JAMES TURRELL

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A RETROSPECTIVE

JAMES TURRELL

Michael Govan and Christine Y. Kim

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

Featuring photography by
Florian Holzherr

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JACKET FRONT AND BACK
Amrta, 2011, installation view at Kulturforum Järna, Sweden, 2011

PAGES 2–3
Roden Crater Project, view toward northeast

NOTE Captions for objects in the exhibition are abbreviated versions of the complete entries in Works in the Exhibition on pages 288–89. Objects that are not in the exhibition have full captions.

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Afrum (White), 1966, installation view
at Los Angeles County Museum of Art, 2009

FOREWORD

Los Angeles–native James Turrell returns to his hometown on the occasion of his seventieth birthday to open the most comprehensive retrospective of his career at the Los Angeles County Museum of Art (LACMA). Since his first, groundbreaking exhibition at the Pasadena Art Museum in 1967, when he was just twenty-four, Turrell has thrilled and mystified viewers around the globe with his statements in light. While exhibitions at the Stedelijk Museum (1976); the Whitney Museum of American Art (1980); the Israel Museum (1982); and the Museum of Contemporary Art, Los Angeles (1985), among others, have penetrated aspects of his oeuvre, none thus far has examined its extraordinary depth and breadth—from his early days at his studio in the former Mendota Hotel in the Ocean Park section of Santa Monica, California, to his ever-evolving magnum opus, Roden Crater in Arizona; from his prints, drawings, and photographs to his corporeally and visually consuming immersive spaces; and from his first light projection *Afrum* (1966) to *Breathing Light* (2013), his most recent Ganzfeld commission for LACMA. As co-curators of this monumental undertaking, we understood that with an artistic practice so rich, a commitment so deep, and a vision so complex, we could only begin to unpack the ways in which Turrell invites us to "see ourselves see." Covering 33,000 square feet on both the second floor of the Broad Contemporary Art Museum (BCAM) and in the Lynda and Stewart Resnick Exhibition Pavilion at LACMA, this retrospective presents works in a variety of media, including projections, sensory environments, and works on paper.

LACMA's collaboration with the Museum of Fine Arts, Houston (MFAH), and the Solomon R. Guggenheim Museum, New York, takes the form of concurrent exhibitions that together celebrate Turrell's groundbreaking career. MFAH presents works by the artist from their rich holdings, including *End Around* (2006), a Ganzfeld that will be constructed for the first time, while the Guggenheim will build a majestic site-specific hybrid work by the artist in its Frank Lloyd Wright rotunda, one of the most iconic museum architectures in the world. Directors Gary Tinterow (MFAH) and Richard Armstrong (Guggenheim), along with curators Alison de Lima Greene (MFAH) and Carmen Giménez and Nat Trotman (Guggenheim), have graced us with their vision, professionalism, and commitment in realizing a true large-scale collaboration inspired by a single artist. Following its presentation at LACMA, *James Turrell: A Retrospective* will travel to the Israel Museum, Jerusalem, and the National Museum of Australia, Canberra (NMAC), both institutions with significant holdings and major commissions of Turrell's work whose efforts we applaud and appreciate. We thank James S. Snyder and Tania Coen-Uzzeli at the Israel Museum and Ron Radford and Lucina Ward at NMAC for their interest and commitment.

First and foremost, we extend our heartfelt thanks to James Turrell for his art, which has inspired us all, and for his generous collaboration with LACMA. Kyung Turrell, as well as Donna An and Tony Dongkwan Lee, have been instrumental in the realization of both this retrospective and publication. Studio assistants past and present—including Julia Triebes, Andrew Beshears, Kelsey Connair, and Cody Kukulski—have been immensely helpful every step of the way.

This monumental project would have been impossible without the essential generosity of the outstanding individuals and organizations that have helped through their crucial financial support. Major support came from Kayne Griffin Corcoran and the Kayne Foundation, their assistance providing the cornerstone for making this presentation possible. Significant support was also provided by Dasha Zhukova, Pace Gallery, Shidan Taslimi, Mehran and Laila Taslimi, Susanne Taslimi, and the Taslimi Foundation; Renvy Graves Pittman; in addition to Christie's and Suzanne Deal Booth and David G. Booth. Important funding also came from Suzanne Deal Booth and David G. Booth, Robert Tuttle and Maria Hummer-Tuttle, and Vacheron Constantin, as well as Violet Spitzer-Lucas and the Spitzer Family Foundation. Additional contributions came from Mark and Lauren Booth, James Corcoran and Tracy Lew, the Charles W. Engelhard Foundation, and Pierre Lagrange and Roubi L'Roubi.

We also thank Turrell's galleries, especially those individuals with whom we have worked very closely over the past three years: Maggie Kayne, William Griffin, James Corcoran, Genevieve Day, and Shannon Haskett at Kayne Griffin Corcoran, Los Angeles; Marc Glimcher, Elizabeth Sullivan, Daphne Palmer, and Justine Chausson at Pace Gallery, New York; Larry Gagosian and Serena Cattaneo Adorno at Gagosian Gallery, London; Wolfgang Häusler and Maximilian Goelitz at Hausler Contemporary, Munich; and Hiram C. Butler at Hiram Butler Gallery, Houston. We appreciate your assistance with and dedication to this project.

We are grateful for the lenders to the exhibition, who have selflessly parted (temporarily) with treasured works to share them with LACMA's audiences: Art & Research, Las Vegas; Barry Berkus and family; Suzanne Deal Booth and David G. Booth; Cejas Art Ltd.; Beth Rudin De Woody; Gagosian Gallery; Houghton Hall Collection, UK; James Corcoran Gallery, Los Angeles; Karen Comegys-Wortz and Edward Wortz; Kayne Griffin Corcoran; Maggie Kayne; Richard and Suzanne Kayne; Saree Kayne; Lannan Foundation; the Mohn Family Trust; the Museum of Modern Art, New York; Pace Gallery; Manfred Simchowitz; and James Turrell, as well as additional lenders who wish to remain anonymous. We also thank the curators, assistants, and administrators who have facilitated loans, paperwork, and other details with painstaking care and precision—including Sophie Backelandt, Mary Buckley, Connie Butler, Kathy Curry, Christie Mazuera Davis, Christina De Castro, Holly D. Dungca, Steffan Foster, Wendy Grogan, Kathy Halbreich, Tracy Lew, Stephen Lowe, and Jessica Rutledge.

Based in Flagstaff is an extraordinary team who manages Roden Crater, headed by Thomas O. McGrath and Richard Andrews, director of the Skystone Foundation. We are grateful for their work there and for the graciousness of our friends in Arizona, including Robert Breunig, Karen Enyedy, and John Haviland at the Museum of Northern Arizona, as well as Allan and Tina Affeldt at La Posada. The design and building of exhibitions, Skyspaces, and other site-specific projects would be impossible without Matthew Schreiber, Ryan Pike, and Maayan Strauss at the Baltic Studio, who worked seamlessly with John Bowsher, Victoria Turkel Behner, and Priscilla Fraser at LACMA, as well as with Mehran Taslimi, Bradley Johnson, Robert Smith, Laura Bachelder, and their team at Taslimi Construction, who brought great excitement and expertise to this project.

