

## **Liberating Light: a Contemplative and Scientific Encounter**

Guggenheim Retrospective on James Turrell

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### **Crossing the *Ganzfeld* Threshold**

For 30 years I have been a researcher and teacher concerning classical and quantum optics, electromagnetic theory and the experimental foundations of quantum physics. The quantum mechanics of light has been my specialty. I have worked with single-photons in delayed-choice experiments at the Max Planck Institute for Quantum Optics, and while at the École Normale Supérieure Laboratory of Physics, I developed a high-powered laser system in the hope of probing the asymmetry of the weak interaction in atoms. Over years I came to know the intricacies of light as only a physicist can. My study of Goethe's three volumes on color *Zur Farbenlehre* (1810) formed a fascinating counterpoint to my research in quantum optics. A longtime contemplative practitioner, I also had meditated light as a daily practice for twenty years, and still I was not prepared for the remarkable art, the "light sculpture" of James Turrell.

Over the years I had read a few interviews with Turrell, and visited small exhibits, but my full initiation into the mind and vision of Turrell had to wait until the large exhibition in Jarna, Sweden, where Rembert Biemond and Anders Kumlander had brought together several of Turrell's most ambitious and visually powerful light exhibits including a large "*Ganzfeld*" or "whole-field" installation.

Imagine yourself completely alone, descending a staircase shining with color of a single luminous hue into a large, two-story, enclosed space of the same color. You have just entered one of Turrell's *Ganzfeld* installations. Unlike a room with painted surfaces, the walls shimmer with color but without a detectable surface location. When we first enter into such a space of luminous and uniform color, we feel disoriented; we mentally seek for conventional points of reference, objects to help stabilize consciousness. Finding none we are thrown back on ourselves. If we have good sense, we give up the search for objects and allow the color experience itself to be sufficient. Yet we continually feel the reappearance in us of an urge for representation, for the contours of a concrete object. At least we have gravity and the self-perception of our own body to stabilize awareness, but we sense simultaneously that we are at a threshold to a form of consciousness without objects or symbolic images or a direction of attention, where even the body can disappear from awareness. Turrell describes the *Ganzfeld* experience in language that references spiritual awakening.

This sense of disequilibria can at once be exciting as well as terrifying. It is not dissimilar from the luminous emptiness or filled void, spoken of in terms of *satori*, enlightenment, or experiences mentioned in near-death experiences.<sup>1</sup>

As a student at Pomona College and a young seeker in the 1960's and 70's, Turrell had a remarkable destiny, studying with leading scientists, astronomers, and psychologists who were also working at the edge of their disciplines, experimenting with biofeedback, "alpha training" (i.e. meditation) for astronauts, Quaker silence and Asian spirituality. His steadfast love of art kept him grounded while others left science and the academy for religious pursuits. When Turrell compares the experience of his art to *satori* or enlightenment, he does so having studied these with genuine interest. In this sense, Turrell is both an artist and an explorer of the mind. Never didactic, we are nonetheless led to confront ourselves and what it is to see and be human.

### **Light Itself**

The purest and most  
thoughtful minds are those  
which love color the most.  
*John Ruskin*

With every glance around us we become aware not only of the objects seen but, by inference, also of the light that illuminates them. Without light the faculty of sight lies impotent. The bright contoured forms and colors of our environment are brought to us on the wings of light, and yet light itself remains unseen, hidden from view, the unrevealed revealer. The material world is thus made visible by means of light, but light remains invisible – at least until James Turrell, who is surely one of those rare pure and thoughtful minds about whom John Ruskin wrote in the epitaph above.

When teaching the physics of light I often start with a simple demonstration. Turning off all lights in a sealed room, my students and I begin in a completely darkened room. I then turn on a laser whose beam of light strikes a white screen opposite it and 20 feet away. The only thing seen is a small brilliant red spot of light glistening on the screen, but the space otherwise remains black. Finally, I bang two erasers together letting the chalk dust fill the air in front of the laser, and a brilliant red beam of light flashes into sight. The light beam had been present but, with no dusk or other substance to shine on, it remained invisible. Turrell and I both aspire to explore light in its manifold, beautiful and often mysterious nature.

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<sup>1</sup> p.43 of James Turrell, NMAC, 2009 Edizioni Charta, Milano.

As in my physics demonstration, one of Turrell's greatest interests is to bring physicality or "thingness" to the perception of light, making it the object of attention instead of merely a hidden illuminator. In this regard he says, "My art deals with light itself. It's not the bearer of revelation — it is the revelation." But how can we shift our attention to that which we never experience directly? What would light "look like" as revelation instead of the revealer?

Every moment of seeing is an act in which external light is married to an interior light of the mind. Turrell is as much interested in this act of perception as the nature of light. He describes his goal and his method by which the action of seeing, of perception is experienced as "thing."

