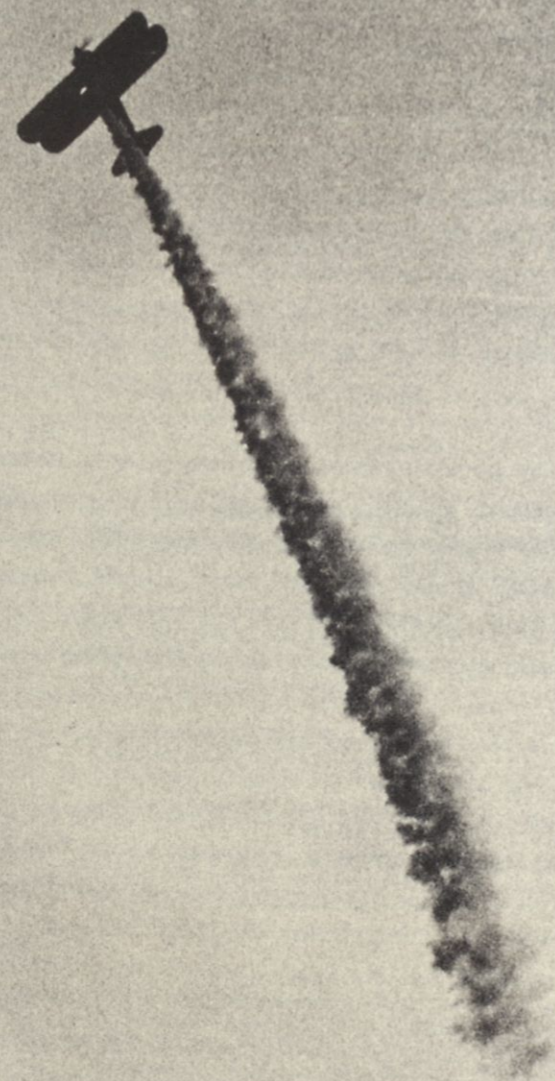
Turrell constructs architecture to expand the potential light he can hold. Yet all of his works employ architecture of a sort—a limit, a frame in space. As he has said, "When the sun lights the atmosphere, you can't see out. Footlights and stage light make it impossible for the performer to see the audience. I construct the architecture of visual space using light as material."⁹

So I'm interested in making shells that open onto situations outside so that outside, and events outside, enter that space meaningfully, as in the situation with the crater. There I feel I'm taking in this space in the Painted Desert, where you see exposed geology—a stage set of geologic time. I then want to make spaces that engage celestial events in light thereby making the "music of the spheres" in light. These pieces are performed by the rotation of the earth and the motion of planets so that they will keep themselves performing long after I'm gone. But then they have a quality of having been human-made in a "civic space" sort of sense, not unlike how we now encounter Mount Alban or Chichen Itza (ruins, Mexico)—old spaces emptied of use, except by the imagination. In fact, it's much more interesting for me to see those places now than it would be if they were actually inhabited. In the same way I'd be very interested to see Washington, D.C., emptied of use. What a space. Long lawns. Huge spires. A big house with a giant man sitting inside it. And you go into these big chambers. It would be pretty terrific (and actually the United States would work just as well, if not better). Anyway, I am interested in the quality of consciousness in space that occurs when you come into it, when you realize it's like an eye in the same way a camera has an eye, and space is somehow seeing and has a way of seeing made by subconsciousness. With my work you actually have a way to investigate this and look at it, but you do it by entering. It's like walking into the lens of a very large camera that has this special way of seeing. When we make the camera, it has its way of seeing that we tend to forget.¹⁰

MICHAEL GOVAN



Untitled print from *Deep Sky* portfolio, 1984



CHAPTER EIGHT

ENTERING THE NEW LANDSCAPE

I am interested in this new landscape without horizon. If you go into the Ganzfeld pieces it is a little bit like the landscape that you can find when flying around through cloud or fog. You can also find it in 'whiteout conditions' when you go skiing and get into snowfall, it can happen that you are not really sure anymore which way is up or down. This occurs in diving, too. We are moving into the territory of horizonless space that you can also experience in outer space without gravity.