Our colleagues at LACMA have shown the highest levels of professionalism, support, and enthusiasm around this exhibition. Vice President of Museum Infrastructure John Bowsher has worked with Turrell on several exhibitions and projects over decades, including helping oversee planning and construction at Roden Crater. We are eternally grateful to Nancy Meyer, who worked above and beyond her role as curatorial assistant. Additionally, we thank the Contemporary Art department—Franklin Sirmans, Rita Gonzalez, and Holly Harrison—as well as Deputy Director for Art Administration and Collections Nancy Thomas and Jarrett Gregory in the Director's Office, all of who have been incredibly supportive of what is one of the largest exhibitions the department has seen to date. We are also grateful for the scholarly work of Carol S. Eliel in the Modern Art department; her deep understanding of LACMA's history and of the Light and Space movement has been immensely helpful. We extend our appreciation to research assistants Megan Metcalf and Megan Driscoll and intern Hannah Yoo, as well as the LACMA colleagues and librarians who aided them in their research.

This catalogue traces Turrell's entire career through an examination of the various series and types of works he has created while highlighting the forty works on view in the exhibition. Its exquisite images are primarily the work of photographer Florian Holzherr, whose exceptional expertise, sensitivity, and understanding of Turrell's work allow us glimpses of past exhibitions and never-before-photographed works sited in various corners of the globe. We are deeply indebted to Florian for his cheerful and unstinting dedication to this project. Our editorial team—Lisa Gabrielle Mark, Jennifer MacNair Stitt, and Phil

Graziadei—bravely took up the challenge of creating an extraordinarily ambitious publication that would survey the artist's oeuvre. Given the sheer number of works, series, sites, sources, projects, exhibitions, and collaborators involved, what seemed a Herculean task has resulted in a beautiful and elegant catalogue, thanks to designers Lorraine Wild and Xiaoqing Wang of Green Dragon Office. We are grateful to Jeanne Dreskin, who worked tirelessly to acquire image rights and reproductions from numerous image lenders, sources, and collections via adminstrators who graciously facilitated access and permissions for this catalogue. We are indebted to essay contributors E. C. Krupp and Alison de Lima Greene, who generously shared their deep knowledge of Turrell's work. Finally, we thank our copublisher Mary DelMonico of DelMonico Books/Prestel, who shared our vision of a lushly illustrated scholarly publication that would bring the work of Turrell to so many.

Our ongoing gratitude goes to LACMA's entire External Affairs team, headed by Vice President of External Affairs Terry Morello, who worked tirelessly throughout the development of the exhibition—especially Director of Artist Initiatives Erin Wright, who has seen it evolve from a series of inspired discussions to a comprehensive survey that involved her producing a documentary film on Turrell and Roden Crater directed by Peter Vogt; Vice President of Development Melissa Bomes and her entire team, including John Dumbacher, Matthew Thompson, Kate Virdone, Rachel Zelaya, Maria Robinson Glover, and Ondy Sweetman; Miranda Carroll, Scott Tennent, Amy Heibel, and the Communications staff, who connected us to essential media; and Associate Vice President for Public Engagement Brooke Fruchtman and her team, who helped us create a spectacular experience for the broadest possible public. Thanks also to Senior Vice President of Education and Public Programs Jane Burrell, who, together with her colleagues in Education, especially Jose Luis Blondet, has developed a tremendously exciting roster of educational programs.

Turrell's work poses numerous challenges for host institutions; the registrarial aspects and installation design require an exceptional level of logistical and conceptual work. Nancy Russell, Errin Copple, Suzan Sengoz, and the Registrars' office; Eddy Vajarakitipongse, William Stahl, Roosevelt Simpson, Jeff Haskin, and his crew in Art Preparation and Installation; the Gallery Operations and Services teams; Renée Montgomery and her Risk Management staff; and Fred Goldstein and Pamela Kohanchi in General Counsel represent some of the many colleagues who created new systems, protocols, and methodologies that were necessary to exhibit Turrell's work in this type of institutional context. They, as well as the staff of the Conservation, Human Resources, Information Services, Technology and Digital Media, Special Events, Photo Services, and Security departments, have confronted extraordinary challenges with dedication and aplomb. We also wish to thank our incredible Exhibitions department at LACMA, headed by Zoë Kahr, who, together with Elizabeth Andres and Marciana Broiles, kept the project on track.

Los Angeles is home to numerous collectors of Turrell's work to whom we are grateful for opening their private residences to LACMA for this retrospective. We extend our thanks to Mandy and Cliff Einstein, James Goldstein, Richard and Suzanne Kayne, Jarl and Pamela Mohn, and Dallas Price–Van Breda and Bob Van Breda. Numerous colleagues have also enhanced our understanding of Turrell's work and provided valuable advice and consultation, including Dolores An, Stanley Grinstein, Paul Schimmel, Julia Brown, Craig Adcock, Maurice Tuchman, Howard Fox, Helen Pashgian, Kathryn Kanjo, Hugh M. Davies, Vivian Sobchack, Shana Turrell-Pietrzak, Lisa LaHorgue, Miwon Kwon, Kathleen Howe, Rebecca McGrew, Dagny Corcoran, Rebecka Belldegrun, Molly Hip Hubbard, Joshua Holdeman, Anna Bernadini, Dr. Markus Michalke, Jose Noe Suro, Nick Mosse, and Janet Cross. LACMA gratefully acknowledges everyone who contributed to *James Turrell: A Retrospective*.

MICHAEL GOVAN, *CEO and Wallis Annenberg Director*
CHRISTINE Y. KIM, *Associate Curator*
Los Angeles County Museum of Art

FOREWORD

On March 25, 2000, the Museum of Fine Arts, Houston (MFAH), inaugurated *The Light Inside*, Houston's first permanent installation of James Turrell's work. Commissioned for the Wilson Tunnel that connects the museum's two gallery buildings, *The Light Inside* is both a passage and a destination, easily traversed but immediately arresting. In many ways an artist's retrospective is also a passage and destination, for both artist and viewer, as immediate experience intersects with history and memory.

For Houston, *The Light Inside* is the conceptual core of *James Turrell: A Retrospective* and its gateway. The museum staff, led by former director Peter C. Marzio, in 2002 began to explore the possibility of mounting a major exhibition of Turrell's work. As conversations with Turrell evolved, it became increasingly clear that the empirical and expansive nature of his work tested the limits of any one institution, and we are fortunate to structure our presentation in conjunction with those of the Los Angeles County Museum of Art and the Solomon R. Guggenheim Museum. This alliance allows for a generous statement no single museum could achieve and we are profoundly grateful to our colleagues: Michael Govan and Christine Y. Kim in Los Angeles and Richard Armstrong, Carmen Giménez, and Nat Trotman in New York.

Like *The Light Inside*, this retrospective was made possible by the visionary philanthropists Isabel and Wallace S. Wilson. Isabel Brown Wilson, former chairman of the Museum of Fine Arts, Houston, championed the purchase of Turrell's *Vertical Vintage*, a survey of twelve major light-based works ranging from *Tycho (White)* (1967) to *Aurora B* (2010–11), which is the backbone of the present exhibition. As she drafted her testament in spring 2012, she provided substantial funds to the museum in honor of her close friend and collaborator, Peter C. Marzio. Her bequest has made this great enterprise possible; in turn, we wish to dedicate this entire project to the memory of Mrs. Wilson, whose presence animated and motivated the museum staff to achieve great things, and whose absence we mark every day. We acknowledge with sincere gratitude the additional funds given by the Brown Foundation, Inc., with particular thanks to Herman L. Stude, president. And we are extremely grateful for the further contributions of Leslie and Brad Bucher and Sara Paschall Dodd-Spickelmier and Keith Spickelmier.