My interest in the perception of light is in giving it thingness. It exists just as a physical object has presence. I make thingness of perception by putting limits on it in a formal manner. There is no object there, only objectified perception. By putting into question physicality and objectness, the work may reveal more about physicality than any physical object.<sup>2</sup>

Experience without object, formal limits on seeing, "objectified perception," such are the means Turrell uses to invert our awareness and draw us into a novel psychological and artistic experience.

### **Philosophy as Artistic Experience**

Another way of characterizing the *Ganzfeld* experience is with respect to what philosophers since Franz Brentano's 1874 book *Psychology from an Empirical Standpoint* call "intentionality." Brentano posed the question, can one ever have a mental experience that is pure, uninterpreted sensation, or is experience always about something: a thing, object, or image? The quality of "aboutness" is the intentional nature of mental experience. For 140 years philosophers have wrestled with the intentional structure of consciousness. Such is the power of Turrell's art that it can reposition an abstract philosophical discourse turning it into an artistic experience at once of striking power and cognitively demanding. Turrell places us mentally in a new and unfamiliar domain of experience where the very action of looking becomes the object of attention. In the *Ganzfeld* Turrell does this by stripping back the referents of conventional consciousness leaving only the bare minimum of color. Turrell says,

First, I am dealing with no object. Perception is the object. Secondly, I am dealing with no image, because I want to avoid associative, symbolic thought. Thirdly, I am dealing with no focus or particular place to look. With no object, no image and no focus, what are you looking at? You are looking at you looking.... My art is about your seeing.

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<sup>2</sup> From "Early Flight" a story by James Turrell from his book, *Air Mass*

We are within pure color perception. After several minutes we note that the color we first saw is gone and another has, imperceptibly, taken its place. Thus we experience neither spatial form nor temporal change. It is as if we are suspended in space and time held within color's womb beyond or at least at the limit of conceptual designation.

Brentano inquired after the chief characteristic of a mental act, and maintained that it was always directed toward an object.

What is characteristic of every mental activity is, as I believe I have shown, the reference to something as an object. In this respect, every mental activity seems to be something relational.<sup>3</sup>

Turrell does not debate the issue philosophically but explores it artistically and phenomenologically. Eliminate all objects and images, and location and direction disappear as well. All that remains is color.

Einstein's relativity theory posed similar challenges to any absolute notion of space or time. All measures of length or time interval must be made in relationship to a particular frame of reference or observer. If a clock and meter stick are stationary relative to the observer, then one length and time interval are measured. If the meter stick and clock are moving then the length and time interval will be measured to be different. If I were placed in a space devoid of all objects, then location, direction, movement and time would cease to have meaning. In fact, I would go so far as to say that all properties are relational.

Turrell's *Skyspaces* are a perfect example of perceptual experience as relational. One enters a tower, the ceiling of which is a white dome. In the dome is a large opening through which one sees the sky. The experience of the changing colors of the sky at dusk are surprising and beautiful, but not because of the sunset alone, but because of the subtle slowly changing colors on the interior surface of the dome surrounding the hole. The visual experience of color is always had in relationship to other colors in the field of view. This phenomenon is well known in scientific psychology as "simultaneous contrast." Turrell learned about such effects as an undergraduate studying perceptual psychology, and he makes remarkable use of the dynamic and relational nature of color perception in every work he creates. In this way Turrell works at the boundary of art, physics, perceptual psychology and mysticism.

## Letting go

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<sup>3</sup> Brentano as quoted in *Stanford Encyclopedia of Philosophy*. From appendix to 1911 edition of *Psychology from an Empirical Standpoint* published in German in 1874.

Constable's landscapes are filled with trees, clouds, animals, a church and stream. One-by-one we can let these things go so the relationships become ever simpler. Finally only the sky and earth remain with the horizon between them. With one last release we can let go of the horizon, which marks the final remaining relationship. Such might be the instruction of a Zen master to his student who seeks to move beyond conventional awareness. In this way we can understand Turrell when he says, "I am interested in the landscape without horizon and that's the landscape that is encountered in meditation."<sup>4</sup>

The progressive stages of the meditative life lead one from the conventional sense objects of daily life, to artistic and inner images of a more symbolic kind. These images are but way stations in our release from the fixed forms of normal consciousness to the generative activity behind them. That is to say, by conscious effort one can shift from symbolic images to that which is neither image nor symbol, but pure activity. We set object and image aside for that activity which makes the image we imagine or the objects in the world. In this way the meditator is said to come to experience the creative energy of the cosmos. In this way in meditation we can ultimately come to experience the *activity* in and behind everything.

Perhaps this is what Turrell means when he says, "Rather than light's illumination of other things, I'm interested in its thingness, its object-making, thing-making kind of ability." When Turrell writes of his interest in the "thing-making" ability of light, he is describing in his own language that which has been described in the spiritual traditions of East and West. The Scholastics called this ability of nature to make, *natura naturans* ("nature naturing") contrasting it with *natura naturata* (nature natured) or the inert things of the world. Light as agency, the maker of things.

