

*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

M I C H A E L G O V A N

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—onesenses 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.

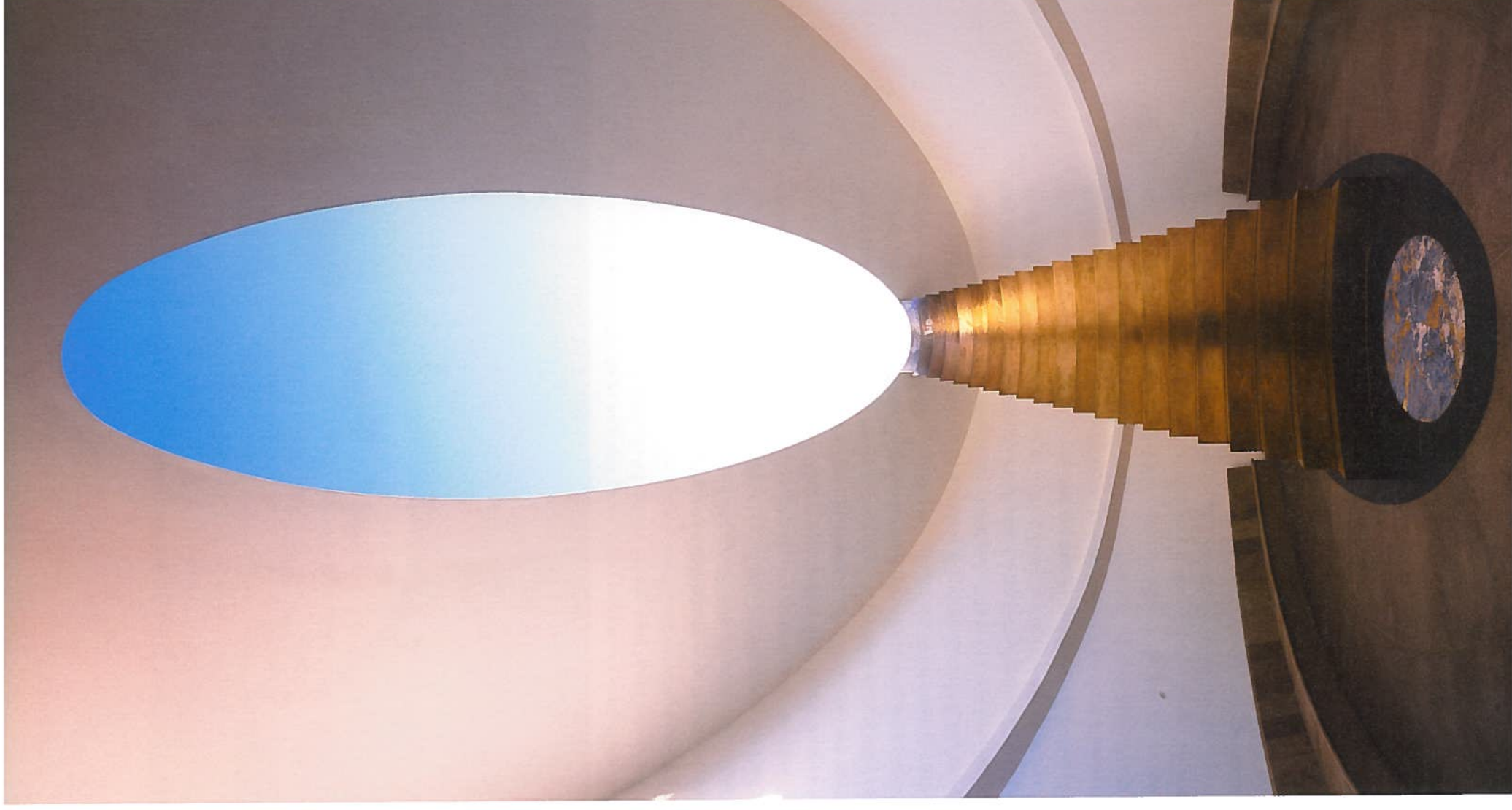
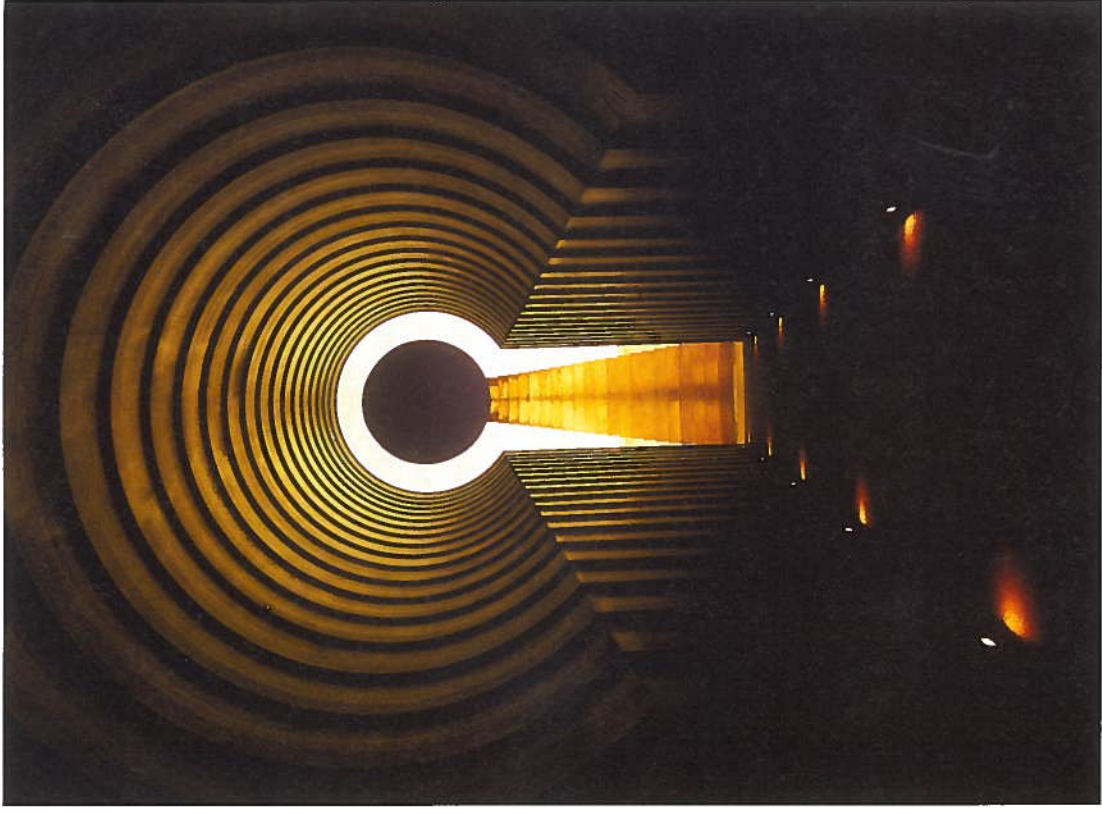
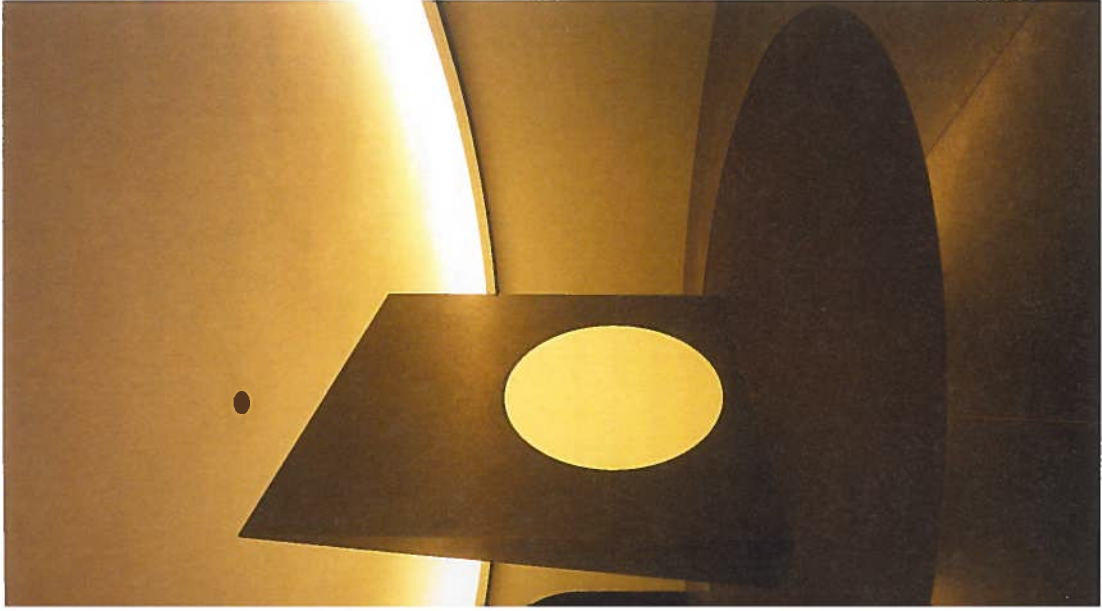
Today we understand that knowledge depends on perspective—that is, the circumstances through which it is attained—and that perception is not fixed. Historically, however, this was not always the case. Renaissance artists utilized color for its symbolism and to enhance the naturalism of their compositions, 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

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.