Credit is also due to the museum's Alice Pratt Brown Museum Endowment, which made it possible for the MFAH to acquire the Peter Blum Edition Archive (1980–1994), which includes not only the complete prints from three major suites by Turrell, but also working proofs, notes, and the artist's plates. Other friends have made important gifts of Turrell's work to the museum's Print and Photography departments as well, and special thanks are due to Ralph O'Connor and Manfred Heiting.

Peter C. Marzio was unwavering in his commitment to this project during his tenure as director of the MFAH (1982–2010). He supported this exhibition from its inception and acted decisively in creating a permanent legacy of Turrell's work for this city. We are pleased to acknowledge the contributions of Associate Director, Investment and Finance, Gwendolyn H. Goffe; Associate Director of Administration Willard Holmes; Exhibition Design Director Jack Eby and Exhibition Designer Bill Cochrane; Assistant Director, Exhibitions, Deborah Roldan; Chief Administrator, Exhibitions and Curatorial, Karen Vetter; Curatorial Assistant Sarah Schultz; Rice University Camfield Fellow Katia Zavistovski; and Executive Administrator Nykia Omphroy. We thank Matthew Schreiber and the staff of Baltic Studio, Tom Butler, and Linbeck Group, LLC, for their partnership in realizing the Houston presentation. We would also like to acknowledge Hiram C. Butler for his extraordinary advocacy of Turrell's work.

Finally, we join our colleagues at the Los Angeles County Museum of Art and the Solomon R. Guggenheim Museum of Art in thanking the artist for the joy and insight he has shared with us.

GARY TINTEROW, *Director*
ALISON DE LIMA GREENE, *Curator of Contemporary Art and Special Projects*
The Museum of Fine Arts, Houston

The Light Inside, 1999, installation view
at Museum of Fine Arts, Houston, 2012

On your tiny planet, my little prince, all you need do is move your chair a few steps.
You can see the day end and the twilight falling whenever you like.

ANTOINE DE SAINT-EXUPÉRY, *The Little Prince*

We eat light, drink it in through our skins. With a little more exposure to light,
you feel part of things physically. I like the power of light and space physically because
then you can order it materially. Seeing is a very sensuous act—
there's a sweet deliciousness to feeling yourself see something.

JAMES TURRELL

MICHAEL GOVAN

INNER LIGHT
The Radical Reality of James Turrell

THE THEME OF LIGHT has preoccupied artists for centuries. Leonardo da Vinci wrote volumes about the importance of light in rendering nature; Romantic artists described the sublime through light; and others, from Russian icon painters to modern artists, used abstract forms to account for a divine or inner light. No one, however, has so fully considered the "thing-ness" of light itself—as well as how the experience of light reflects the wondrous and complex nature of human perception—as James Turrell has over more than four decades. As the artist himself explains of his work, "Light is not so much something that reveals as it is itself the revelation."[1]

During the 1960s, Turrell emerged as one of the most radical of a new generation of artists. At a moment when American art in particular was dealing with extremely simplified forms (which were the beginnings of Minimalism), Turrell applied this approach to *nothing*—no object, only light and perception. His earliest light projections and constructions conjure a material perception of the immaterial, and in his (still unfinished) magnum opus, Roden Crater, Turrell goes beyond even that. One of the most ambitious artworks ever conceived, representing forty years of ongoing work to convert an extinct volcanic crater in northern Arizona, Roden Crater—through light—conveys the vastness of the cosmos within the tangible space of human experience.

By devising means to hold light as an isolated and almost-tactile substance, Turrell has created opportunities for us to experience it as a primary physical presence rather than as a tool through which to see or render other phenomena. Viewing his work, we are not called upon to consider what is being lit but instead to contemplate the nature of the light itself—its transparency or opacity, its volume, and its color, which is often perceived as changing, thus adding a temporal aspect to the experience. Turrell's work is especially "modern" in this sense. So often it is presumed that the most revolutionary aspect of (Western) modern art is a tendency toward abstraction or intellectualization, accompanied by a distancing of emotion. But quite the opposite is true: as Cubism offers multiple points of view at once; as Color Field Painting and Hard-Edge Abstraction isolate visual phenomena through distinct color and form; as Abstract Expressionism allows the materiality of paint or canvas to dominate composition or subject; as Surrealism excavates the unconscious and brings it to the surface; as Conceptualism can provide more direct access to the artist's intentions; and as photography has often concerned itself with verisimilitude, much modern and contemporary art strives to heighten awareness of our own perception and understanding more than artworks based on conventional narrative, symbolic, or illustrative structures. Turrell's Skyspaces—essentially rooms with apertures that open to the sky—afford the immediacy of pure color and light without the distractions of image or even paint, dramatizing the materialization of our own perception characteristic of modern art as they magically bring the sky we take for granted as being *far away* into our intimate physical space. There could be no better illustration of art's capacity to put an otherwise distant truth directly in front of us than the heroic gesture of bringing the sky down to earth for our immediate consideration. Turrell closes the gap between the thing perceived and the perceiving being as he plays with the very act of seeing itself.

Of course removing the distance between the perceiver and the object perceived in order to see "truth" is an ongoing concern, if also an elusive concept. This "problem of objectivity" is one of the great themes of both modern art and twentieth-century philosophy. Even in the nascent Modernism of late nineteenth-century French painting—the often dimly lit but shocking realism of Gustave Courbet's studio-based practice on one hand and the intense reality of pure color and light of the Impressionists' plein air painting on the other—one senses those artists' interests not only in what is seen, but in how it is seen, and in what context. Courbet's realism stripped away the artifice of artistic description in search of the social and political truths of his day. The Impressionists, anticipating Turrell's interests a century before, opened the door to understanding that our perception of "reality" is dependent on the medium of light, which is a reality in itself. Claude Monet's huge water lily paintings paved the way for the American Abstract Expressionists' efforts much later to disassociate the facts of paint, color, and light from any particular referent in the visible world in favor of a visceral formal coherence that often attempts to fill the entire field of one's vision. More recently, installation art immerses the viewer entirely in its own visual context. "Removing the frame" from a picture or creating the entire "frame of reference" for a visual experience is evidence of artists' growing awareness of the idea that what is seen depends on the context in which it is seen and the mechanism that facilitates vision.

Today we understand that knowledge depends on perspective—that is, the circumstances through which it is attained—and that perception is not fixed. Historically, however, this was not always the case. Renaissance artists utilized color for its symbolism and to enhance the naturalism of their compositions, and in the seventeenth century, Sir Isaac Newton defined the optical spectrum of color in terms of absolute and universal wavelengths of visible light. A radical shift occurred when Johann Wolfgang von Goethe responded to

PAGE 12 *Roden Crater: Complete Site Plan*, 2008, color carbon print, framed: 42¾ × 33¾ in. (108.6 × 85.7 cm)

Newton in the eighteenth century with a theory of color based on observation and the experienced (rather than the externally measurable) qualities of phenomena as they are received. In the early to mid-twentieth century, Josef Albers demonstrated in both his teaching and painting that our perception of color is entirely dependent on the context within which we see it. Turrell deploys that same principle in his Skyspaces to make the wide open sky appear to turn red or green or any other color he chooses.