## Light Consciousness

*I am the one who opens his eyes, and there is light;  
When his eyes close, darkness falls.  
Ra speaking, Turin Papyrus, 1300 B.C.*

To an ancient Egyptian, light was the act of Ra seeing. When one stood in the intense light of the desert sun, one stood within the divine and all-powerful flow of sacred awareness. As we learn from the Turin papyrus, the light of day was the directed gaze or consciousness of the highest Egyptian god Ra. The sun and moon, also called the two eyes of Horus, were but the most prominent of myriad eyes that included the stars that looked down on the human world. Such was the felt moral and spiritual reality of the ancient world, that light was not a material reality but the activity of a god Ra whose open eye and act of sight was the light to the world.

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<sup>4</sup> (Turrell)

By the time of the Greek philosopher Empedocles (490-430 B.C.E.) the solar eye had migrated to the eye of man and woman. Empedocles, like many after him, thought of the eye as a lantern inside which burned a pure ocular fire whose ethereal light passed through the membranes of the eyeball unimpeded and reached out to touch the objects before one. Human awareness figured more prominently in the Greek imagination and experience than the awareness of distant gods. We now term Empedocles view the “extromissive” theory of vision, which largely dominated natural philosophy until the 12<sup>th</sup> century. I consider the longevity of the extromissive theory as an early reification of the experience of intentionality. We strain to see something in the distance. Why? That lived experience became the ethereal light emitted by the eye into the mute world around us.

Turrell could have been one of Empedocle’s protégé’s when he says, “When you reduce light and the pupil opens, feeling comes out of the eye like touch.” Something seems to come out of our eyes, and light itself becomes tactile.

In working with light, what is really important to me is to create an experience of wordless thought, to make the quality and sensation of light itself something really quite tactile.

James Turrell’s interest in the felt experience of light extends to the possibility of attributing consciousness to light. This view certainly had several sources but one touches on a physics experiment that colleagues and I performed at the Max Planck Institute for Quantum Optics in the 1980s.

At that time Turrell’s science friends described to him recent wave-particle experiments that colleagues and I were doing, which showed what Einstein termed “spooky action-at-a-distance” and a strangely powerful role for observation in quantum physics. The delayed-choice experiments on which I worked were first described theoretically by Princeton’s John Archibald Wheeler. When we performed a version of Wheeler’s proposal at the Max Planck Institute, we showed that light appeared to change its character depending on the kind of observation being made. When we set the apparatus for observing wave behavior, wave phenomena showed up, and when set for the complementary particle behavior then particle phenomena appeared. Moreover, in our experiment we were able to delay the choice as to which observation would be made until very late, indeed to the last possible instant, but light always responded according to our question – wave or particle - long after one would have expected the behavior to be set.

About these experiments Turrell has said, “That was very interesting to me; it almost awarded light a consciousness. I certainly feel that way. Quakers are always talking about going inside to greet the light, and about this idea of the light in everyone.” The light of the human spirit could be vivid and even experienced as if it had a conscious awareness of its own. Turrell’s long association with Quaker silence

disposes him to such vivid inner experiences that can come from long meditation on light. Quantum physics experiments seemed to confirm Turrell's own inner experience of greeting the inner light as a medium that possessed consciousness.

### **Light of the Heart**

Once we let go of object, image, focus and direction, we can enter into unbounded formless consciousness, into what the Indo-Tibetan pundits might well call *arupa* or formless realms of inner experience. Light is a recurring motif in the inner experience of the meditator. The lineage of meditation on light is long and honorable. In the 5<sup>th</sup> century B.C.E. Lao-tzu would write: "Use your own light and return to the source of light. This is called practicing eternity." In the 13<sup>th</sup> century the Sufi Master Najm al-Din Razi would write of the light in the heart.

If the light rises in the Sky of the heart...and, in the utterly pure inner man attains the brightness of the sun or of many suns...then his heart is nothing but light, his subtle body is light, his material covering is light, his hearing, his sight, his hand, his exterior, his interior, are nothing but light.

Yet when talking with Turrell, he always ends such wide-ranging conversations with laughter and by declaring, in the end his work is simply art. In that instant, philosophy, contemplative exploration, and quantum experiments all slip away, and we stand once again within the remarkable lived experience of Turrell's art: that is sufficient. Through his genius, Turrell leads us into a space of experience like few others where we greet the light, sense its presence, and consider its invitation.

I want to create an atmosphere --- one that can be consciously plumbed with seeing, like the wordless thought that comes from looking into the fire.

Light is a powerful substance. We have a primal connection to it. But, for something so powerful, situations for its felt presence are fragile. I form it as much as the material allows. I like to work with it so that you feel it physically, so you feel the presence of light inhabiting a space. I like the quality of feeling that is felt not only with the eyes.