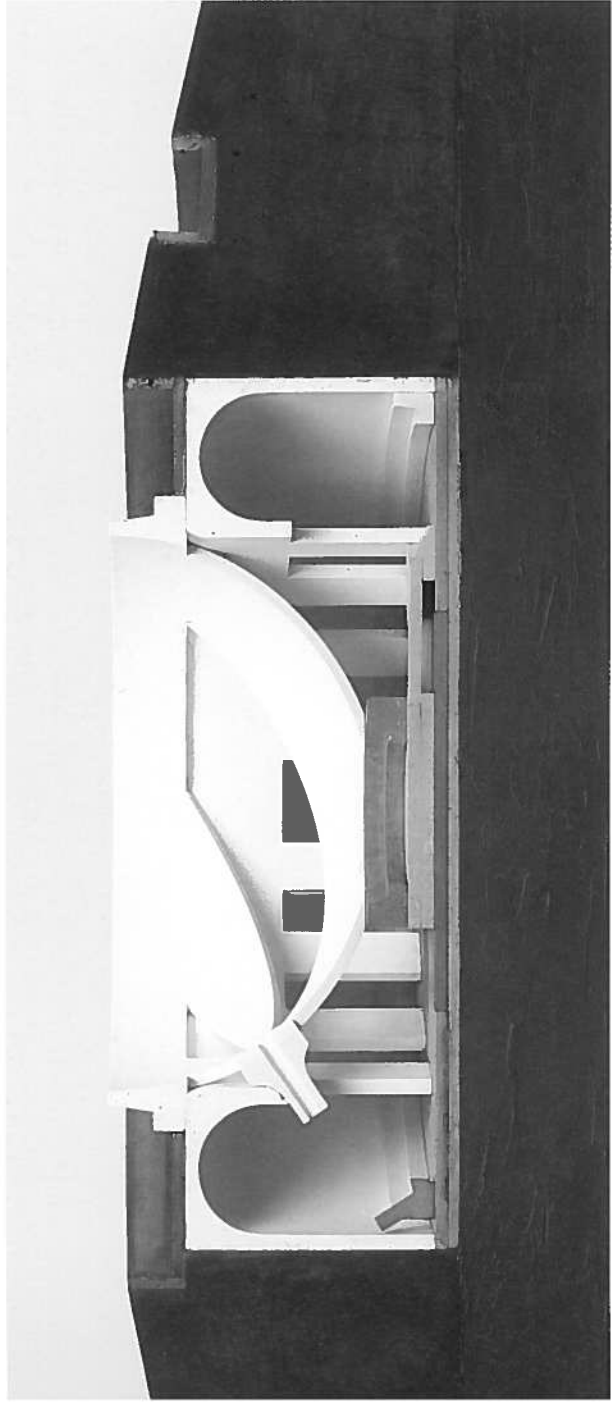
Turrell's art does not illustrate these leaps in understanding but embodies them. The actual experience of light in Turrell's constructions often defies our expectations—whether it is seeing a circle reveal itself as an ellipse or wondering how the world outside a Skyspace can seem from inside as if 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



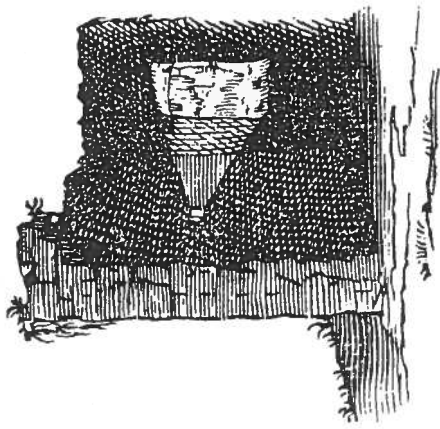
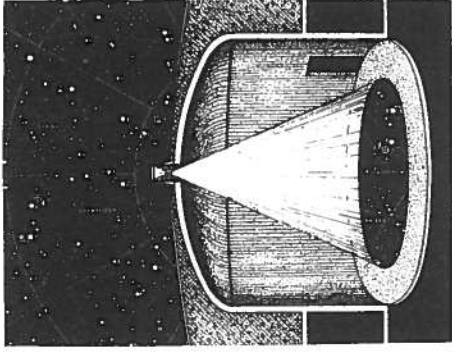
surrounds a Minimalist-looking stone monolith, which is actually two eccentrically angled blocks of black granite holding and framing a single huge circular piece of pure white stone. Visible on either side of the form, the white abstract discs of the embedded stone relate specifically to the sun and 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 moonset³—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.