Visible form is subject to the same relativity. A particularly surprising moment in the experience of Roden Crater happens when visitors climb a tunnel several hundred feet long toward its open terminus, a circular disc of light; as a viewer approaches, he or she perceives the disc transform slowly into a highly elongated ellipse, not a circle at all, and may recall that an ellipse can easily be perceived as a perfect circle when viewed from a certain vantage point.

Turrell's formal theatrics aim not to deceive but to reveal. Never do we see the world with entirely open and unbiased eyes; the preconditions of our seeing and understanding are an ever-present influence on our vision. The brilliant astronomer Copernicus was limited in trying to reconcile his experience of planetary motion into circular orbits due to assumptions dating back to the time of Aristotle that the universe is perfect and therefore would express itself in the perfect geometry of a circle. These assumptions were upended by Johannes Kepler, who understood that a circle is only a manifestation of an ellipse, which in turn defines planetary orbits. The circle is essentially a geometric subset, an ellipse with its two foci at the same point.

Turrell's art does not illustrate these leaps in understanding but embodies them. The actual experience of light in Turrell's constructions often defies our expectations—whether it is seeing a circle reveal itself as an ellipse or wondering how the world outside a Skyspace can seem from inside as if it has been painted a deep shade of blue or red or green. These experiences prompt us to consider the nature of our own perceptual apparatus as much as the thing we are perceiving. This is by design. In fact, the artist has said that perception is his true medium. The greatest revelations borne by Turrell's art are a deeper understanding of what it is to be a perceiving being and an awareness of how much of our observation and experience is illuminated by the "inner light" of our own perception. Turrell often refers to the brilliance of color experienced in a lucid dream when the eyes are closed—or to the Quaker practices of his religious upbringing, which describe meditation as "going inside to greet the light." The Quaker concept of "inner light," which is shared in a collective silent-prayer meeting, is echoed in the experience of Turrell's Skyspaces—in the collective silence, duration, and receptivity they induce. Quaker practice can be seen as the Minimalism of Christianity, a reduction in form in search of a deeper, more honest effect.

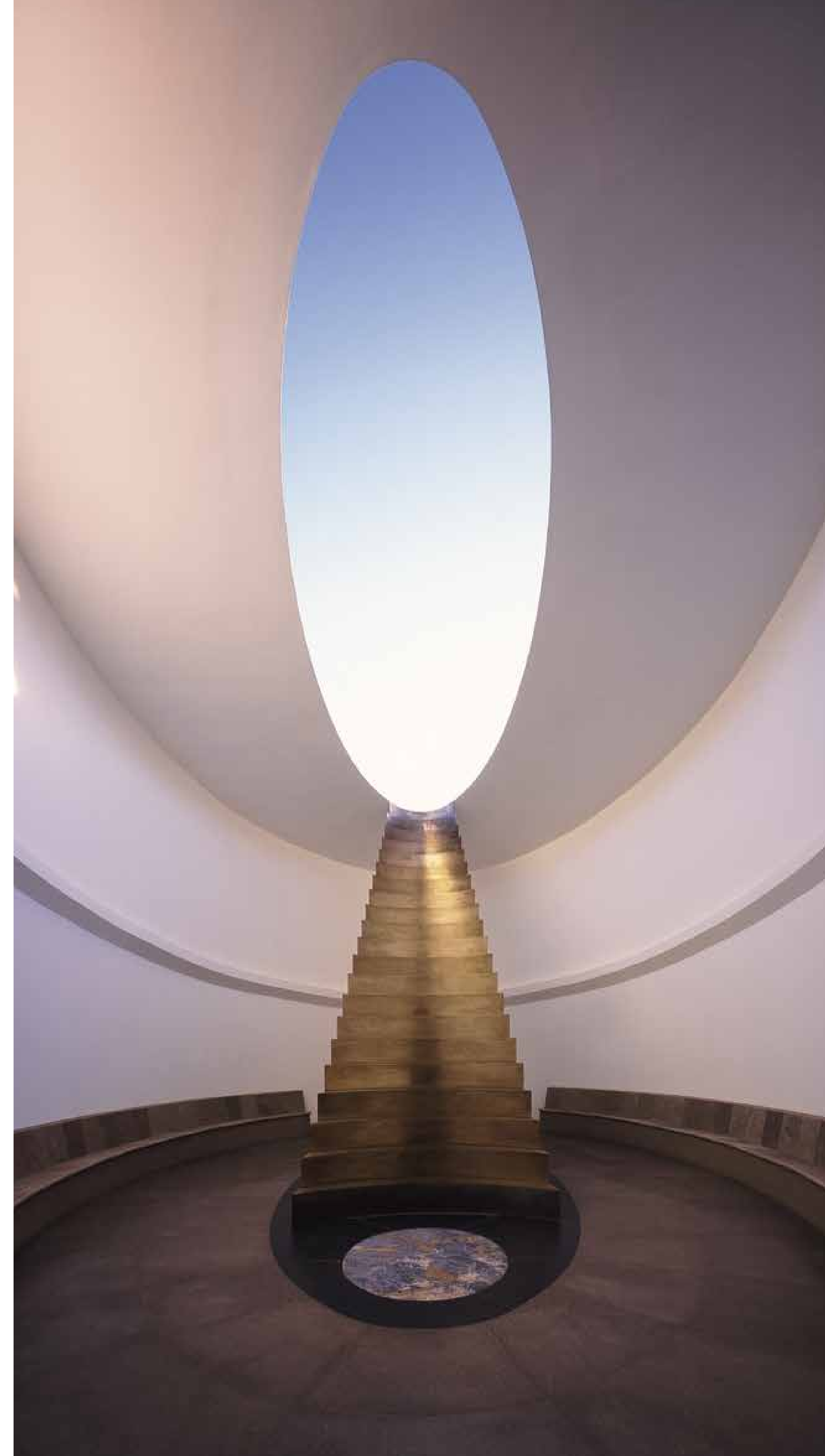
RODEN CRATER

Turrell's work also takes into account the more mechanical aspects of seeing. In some parts, Roden Crater is an architectonic camera obscura, rendering the image of celestial bodies like the sun or the moon within spaces we inhabit—bringing outside light *inside*. A camera obscura is constructed by puncturing a small hole in a sealed container of any size, which renders the outside world as a projected image within its dark interior space; the body, then, can be seen as a camera obscura in which the eye is an aperture for light to enter the body. In the dimness of the body's interior it is possible to perceive subtleties of light that might otherwise be inaccessible, or even blinding, on the outside, just as it is impossible to view directly the greatest source of light—the sun—without some kind of mediating device.

Long tunnels leading up through the volcano to the Sun and Moon Space,[2] a central chamber inside Roden Crater—each functions as a camera obscura. A large lens is deployed as a simple refractor telescope pointed to the sky, delivering the celestial bodies to the deepest darkest interior of the mountain. The barely lit rotunda at the lower end of the tunnel that ends upward in an ellipsoid aperture facing the sky

ABOVE LEFT Roden Crater Project, stone inside Sun and Moon Space

ABOVE RIGHT Roden Crater Project, night view of Alpha Tunnel toward bronze staircase in East Portal



Roden Crater Project, East Portal, day view

surrounds a Minimalist-looking stone monolith, which is actually two eccentrically angled blocks of black granite holding and framing a single huge circular piece of pure white stone. Visible on either side of the form, the white abstract discs of the embedded stone relate specifically to the sun and the moon, ageless icons representing opposites and, together, the totality of the cosmos (day and night, male and female, yin and yang). The marble discs function as screens upon which images of the sun and moon (and sky) are projected through the two telescopic tunnels that open to the exterior and lead to either side of the erect stone sculpture, providing access for visitors so that, on occasion, they can touch the projected images of the sun and the moon. The two tunnels are positioned nearly opposite each other—one aligned to the furthest north sunrise and the other to the furthest south moonset[5]—and the images they project are sharply focused and calibrated to an equal, human-scale five-foot diameter. Where the sun and the moon may meet is thus divined not by formal intuition but, like most of Turrell's work, by light—in this case the cycles of time and the light of celestial bodies in motion, the metaphysical music of the spheres.

