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## A New Question about Color

### ABSTRACT

Philosophers of art have advanced our understanding of the role of color in realistic representation in painting. This article addresses a new question about how color functions expressively in art. I sketch some ways to answer this question, using examples of paintings by Mark Rothko and light art installation works by James Turrell and Olafur Eliasson.

### I. INTRODUCTION

Philosophers of art who have discussed color have focused mainly on its role in representation. I am thinking of work by, for example, John Hyman (2000), John Kulvicki (2015), Dominic Lopes (1999), and Michael Newall (2006). They have debated whether realism in depiction is mainly a matter of resemblance. If so, then what are the relevant properties, and of what, and how should we specify their resemblance relations? Accounts have been proposed citing features such as aperture color, color relationships, or luminances.<sup>1</sup> Newall favors a recognitional view, construing color as a special sort of capacity belonging more to viewers following cues than to objects and scenes viewed. Brain scientists have also weighed in. Semir Zeki has argued that the Fauvists's attempts to "liberate color" from forms they are normally associated with prompt activation of unusual brain systems not employed in "normal color perception" (1999, 203–204). At the opposite extreme is Nelson Goodman, who claimed in *Languages of Art* that realism in color depiction systems is entirely conventional (1968, 34–40).

There are, to be sure, many interesting issues to explore about color's role in realism. Painters at least as far back as Leonardo applied lessons learned from color theory and technology to represent such complex aspects of our visual world as

shadows, edges, color relationships, atmospheric effects, reflections, and so on. They used scientifically based color wheels, accounts of the emotional effects of color, treatises about contrasting and complementary colors, the effects of lighting and framing, and so on. Painters drew not only from theories of optics and color but from new technologies. Turner, Seurat, Monet, and Van Gogh all tried out new pigments developed in their time.<sup>2</sup> The availability of technologies affected artists' styles. John Gage has argued that the Spanish baroque painters who sought to emulate Caravaggio's tenebrism "were able to achieve much more homogeneous color compositions" because the colors the Italian painter had used were more expensive and unavailable for their palettes (1993, 15). Artists' explorations of opportunities afforded by new color technologies continue today. We could cite the example of Anish Kapoor, who recently, and rather notoriously, acquired sole artistic rights for the use of the new super-black material called Vantablack.<sup>3</sup>

Painters and philosophers alike have dealt with problems such as color constancy. We know, for instance, that a white object seen at sunset or with an orange reflection looks orange, though we still read it as white. A painter who brilliantly rendered color constancy is Caravaggio. In his *Supper at Emmaus* the white tablecloth is depicted using many colors including shades of gray, yellow, and brown. These vary in relation to the



FIGURE 1. *Snow Storm—Steam-Boat Off a Harbour's Mouth*, exhibited 1842, Joseph Mallord William Turner (1775–1851) ©Tate, London 2017. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

light source, shadows, angles, and reflections—though the tablecloth is still read throughout as white.<sup>4</sup>

But there are more questions about color than are dreamt of in the current philosophy of art.<sup>5</sup> In this article, I hope to begin expanding our research to include questions prompted by the work of nonrepresentational artists—in particular, Mark Rothko, James Turrell, and Olafur Eliasson. Rothko's color field paintings have been regarded as unusually expressive, raising issues about connections between color and the emotions. Turrell and Eliasson's light installations also prompt questions about color and emotions. They prove alternatively uplifting or troubling to viewers. They challenge metaphysical and epistemological assumptions about our knowledge of the world and ourselves.

Before discussing my main examples, I will mention two artists whose work sets the stage, Turner and Monet. Each participated in broader movements reflecting developments in both the theory and technology of color. Monet tackled new issues in representation, even trying to depict the atmosphere itself.<sup>6</sup> Like other Impressionists, Monet was familiar with studies of color by the chemist Michel Eugène Chevreul.<sup>7</sup> Scientific theories of color perception led to Chevreul's for-

mulation of the “law of simultaneous contrast”: a color put nearby to one color can change the neighboring color (Gage 1993, 191). Published in French and translated soon into English (1854), Chevreul's text influenced many artists, particularly Impressionists, including Monet, along with Pissarro and Seurat (Roque 1996). It has been argued, for example, that at least some of Monet's paintings of Rouen Cathedral show an interest in using Chevreul's account of effects of color contrasts between violet and yellow.<sup>8</sup>

Turner was an even more serious student of color science. He lectured on color at the Royal Academy in London and knew about Newton's color theory and its critique by Goethe.<sup>9</sup> Before Turner, the Royal Academy president Benjamin West had applied Newton's theory of the seven primary colors in his work.<sup>10</sup> Newton's view was being replaced, though, in the early 1800s by newer theories of three primary colors related to scientific accounts of the physiology of vision and also by Goethe's work, which shifted scientific focus onto the relation between color and our subjective responses to it. And in 1878 Helmholtz published an essay “On the Relation of Optics to Painting,” which brought his synthesis of nineteenth-century color science to bear specifically on the practice of painting as well as viewing

artworks. This was also work Turner was familiar with.