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.

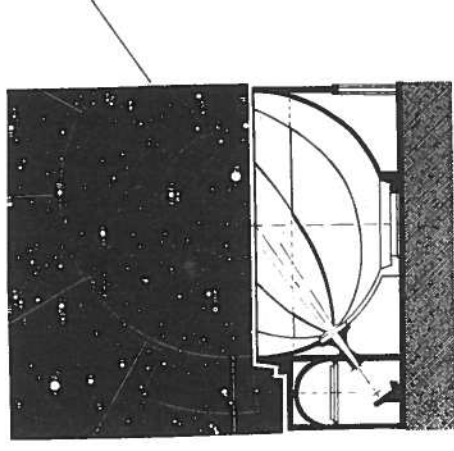
Throughout human history, the sun—its power and its brightness—has represented an almighty power. The point and sloping sides of ancient Egyptian pyramids (echoed by the pyramidal qualities of Turrell's found volcano) are thought to represent the sun and rays of light. The Freemasons directly associated 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 Ramesses 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.



—*Candida mens media capit omnia nocte.*

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.)

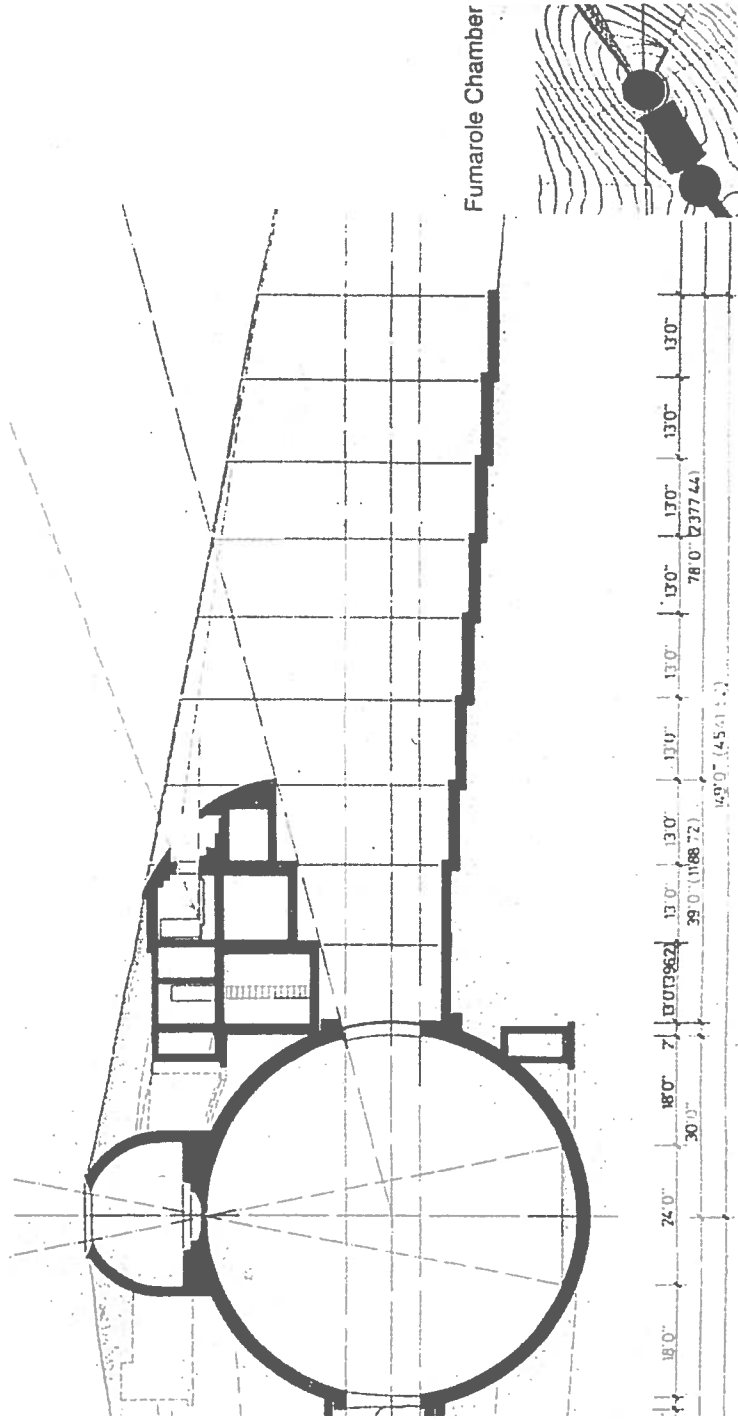


—*Ex obscuro spectabile calum est.*

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.