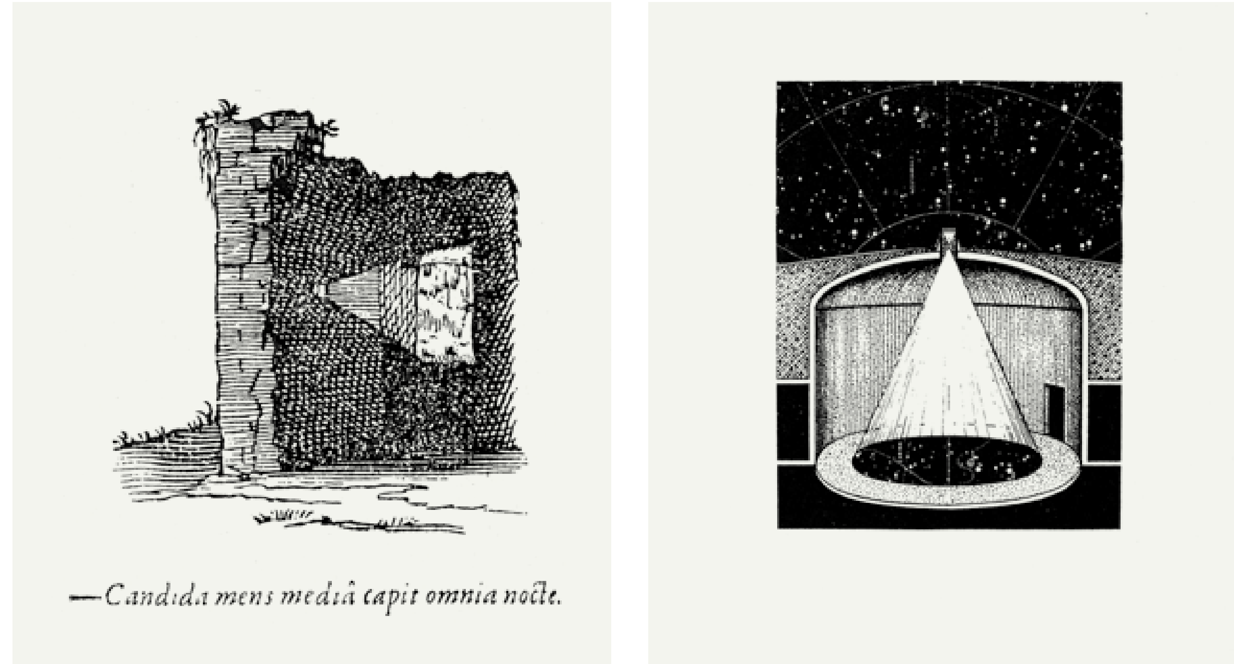
Presently Turrell is completing the design details for a space embedded into the south slope of Roden Crater. Generally envisioned as a modern interpretation of the extraordinarily accurate, architecturally scaled astronomical measuring devices built in eighteenth-century Jaipur, India, Turrell's South Space allows time to be measured and felt around the celestial cycle of the year. A bronze figure, looking something like an infinity sign laid in a stone floor, is in fact a shape known as an "analemma"—another minimal geometric form Turrell has appropriated from the realm of astronomy. An analemma is the actual path of the sun, which is seen only through measured and plotted observation, a result of Earth's tilted axis orbiting around the sun. At noon each day, the shadow of a suspended bronze ellipse casts a shadow on Turrell's analemma figure on the floor, tracing over the course of the year the path of daily solar noon.

Model of the South Space, 1998, plaster,
33 ¾ × 33 ¾ × 17 in. (85.7 × 85.7 × 42.9 cm)

Also within the South Space, Turrell has situated a backward-leaning stone seat that directs the viewer's gaze upward and northward to Polaris, the North Star, which from Earth's vantage point seems to shine singularly and nearly motionless in the sky; stars and cosmos appear to circulate around it. From this seat at night, looking up through the same suspended bronze ellipse that casts a shadow on the analemma during the day at an angle where it appears a perfect circle, one sees an isolated segment of the sky trained on Polaris and the stars of Ursa Minor (which translates as "Little Bear," also known as the Little Dipper). An observer should perceive the slight continuous rotational motion of the other stars of Ursa Minor around the fixed North Star. Turrell has set up the view such that the observer's first sensation is not that the stars are moving, but rather that he or she is moving relative to the stars, as when one is sitting on a train and feels movement even though it is actually another train on an adjacent track visible out the window that is moving. Turrell hopes to construct for us, within a stationary theater made of substantial stone and concrete, a sliver view to the vast emptiness of space in order that we might have the slight sensation of moving on Earth relative to our vast surrounding cosmos—a great truth that is known but almost never felt. While it is one thing to know that Earth moves relative to the stars, it is quite another to feel it in your stomach.