Turner, like Monet, sought to use color to capture a range of atmospheric effects such as sunsets, snowstorms, floods, fires, rainbows, and light reflecting on water or iridescent surfaces such as fish scales. His paintings moved toward abstraction, showing scenes swathed in mist or obscured by weather effects, making it harder to discern what was being depicted. His canvases—especially the later ones—convey atmosphere and mood through his use of colors and swirling brushstrokes. Here, for instance, is critic Meryle Secrest (2014) writing about Turner's *Snow Storm: Steam-Boat Off a Harbour's Mouth* (1843) (Figure 1):

What, we wonder, is the meaning of this swinging, heaving, chaotic blur of elemental forces as menacing as a hurricane? And if the black wedge in the center is a ship, why are its outlines so indistinct, as if the image itself were dissolving under the relentless battering of sea and sky?

Over the course of his years of experimentation with color, Turner's paintings seemed less and less concerned with the realistic depiction of recognizable objects. Color played other roles. His later works exemplify a point made by Mazviita Chirimuuta in her recent book *Outside Color*:

The stimuli for color need not be anything like a typically colored surface. Motion . . . can itself be a cue for color. No object need have the colors that we see. . . . In fact this case is no different from the example of the rainbow. There is no spectral bridge in the sky. Its appearance vanishes if we take slightly the wrong point of view. Yet, if any manifestation is an iconic example of color, it is the rainbow. (2015, 84)

In other words, as Turner saw, color functions importantly in our visual world even when not attached to stable, well-defined objects in a specific scene.

## II. ROTHKO, COLOR, AND EXPRESSION

I now turn to my new question about color: What is the role of color in expression? I cannot hope to answer this as a general question. But to try to advance at least some way, I will take up the example of Mark Rothko. Many critics agree that

Rothko's paintings evoke unusually strong emotional responses in viewers and that this is mainly due to their use of color. In histories of modern art, Rothko is usually classified as a color field painter, although he himself rejected accounts of his works that focused on formal features. Rothko staunchly defended claims about his works' *expressive* aims.

I'm interested only in expressing basic human emotions—tragedy, ecstasy, doom, and so on—and the fact that lots of people break down and cry when confronted with my pictures shows that I *communicate* those basic human emotions. . . . The people who weep before my pictures are having the same religious experience I had when I painted them. And if you, as you say, are moved only by their color relationships, then you miss the point! (quoted in Rodman 1957, 94)

Many viewers agree and find Rothko's paintings unusually potent. Indeed, James Elkins speculates in his wonderfully titled book *Pictures and Tears: A History of People Who Have Cried in Front of Paintings* that more people have wept before Rothko's works than those of any other painter (2004, 4). And the colors in the works are central to the viewers' intense responses. Elkins comments, "From a distance a Rothko painting can be pleasing and even pretty. If you walk up to it, you may find yourself lost in a smear of colors." He adds:

If you step too close to a Rothko, you may find yourself inside it. It is not hard to see why people say they are overwhelmed. Everything conspires to overload the senses: the empty incandescent rectangles of color, entirely encompassing your field of vision; the sheer glowing silence; the lack of footing, or anything solid, in the world of the canvas; the weird sense that the color is very far away, yet suffocatingly close. It's not a pleasant feeling: the painting is all around you, and you feel both threatened and comforted, both cushioned and asphyxiated. (2004, 13)

There are few philosophical discussions of how color operates expressively in Rothko's paintings. As perceptive a critic as Arthur Danto was skeptical about the kinds of grandiose claims made on behalf of the work by both the artist and his fans. In his essay "Rothko's Material Beauty," Danto said that one of the works "shows what materiality comes to when it does not evoke something

deeper than itself" (quoted in Boxer 2000). To him the works were only about beauty.

However, some philosophers have found more depth in Rothko's works.<sup>11</sup> Selma Kraft, writing in 1986, argued as follows:

In 1947 Rothko began to probe a new area of meaning: color as the source of an indefinitely open, expanding experience in which the boundaries between viewer and viewed, space on canvas and beyond, are obliterated. In his attention to the possibility of lifting the emotional experience of color beyond something closed and finite, Rothko went beyond the questions explored by such earlier innovators in the meaning of color as Gauguin, Matisse, and Kandinsky. [His works] made it possible to express a new general kind of meaning. (1986, 408)

Kraft's claim that Rothko expresses "a new general kind of meaning" sounds promising. But just *what is* this meaning?

I am reminded by Kraft's vagueness of my dissatisfaction with Nelson Goodman's claims about the intellectual impact of abstract art in *Ways of Worldmaking*. Goodman argues that time spent with abstract art affects our subsequent experience: "Everything tends to square off into geometric patches or swirl in circles or weave into textural arabesques, to sharpen into black and white or vibrate with new color consonances and dissonances" (1978, 105). But I am not sure it is the world outside the museum that vibrates with new color consonances when we leave a Rothko exhibition—it is the paintings themselves that vibrate. Perhaps, too, something about ourselves and our own inner states is transformed.