James Turrell



1 Nancy Alsop, "Experience 'Bindu Shards' by James Turrell," *Wallpaper*, October 4, 2010, <http://www.wallpaper.com/art/experience-bindu-shards-by-james-turrell/4799>.

2 Craig Adcock, *James Turrell: The Art of Light and Space* (Berkeley: University of California Press, 1990), 137.

3 "James Turrell's latest baptism-by-light installation, *The Ganzfeld Piece*, offers an immersive experience in immaterial color, pure perception, and what might be called the fullness of emptiness. Roberta Smith, "Venice Biennale: The Enormity of the Beast," *New York Times*, June 2, 2011, <http://artsbeat.blogs.nytimes.com/2011/06/02/venice-biennale-the-enormity-of-the-beast/>.

4 Markus Brüderlin, "The Innerworld of the Outerworld of the Innerworld: James Turrell and the Boundaries between Sensory and Spiritual Experience," in *James Turrell: The Light Inside* (Järna, Sweden: Kulturforum, 2012), 36.

5 Esther Barbara Kirschner, "From Space to Surface to Space: On the Works in the Exhibition," in *James Turrell: The Wolfsburg Project* (Ostfildern, Germany: Hatje Cantz, 2009), 74.

6 *Ibid.*, 75.

PAGE 248 James Turrell and Sam Francis, sky drawing performed at Easter Sunday in Brookside Park, April 1969, image originally reproduced in *Avananche*, no. 1, Fall 1970, published by Kineticism Press, New York

ONE OF THE THINGS ABOUT FLYING is that the places it has taken us are places that we haven't really begun inhabiting until very recently. Perceptually we are still a ground-based being, and we don't have a real good handle on the spaces of the skies. There are a lot of illusions that occur to pilots, that are actually rather dangerous....there are situations where absolute loss of horizon really does change things. Also, just where your perception is wrong. About six hundred to three thousand feet from the ground there's a quality of the earth curving the wrong way...being concave. That's very interesting to me. It looks like it goes up underneath you. The first to describe this was Antoine de Saint-Exupéry. Wind, Sand and Stars and Night Flight are the descriptions of the spaces he was involved in. They were very exciting spaces. I have a whole book of illusions that happen to pilots—especially, say, in a turn, and where there are changes in terrain that may not be read as changes in terrain, and it may set up an illusionary quality.

JAMES TURRELL

Ganzfeld is a German word meaning "complete field" that is used to describe an unstructured region of stimuli that causes perceptual deprivation. The effect of a ganzfeld can be compared to the natural visual phenomenon of a whiteout that occurs during a blizzard. It becomes impossible for a person to tell if what he or she is seeing is real or imagined. "It is quite something to realize we create the reality within which we live but are quite unaware of how we do it," James Turrell remarks.¹

The first work in Turrell's own Ganzfeld series was *City of Arhirit*, which he created for his 1976 solo exhibition at the Stedelijk Museum in Amsterdam. It consisted of four consecutive wedge-shaped chambers that served as sensing spaces. Two appeared to be filled with green light, which was actually light reflected from a grassy lawn, and two had red light that was the reflection off a brick wall. After the viewer entered these spaces, however, the colors became imperceptible within moments.² The artist's more recent work consists of a large, enclosed, tightly controlled immersive environment with impeccably programmed lighting and refined surfaces and architecture that enable a viewer to fully experience the ganzfeld effect. A visitor ascends stairs or a ramp to an elevated platform and proceeds forward toward a volume or space with no discernible horizon. While the mind attempts to locate architectural fragments that exist beyond the platform—walls, corners, flooring—the eye cannot see them. Whereas the viewer of a Space Division Construction can focus on the walls and then within moments can see the room, the Ganzfeld is constructed seamlessly so that the eyes cannot focus on anything. Vision seems to collapse, leaving the beholder to experience what critic Roberta Smith describes as a disorienting "fullness of emptiness."³