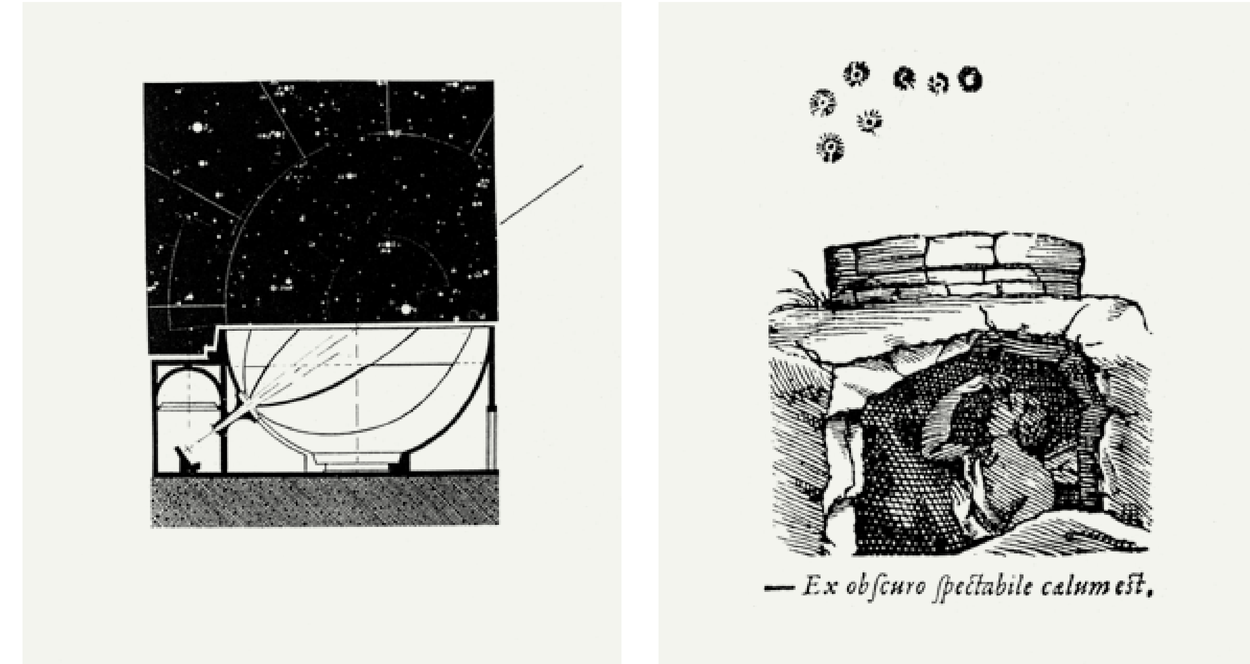
Among the largest and most complex of Roden Crater's planned but unfinished interior chambers is the Fumarole—named for the Italian scientific term describing small vents that can open up around a major volcano, a prominent feature of Roden Crater's northern profile where the chamber is situated. Within the Fumarole, the artist has designed the circumstances for diverse senses of time and space. Mostly buried inside the body of the cinder volcano, the concrete construction owes much to the tradition of military bunker architecture hidden in natural high mounds or cliffs with a broad view of surrounding land for the purposes of surveillance and designed with small apertures for artillery defense. Reached by a set of concrete stairs ascending the volcanic cinder slope, the Fumarole serves as the main entry point of Roden Crater. Looking back from this entrance, one can survey the view northeast toward the incredibly vast and beautiful Painted Desert and buttes as far away as Utah (nearly a hundred miles in the distance) that are the remaining hard rock and inner basalt cores of former volcanoes like Roden Crater, though formed millions of years before the 400,000-year-old volcano that has become Turrell's artwork. Presumably, millions of years from now, Roden Crater's cinder mountain will have been similarly eroded away by wind and weather, leaving only the volcano's hard vertical basalt core and the concrete ruins of Turrell's tunnels and chambers. Looking out into this bright and colored desert, one may easily contemplate geologic time or experience the feeling that we are living on a planet, without looking back from the moon. The picture certainly gives measure to the great distinction between geologic and human time. Stepping into the Fumarole Space one finds a forty-two-foot-diameter sphere with a few apertures. When the door to the outside is closed, the sphere becomes a camera obscura; then, peering inside the sphere through a viewing aperture, one can see the projected image of the Painted Desert. The seemingly immeasurable landscape and the sky are brought inside to human scale.

Throughout human history, the sun—its power and its brightness—has represented an almighty power. The point and sloping sides of ancient Egyptian pyramids (echoed by the pyramidal qualities of Turrell's found volcano) are thought to represent the sun and rays of light. The Freemasons directly associated the pyramid with the eye of an all-seeing God, an image that even graces the back of the United States dollar bill. Many religions, like Christianity, are rife with images and texts associating light with God. From Rameses the Great's temple at Abu Simbel to the Jesuit Roman churches of the sixteenth and seventeenth centuries, many cultures have created buildings and structures to bring the sun's light inside, where, directed and modulated, it can be seen and felt.



In every case, the blinding sun, impossible to observe directly, must be controlled or crafted into an image to be contemplated. It must be imaged (and imagined) inside, as in the interior of a camera obscura or a temple, church, or cave. Jesuits in the seventeenth century were fond of using architectural spectacle and dramatic graphic images as teaching devices for a largely illiterate populace, hence the theatricality of the interiors of their churches and their adoption in publications of "emblemata"—small images of symbolic and didactic significance informed by Egyptian hieroglyphs. Turrell found a Jesuit album of emblemata—Guilielmus Hesius's *Emblemata Sacra de Fide, Spe, Charitate* (1636), published in Antwerp, Belgium—so germane to his art that he selected and reproduced seven of its woodcut images pertaining to light and the heavens alongside seven prints of his own design.[4] One of the emblemata depicts a sun, simply, with a Latin caption that translates as "At a point, they are joined into one." Another, juxtaposed with an interior of one of Roden Crater's spaces, depicts man in a cavelike chamber with an aperture to the sky under which is written, "From the darkness, heaven can be seen." Most depict light entering interior spaces, both day and night. One caption beautifully suggests, "By means of a bright mind, everything is understood at night." In both religious and secular contexts, the sun in fact obscures the view of the heavens, which are closest at night; indeed, light is best apprehended *inside*.

In the clear dark skies of the high desert, the view at night from Roden Crater is as revealing as in daylight. Turrell has described how under close observation starlight divulges its type and vintage, just as smell and taste indicate the distinct type and vintages of fine wine. These differences are of course counted in light years, well beyond the measure of earthly geologic time. Two bedrooms are built into the Fumarole, in addition to several others planned in other spaces and a visitor lodge, to accommodate many nighttime events in light. (As part of the effort to protect the near perfect visibility of the night sky from Roden Crater, Turrell was instrumental in encouraging nearby and fast-growing Flagstaff to adopt the nation's first "dark-skies laws" requiring citywide down-focused and shielded lights and night signage.)



It happens that since the universe is expanding and the spheres of our own solar system are ever-shifting by the slightest measure, all of Turrell's celestial calculations for Roden Crater—worked out with his close friend Dick Walker, who was an observational astronomer at the Naval Observatory in Flagstaff—must be optimized for a specific moment in time. A small indicator of the artist's attention to extrasensory measures of time as well as the ambition for his artistic instrument, Turrell selected that moment to be two thousand years from now. That is because the moon's furthest south moonset tunnel alignment is inches off today—the same amount, in the other direction, it will be off in roughly four thousand years.

Drawings of the planned Fumarole reveal its distinctive spherical interior shape. In section the design bears strong resemblance to another unbuilt spherical interior, eighteenth-century French architect Étienne-Louis Boullée's famous cenotaph for Newton, honoring the great scientist's discovery of fundamental rational laws of the physical universe. The cenotaph's interior was to be a cavernous empty sphere, an architectural form reflecting the perfection of the universe with Newton's sarcophagus at its base. A great interior light would create the effect of day in the darkness of night, and the top of the sphere was to be perforated so that daytime sunlight would simulate the stars of the night sky. Turrell has often recounted childhood memories suggesting his nascent fascination with light, such as poking holes in his closed bedroom curtains to simulate the stars, like Boullée's cenotaph perforations.