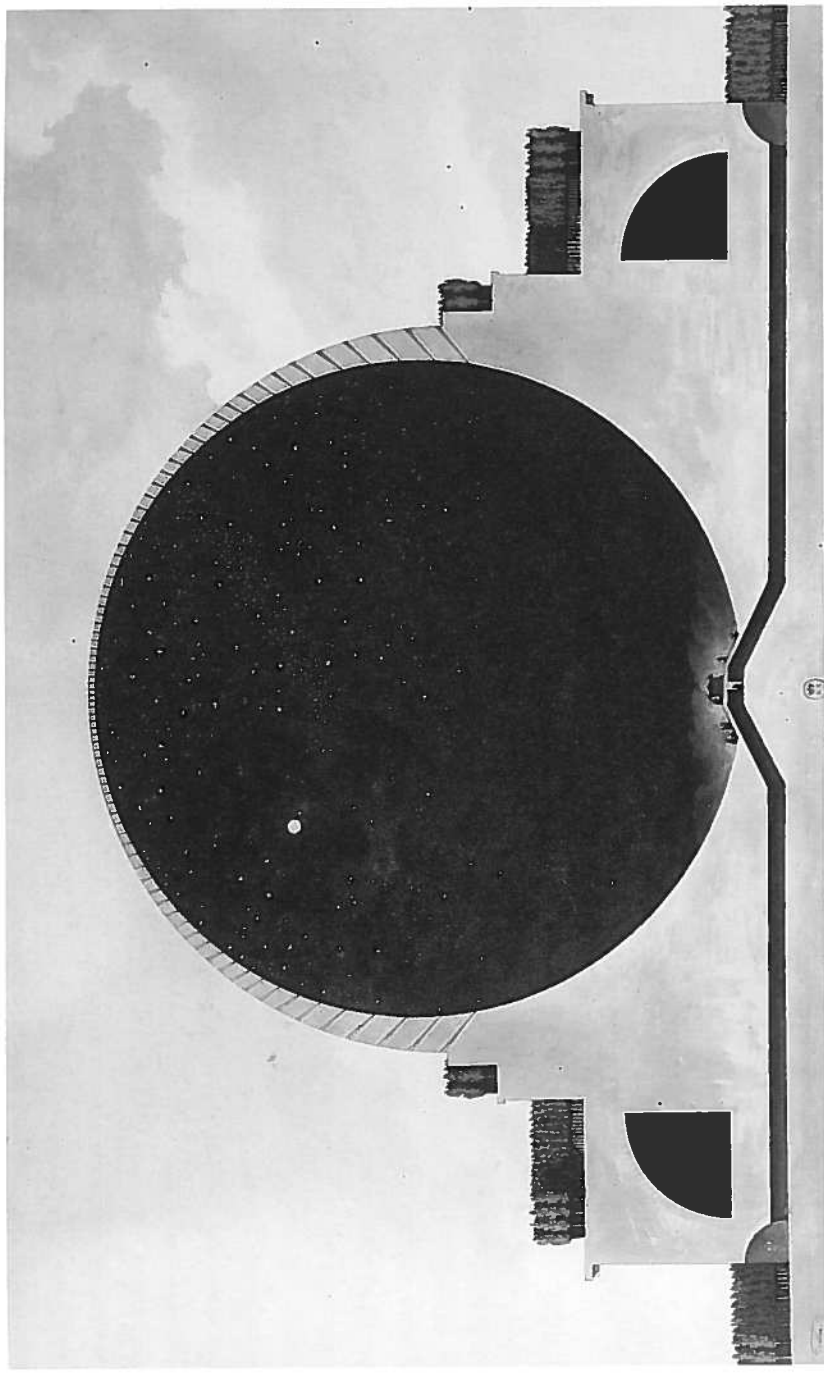
Drawings of the planned Fumarole reveal its distinctive spherical interior shape. In section the design bears strong resemblance to another unbuilt spherical interior, eighteenth-century French architect Étienne-Louis Boullée’s famous cenotaph for Newton, honoring the great scientist’s discovery of fundamental 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



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.



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