Turrell's Ganzfelds are based on the sensory-deprivation experiments that he, Robert Irwin, and Ed Wortz conducted in 1969 for the *Art and Technology* program at LACMA. A viewer of these works essentially "no longer perceives, but only 'sees,'" as Markus Brüderlin says.⁴ This description of *Bridget's Bardo* (2009, a large work in Wolfsburg, Germany), illustrates how, as Esther Barbara Kirschner notes, "the eye has nothing to latch onto for orientation—nothing to make sense of"⁵ and is thus deprived of the type of seeing to which the mind is most accustomed. Kirschner adds:

*The visitor enters a room completely bathed in colored light via a steep ramp at third-floor level. All surfaces—floor, ceiling, and side walls—display optimum smoothness and evenness, and run softly into one another. All visible corners are rounded off, all transitions perfectly flush. Finally, all surfaces are finished in reflecting white paint. If you plunge into the dimensionless world where all architectural features—light, color, and space—blend into one, the eye is lost in the diffuse mist of light, which is evenly lit by the reflected light of the white walls...an undifferentiated void that could be anything.*⁶

Around the same time that Turrell's practice expanded into the new landscape of the ganzfeld, he embarked on a literal move away from Los Angeles. Turrell left Southern California for Arizona and started work on Roden Crater in 1974. His impulse to reconsider the horizon and reify the notion of the landscape with light started much earlier, however. In the mid-1960s, when Judy Chicago (then Judy Gerowitz) was performing with pyrotechnics at Pomona College, Turrell was working with gas and fire in the form of flat flames, which ultimately proved too difficult to control. Then, in collaboration with Sam Francis, Turrell created *Aerial Skywriting Pieces* (1968). He and Francis carefully choreographed the movement of a plane trailing colored skywriting smoke, transforming the airspace into a kind of screen.⁷ The plane, piloted by Turrell, made intersecting painterly elements that were buoyant—reflecting, fading, and streaming along the x-, y-, and z- axes, activating the horizon and creating a new, if fleeting, skyscape. For another outdoor performance at Pomona, *Burning Bridges* (1971) in front of the Bridges Auditorium, Turrell used road flares to animate a Neoclassical arcade. "They made an unbelievable amount of light. When the flares were set off, it just looked fantastic because it put the light right into the alcove space—behind the columns," Turrell describes. "It really looked like the building was on fire!"⁸ This performance used an enclosed portion of the building's facade as a sort of "cave wall" that allowed the projection and reflection of flares to perform like fire. Turrell believes that all light comes from fire; he does not differentiate between natural and artificial light. The implication of destruction or visual obliteration from fire is thus unproblematic for Turrell if it leads to (re)creating a space for a new landscape made with fire/light.

These earlier performance works enabled Turrell to seemingly manipulate sky and architecture, a key element of his Ganzfelds. The development of his typologies of indoor works at the time, namely the Projection Pieces, Shallow Spaces, Wedgeworks, and Space Division Constructions, also informed his approach to the Ganzfeld works. By emptying a space of specific types of information and then refilling it with elements that compromise vision, Turrell is essentially replacing the images on the wall of Plato's Cave with a condition derived directly from and inspired by the viewer's own unique perception. While the light performances tested the limits of how a viewer reads a landscape, Ganzfelds (and Gasworks in particular)

create an experience for a viewer's body and eyes, senses and vision, both in tandem with and in isolation from each other.⁹

Making bodily presence entirely central to the work reflects an extension of the stage collaborations *Severe Clear* and *To Be Sung* (see Chapter 5). In those performances, the dancers' bodies ruptured the boundary between the viewing and the sensing spaces of the Space Division Construction on the stage. This crossing-over can be considered a precursor to Turrell's Ganzfeld, which metaphorically calls on the audience to approach the stage and enter into a void of seeing on the other side, generating a sensation that is at once both paralyzing and thrilling. "Turrell's work with existing architecture explores the ambivalence of the boundaries and meaning of objects, using light as a means to reinforce the margins and borders of architectural bodies and thus breaking up their structural order and dimensionality," Peter Noever explains, making a particularly valid point about the experience of a Ganzfeld. "The dissolution of material boundaries effected by Turrell's light installations...does not merely present but enforces a new kind of architectural thinking as a fragment of time and a changeable, ephemeral appearance through light."¹⁰ Simultaneously stimulating and confusing the senses, a Ganzfeld facilitates a viewer's encounter with his or her own body and perception and represents the development of a vocabulary for a new landscape.