In section, Turrell's plan for the Fumarole resembles a giant eye embedded in a small mound and gazing up at the sky. Its upper chamber contains a glass-bottomed circular pool, which, when filled with water, serves as a lens through which light over an open aperture above may pass. Together these elements form a Skyspace whose parts are analogous to the human eye, with the bath as lens and the aperture as pupil. At night, the still water will focus images of the stars onto a floor of black volcanic cinder underneath such that a visitor might have the experience of walking on light from the stars. The bowl shape of the bath's

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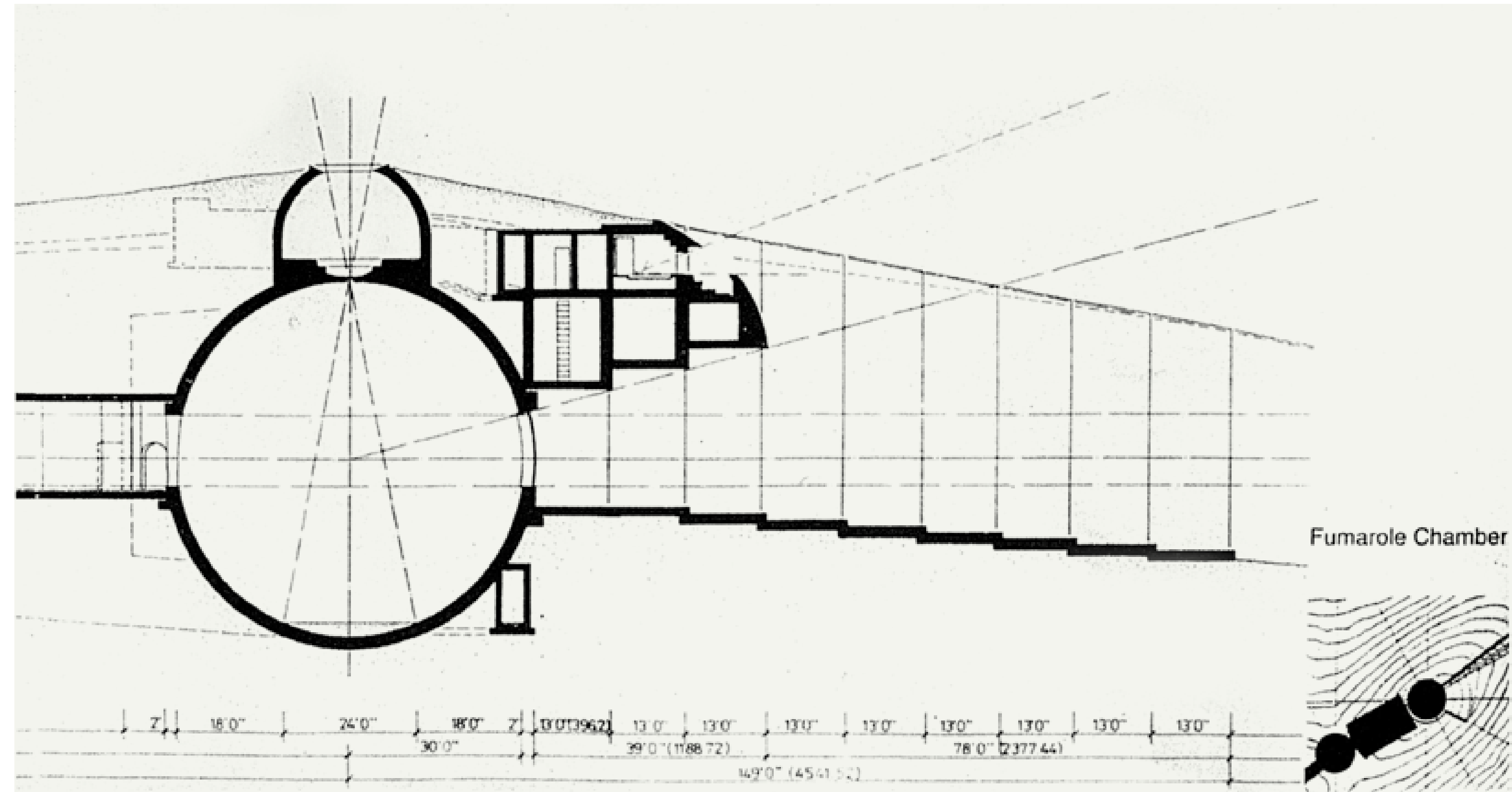
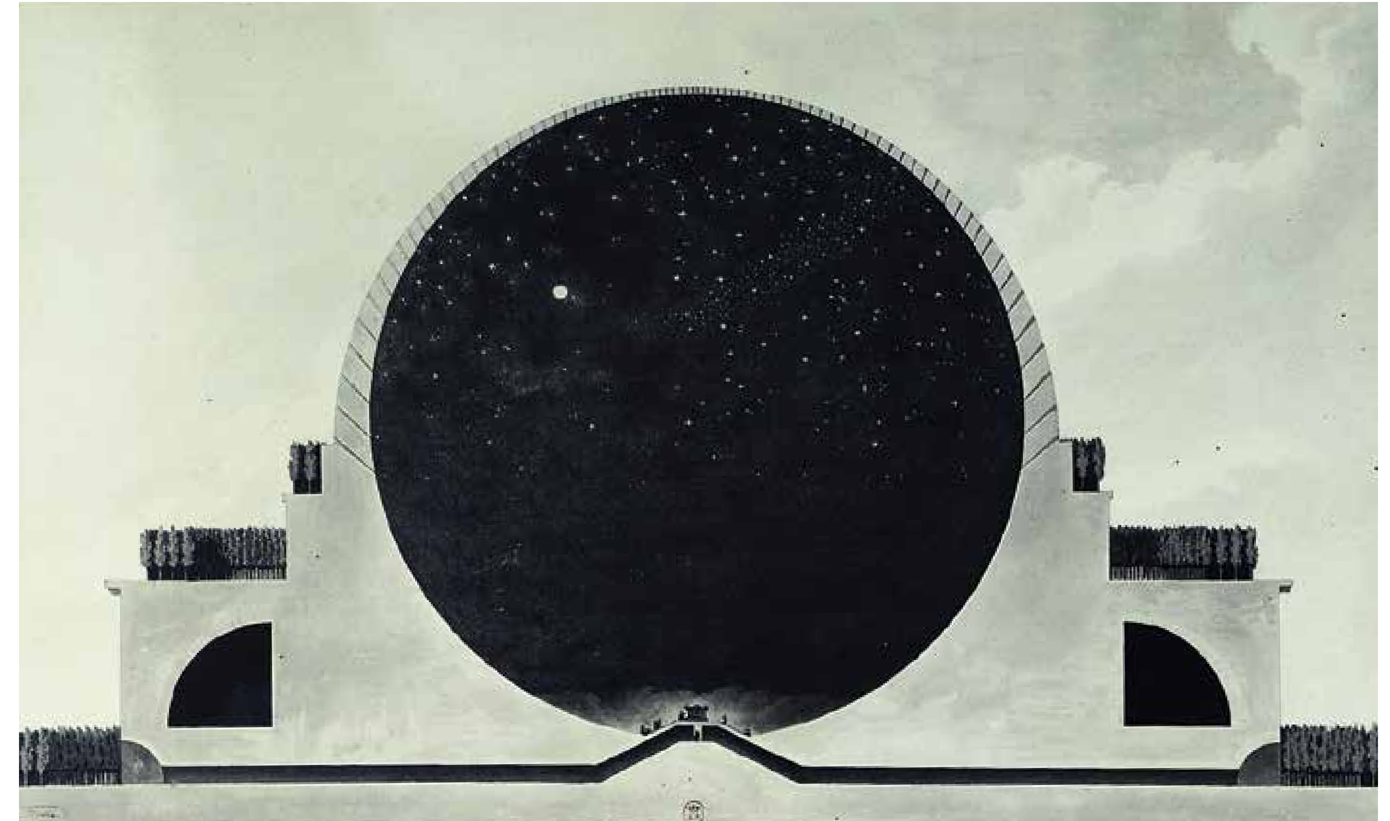
Images from Turrell's book *Emblemata*, 2000



bronze-and-glass bottom is complemented by a small invisible antenna on the aperture's edge that effectively turns it into a simple radio telescope. Bathers will be able to submerge their ears under the water to hear the ancient static radio noise emitted from the portion of the sky visible through the aperture.