Ultimately, entering this ephemeral new landscape—which for Turrell has "no up, no down, no left, no right"¹¹—is paradoxically about returning inside, or "going inside to greet the light," as Turrell's Quaker grandmother would say, and thereby seeing with the eyes closed. Whether manifested as the buttes, mesas, and fantastical landscapes in and around Roden Crater as depicted in the *Krazy Kat* comics by George Herriman or in the form of virtual communications, remote sensing, the Simultaneous Dreamer¹², or meditation, Turrell links the space beyond to our own personal space. The Ganzfelds are particularly defining of the artist because with them, as Miwon Kwon explains, Turrell achieves "a dimensionless and scaleless sense of space, dreamlike and ethereal, always infinite, that one realizes is not so remote but is within us, and beyond us, all the time...the context that surfaces in the field of Turrell's work is at a far more expansive scale than that commonly discussed in contemporary art discourse."¹³

CHRISTINE Y. KIM

7 Additional skywriting pieces include *All in the Sky* (1989) and *Body in Flight* (1990).

8 Rebecca McGrew, ed., *It Happened at Pomona: Art at the Edge of Los Angeles, 1969–1975* (Claremont, CA: Pomona College Museum of Art, 2011), 310.

9 Gasworks like *Bindu Shards* are compact versions of Ganzfelds. A single reclining viewer slides into an enclosed sphere with a diameter of about five feet for approximately ten minutes to experience the interior light program. Large Ganzfelds, in comparison, are more architecture than object, can measure more than ten thousand square feet, and can accommodate several viewers at once.

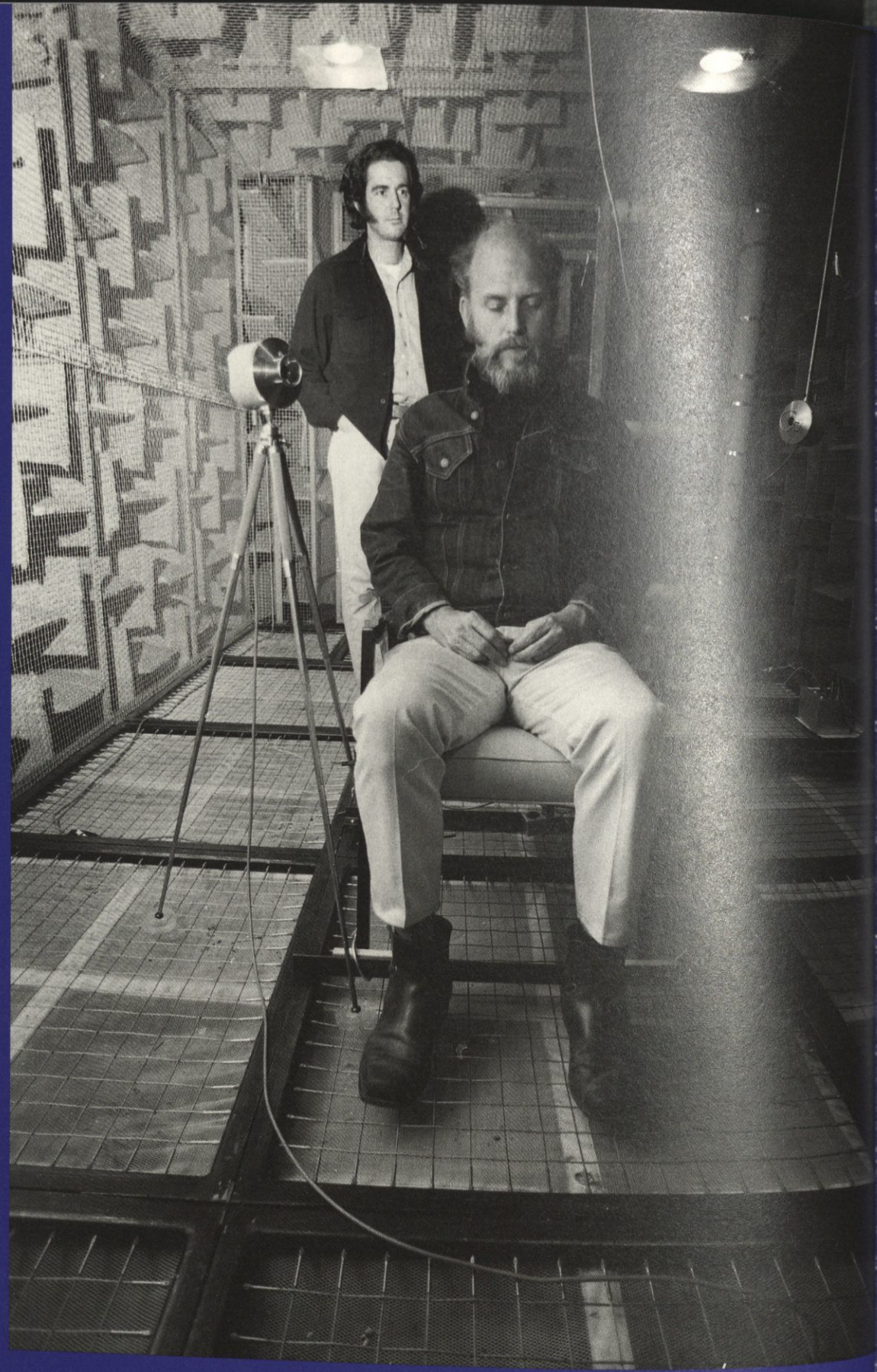
10 Peter Noever, ed., *James Turrell: The Other Horizon* (Ostfildern, Germany: Hatje Cantz, 1999), 195.

11 James Turrell, interview with Christine Y. Kim, March 28, 2012.

12 The Simultaneous Dreamer refers to the concept of a person who experiences the Infinite Simultaneous Dream, when multiple points of consciousness can observe different perspectives at the same time. Someone with this capability can dream lucidly while seeing himself dreaming and during various states of consciousness.

13 Miwon Kwon, "Room for Light, Light on Its Own," in *James Turrell* (London: Gagosian Gallery, 2011), 75.

ABOVE *Burning Bridges*, 2012, re-creation of 1971 performance at Pomona College, Claremont, CA

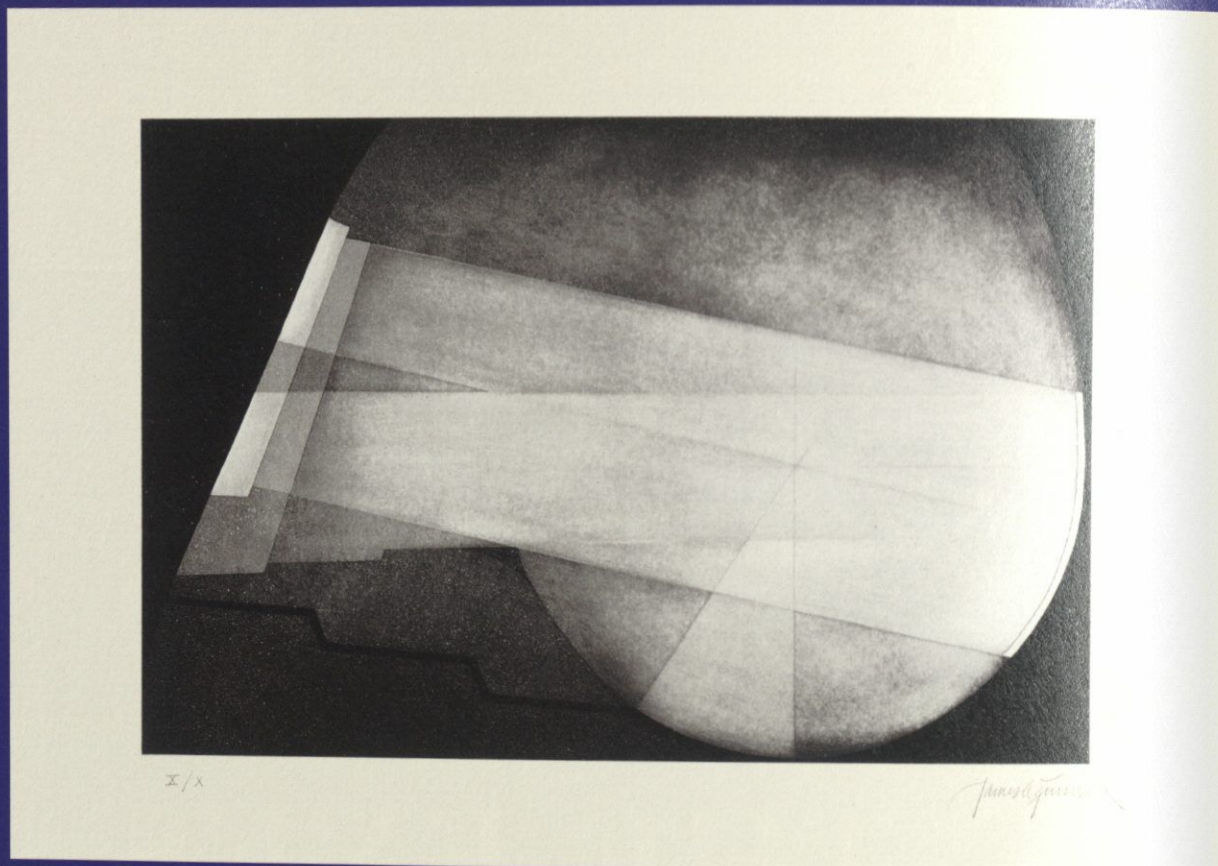


CHAPTER NINE

BEHIND- THE-EYES SEEING

*I've always wanted to make a light that looks like
the light you see in your dream. Because the way that light
infuses the dream, the way the atmosphere is colored,
the way light rains off people with auras and things like that....
We don't normally see light like that. But we all know it.
So this is not unfamiliar territory—or not unfamiliar light.
I like to have this kind of light that reminds
us of this other place we know.*

James Turrell



1 James Turrell, in conversation with Michael Govan at the Los Angeles County Museum of Art's Bing Theater as part of the Director's Series, unpublished transcript, October 16, 2007.

WITH THESE CELLS I am going back to my sources and beginnings in art. In terms of spirituality, there are definitely references in my work to the way we look at light and very few discussions of things spiritual are able to avoid discussions of light. However, I feel that spirituality in no way reduces sensuality; the real lushness of spirituality has to do with how sensual it is, and with sharing positive pleasure. I use no object as such because I don't want to have light lighting things, I want to make a thing-ness of light. Therefore, there is no object because perception of