As he developed the interior architectures for Roden Crater, Turrell discovered that spaces designed to hold the waves of light can also be tuned to hold waves of sound. An interior rotunda properly shaped, like the bath's chamber, can create the effect of a "standing wave," which concentrates a node of sound at its center. The radio noise of the sky will be directed into a center point corresponding with the head and ears of a visitor standing in the bath so that he or she might faintly hear the sound of the sky focused by the aperture. Turrell often describes how, under the right circumstances, one might actually feel the subtle but distinctive signature of the energy waves that still flow invisibly from nebulae, the remains of exploded stars known as supernovas. Eleventh-century petroglyphs near Roden Crater bear witness to some of those spectacular phenomena, which have been visible and recorded throughout human history.

Elevation view, plan of Fumarole Space
in Roden Crater Project, 1996



Roden Crater sits at the northern edge of the volcanic fields below the imposing San Francisco Peaks—Arizona's highest mountains at over twelve thousand feet—and nearby Sunset Crater, its youngest volcano, which erupted only a thousand years ago. The beautiful and surreal northern Arizona landscape of Coconino County and its environs has inspired many of its human inhabitants and visitors. Ancient Americans built numerous Maya-style ball courts nearby, and evidence of their art and trade with Southern Mexico can be found all over Turrell's ranch, which surrounds his crater. The ancient Pueblo peoples and the related native Hopi are known for their ceremonial "kivas," underground chambers that open to the sky and are accessed by a ladder, not dissimilar to Turrell's East Portal Skyspace, which features a bronze staircase from the floor to the ceiling aperture, allowing access to the sky and the interior of the crater bowl. At dusk, with the warm light of a fire burning within, kivas reveal the intense blue of the sky through their ceiling openings, directly analogous to (though less precise than) Turrell's Skyspaces. It is worth noting that the Navajo, whose reservation orders the project to the east, have been the primary builders of Roden Crater.

The artist will sometimes compare his own desert obsession with many other monumental folly builders and creative eccentrics who have situated their art in desert landscapes—from ancient ceremonial spaces to modern Land Art, including Paolo Soleri's utopian experimental fusion of architecture and ecology

Étienne-Louis Boullée, *Cénotaph de Newton*
(Newton's Cenotaph), 1784, black ink wash
on paper, Bibliothèque nationale de France

at Arcosanti in southern Arizona. (Turrell has sometimes speculated about whether the desert attracts eccentric artists or encourages artists' eccentricity and ambition.) French Surrealist painter Max Ernst lived for a time and was inspired by the expressive landscape of red rocks and mesas in nearby Sedona to the south, and American filmmaker John Ford forever memorialized the majestic Monument Valley just north of Roden Crater in his movies as the quintessential Western desert landscape. But it was George Herriman, the acclaimed early twentieth-century cartoonist that lived nearby part-time and famously set his pioneering Hearst-published comic strip *Krazy Kat* in the exact locale of Roden Crater, who specifically centered his nihilistic graphic slapstick in Coconino County. As comic-strip artist Bill Watterson has noted, "Virtually every panel features a different landscape, even if the characters don't move. The land is more than a backdrop. It is a character in the story, and the strip is 'about' that landscape as much as it is about the animals who populate it."[5] Turrell is a *Krazy Kat* aficionado who has collected and annotated nearly all of Herriman's strips with their specific references to nearby Arizona landmarks; like Herriman, he is from Los Angeles and has made another home and his art in Coconino County, but he also recalls fondly his father's devotion to the comic strip.

AVIATION

The influence of Turrell's father, Archibald, is apparent in many aspects of the artist's life and work. After marrying Margaret Hodges, whose Quaker family included seventeenth-century religious refugees to Eastern Maryland, the senior Turrell died while James was still a boy. Archibald Milton Turrell was trained as an aeronautical engineer and worked in education for most of his career, running the technical program at Pasadena Junior College, where the first all-metal, low-wing monocoque aircraft was designed and certified. The Harlow, named for its designer, Max Harlow, was put into a limited production of ten aircraft. Turrell owns the rare serial number one as part of his small but personal collection of vintage aircraft that also includes two fully restored examples of Helio aircraft. The artist flew—and crashed—one of these types when he was airlifting monks out of Tibet during the 1960s non-government-sponsored peace work he performed as a Quaker conscientious objector to US military service. While he only remembers flying with his father once, it left an indelible impression of the joy of aviation and the unique experience of sky and land from the air. Flying from Baker, California, toward Alhambra (an airport that no longer exists), the light was leaving the sky at twilight. Watching the "bioluminescent-lichen-light of urban Los Angeles" begin to take over the nightscape, his father observed, "a peasant by day, a princess by night."

Turrell was bequeathed and still maintains his father's substantial library of volumes on civil aviation, including rare editions of books by French pioneer aviator and author Antoine de Saint-Exupéry, whose compelling descriptions of inner enlightenment gleaned from the aviator's aerial perspective of sky and land bear uncanny relevance to Turrell's own art in the landscape. As Exupéry proclaims in the opening paragraphs of "The Plane and the Planet," a chapter of *Wind, Sand and Stars* (1939), "The airplane has unveiled for us the true face of the earth.... We are able to judge man in cosmic terms, scrutinize him through our portholes as through instruments of the laboratory." As if describing Turrell's epiphany in finding, after a seven-month journey across the Western United States in his small plane, a natural crater in which to situate his artwork among northern Arizona's volcano fields, Exupéry writes, "This day, as I fly, the lava world is calm. There is something surprising in the tranquility of this deserted landscape where once a thousand volcanoes boomed to each other in their great subterranean organs and spat forth their

George Herriman, *Krazy Kat* daily comic strip
published July 27, 1941

fire."[6] Or, as he continues, "Whence do men draw this passion for eternity, flung by chance as they are upon a scarcely cooled bed of lava, threatened from the beginning by the deserts that are to be…?"[7] and looking at the land "by the grace of the airplane" to "ponder with even more bewilderment the fact that this earth that is our home is yet in truth a wandering star."[8] Exupéry was obviously partial to volcanoes. They feature prominently in the description of the eponymous protagonist of his well-known children's book *The Little Prince* (1943), who comes from a planet so small that he may simply move his chair a few steps to see the sun set again and again—a childlike exaggeration of how the world shrinks by virtue of the airplane.[9] At Roden Crater one sees the sun set more than once: first over the false horizon of the crater rim, then over the horizon looking from its rim, and then in the postsunset spectacle of light in Turrell's inner Skyspace.

Aviation is not incidental to Turrell's art. The artist has often remarked that his airplane has served as his studio. After college, as he restored historic aircraft or flew for profit, aviation helped fund his artistic pursuits. And many of his works are predicated on the fact that at high altitudes the sky is much clearer and of a deeper hue. At that altitude, Earth is a distant abstraction. Not only is the experience of land from the air revealing, as Exupéry describes, it can also be disorienting. As the pilot's adage goes: one flies high and can see more, only to get lost, for our evolved sensory facilities of terrestrial spatial orientation are almost useless in the air. There is, for example, an altitude above the plane of Earth, about the same as the vantage from the almost mile-high rim of Roden Crater, where the horizon seems to curve up at each end,

Antoine de Saint-Exupéry, drawing of the Little Prince cleaning out his volcano, courtesy Antoine de Saint-Exupéry Estate

View out the rear window of Helio Courier airplane on desert near Roden Crater, 1977, photo by Ad Petersen