light is the objective—perception is the object....I also like no focus, no one point, no one where to look, so that literally you begin plumbing the space with vision, and, in a reduced light area, you are able to have feeling move out of the eyes. Our eyes are normally closed either with the protective eyelid or the tight pupil....I believe that there is a time

when the eyes, being the most exposed part of the brain, have feeling move out of them so that there is a sensual sensing and this happens only in rather reduced light levels. It may seem that there is a lot of light in some of my works. But in fact, there is very little. It's just that I control the rest of the situation.

JAMES TURRELL

While viewers often describe a sense of "infinite light" in the unstructured stimulus field of a Ganzfeld by James Turrell, the artist clarifies that what is actually experienced is "a different kind of landscape, a new landscape of indeterminable space."¹ The difference between infinite light and indeterminable space is that although vision collapses and depth perception

is compromised in both scenarios, a viewer senses a volume in a Ganzfeld. "You feel this depth beyond it," Turrell says.² This type of seeing mimics that of closed eyes and enables a kind of vision Turrell calls "behind-the-eyes seeing." "You're looking into this ganzfeld space," Turrell explains, "then I have this phased light that's projected in there....That's actually where you can see the organization of vision."³ The architectural Ganzfelds that Turrell began to construct in 1976 employ entire rooms as chambers for reflecting light, but his study of the ganzfeld effect and the construction of smaller spaces for an individual viewer date back to the experiments Turrell conducted in 1969 with Ed Wortz and Robert Irwin as part of the Los Angeles County Museum of Art's *Art and Technology* program (*A&T*).

Looking for a way to create a situation in which indeterminable space could be perceived, Turrell began with the arching dome of a planetarium. *Art and Technology* provided the resources, technical equipment, tools, and collaborators. Wortz, who had a PhD in experimental psychology and headed the Garrett Corporation's life-sciences division in Torrance, worked as a subcontractor for NASA on systems for manned lunar flights. He had extensive knowledge of science, while Irwin, who brought Turrell into the LACMA program, had specialized skills in art and aesthetics. Turrell, a groundbreaking artist who had studied psychology and astronomy at Pomona College, had a deep understanding of both.⁴ In 1969 they proposed an enclosed structure that combined a ganzfeld (a total, homogeneous visual field) with an anechoic chamber (a total aural field). The team wanted to work with states of consciousness; viewers would spend time in spaces that first deprived the senses and then restimulated them.⁵ As art historian Craig Adcock notes, they were "interested in designing a work that would enhance the observer's willingness to listen to the sounds of hearing and the focus on the internal aspects of visual processing, such as retinally induced color fields. In these circumstances of literally introspective seeing and hearing, the perceiver, as Turrell expressed it, "could back into a subtle form of meditation."⁶

The proposal for *Art and Technology* outlined a structure with three spaces. A viewer would be seated in a reclining chair and enter an anechoic chamber measuring approximately twelve feet in height, width, and depth. A hydraulic lift would then move him or her to an upper chamber with no light or sound stimulus for five to ten minutes. After that time passed, the reorienting stimuli would, as Turrell's notes for the experiments indicate, "increase gradually to the point which seems to be between hallucination and reality."⁷ The viewer would then ascend to an upper, domed, cylindrical chamber constructed of a semitranslucent Plexiglas for the ganzfeld experience. After this deprivation—notunlikethewhiteoutconditionsofablizzard—a light program with changing colors and temperatures, flashes, and pulsations would then restimulate the viewer's senses before he or she descended and exited the work via a tunnel leading out of the museum, gradually emerging to the outdoors.⁸ Although the research toward realizing this complex piece led to a heightened understanding of and interest in alpha conditioning and meditative states, the end result for Turrell was the construction of smaller hemispheres: illuminated domes just three feet in diameter, under which a single viewer would sit and experience a field of even light comparable to a fog or a mist with an indeterminable depth beyond. Reflecting on this work that stemmed from *A&T*, Turrell explains how he "made a situation where you confront and experience your own seeing.... this is more like [the] source to me," in its connection to the most primal state of human perception.⁹

The Irwin-Turrell-Wortz collaboration ended well before the *Art and Technology* exhibition opened at LACMA in 1971. Turrell, though, continued to build chambers within which individual viewers could experience phenomena such as the ganzfeld effect. Known as the *Perceptual Cells*, each work is a freestanding, enclosed structure that provides an immersive experience for one visitor at a time:

2 Ibid.

3 Ibid.

4 Craig Adcock, *James Turrell: The Art of Light and Space* (Berkeley: University of California Press, 1990), 62.

5 Jane Livingston, "Robert Irwin/James Turrell," in *A Report on the Art and Technology Program of the Los Angeles County Museum of Art, 1967-1971* (Los Angeles: Los Angeles County Museum of Art, 1971), 129-33.

6 Adcock, *James Turrell: The Art of Light and Space*, 20.

7 Livingston, "Robert Irwin/James Turrell," 130.

8 Ibid., 130-31.

9 James Turrell, *Perceptual Cells* (Ostfildern, Germany: Edition Cantz), 61.