More help comes from a subsequent article in which Katherine Thomson-Jones took up the challenge of specifying content in abstract art. In her article, "Inseparable Insight: Reconciling Cognitivism and Formalism in Aesthetics," Thomson-Jones sketched what Kraft may have intended:

Rothko's work is about something, namely, our very own experience of color. Many minimalist artworks are about something in this sense, precisely because they are minimalist. . . . What is interesting about Kraft's argument is that she applies the semantic distinction between form and content to a corpus of artworks that is not obviously representational. . . . [T]he semantic distinction can be applied to minimalist art like Rothko's insofar as such work has meaning that is articulated in a certain way. (2005, 379)

It is refreshing to hear such a clear claim that nonrepresentational works can have semantic content. But the content suggested here by Thomson-Jones is still too minimal to account for many viewers' strong responses to Rothko's paintings. Abstract works understood this way are about art or about themselves; the colors are about color. This leaves us a long way from Rothko's grand themes of ecstasy, fate, and doom. Thomson-Jones does take things further, though, by suggesting that, on certain views of emotions, an artwork that stimulates exploration of our inner emotional lives can have cognitive dimensions that inform us about our lives and ethical views:

Just as the way I respond to a situation establishes its significance for me, so the way an artist presents the subject of his or her work establishes my ability to see new significance in familiar aspects of ethical life. These two ways of learning from art show that the inseparability of form and content in art need not rule out the aesthetic relevance of learning from art. (2005, 382)

Thomson-Jones's idea that emotional insight or reflection stimulated by an artwork can inform ethical life is interesting and offers further specification of Goodman's claims about abstract art. But the challenge about Rothko's expressive power remains, because Thomson-Jones's main examples to illustrate how emotional experience can lead to ethical insight are from works by authors like Charles Dickens and Toni Morrison. It is easier to see in such literary cases how processes of identification, empathy, and moral assessment are facilitated by readers' emotional responses.

Recall Rothko's claim that his paintings are about basic human emotions and that if audiences respond, then they feel what he was feeling while painting them. This reflects a theory of expression sometimes called the contagion view, which treats art as an expression of the artist's own emotions, a view presented by Tolstoy (1996) in *What Is Art?* On this view, expression works in a direct way: the artist has a feeling, somehow puts it into the work, and it is transferred to the audience. This view has many critics. A prominent alternative is Peter Kivy's account of expression in music, developed in *The Corded Shell* (Kivy 1980). Kivy speaks of an artwork as *expressive of* emotion rather than *expressing it*. Aspects of music are expressive due to their resemblance to familiar cases of human



FIGURE 2. Rothko Chapel, Houston, Texas. Photo by Hickey-Robertson. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

expressiveness. As an example of this “contour theory,” Kivy mentions how a Saint Bernard’s face can be expressive of sadness without the dog itself being sad.<sup>12</sup>

A major challenge for the art critic attempting to account for expressiveness in Rothko’s mature works is their simplicity. This is particularly true of the very large and dark-colored canvases in the Houston chapel that bears his name (see Figure 2). Elkins cites remarks from the Rothko Chapel visitors’ book saying things like “I felt crushed,” “I was moved to tears,” and “It is a visually and viscerally stunning experience” (2004, 8).

Basically, the contour theory posits recognition of some observable similarity to human expression of emotion. Trying to apply the contour theory to the Rothko Chapel murals, we might draw comparisons between their dark colors and people’s dark moods or dark faces.<sup>13</sup> Generally, faces are termed “dark” when they are angry (angry people’s faces tend to become more red), and moods are dark when someone is depressed. But such comparisons seem superficial. It is too easy to draw links between the dark colors of the Rothko Chapel canvases and facts we know about the artist’s depression and eventual suicide.

Talk of the “dark” paintings seems not so much to involve visual similarities as using “dark” metaphorically. Elkins surely uses the term in a metaphorical way when he says, “I think Rothko was trying to learn how to live with pure unrelieved darkness” (2004, 7). The contour theory fails to recognize that the murals were designed for a (nondenominational) chapel—that is, for a religious setting. In addition, the paintings *in situ* change appearance in surprising ways due to the skylight overhead that allows for shifting natural light. Or, at evening events, the works take on yet another appearance when lit by flickering candelabra. Perhaps the paintings are dark in order to convey mystery and stimulate meditation in a cave-like atmosphere. For some viewers this experience is fruitful; for others, off-putting. The latter was Elkins’s reaction. After a few days of studying the murals and how visitors react to them, he writes:

The paintings are like black holes, absorbing every glint of light, sopping up every thought. Wherever you turn, they face you, and show you nothing but blackness. They say nothing and depict nothing: they just bear down. I had felt some of that the day before, and I had started taking notes partly to avoid thinking about it. Other

people just close their eyes and meditate, released from Rothko's weird unhappiness into their own more pleasant thoughts. (2004, 8)

The Rothko Chapel murals are atypical in the artist's oeuvre in using very dark shades of black, blue, and purple. I would like to move toward understanding how other examples of Rothko's paintings express emotions. Suppose that we pursue the ideas from Kraft and Thomson-Jones that Rothko's paintings are about our own experiences of color and that these experiences lend themselves to acts of emotional appraisal that can inform our lives. Here we can benefit from the theory of expression developed by Jenefer Robinson (2005) in her book *Deeper than Reason*. Robinson offers a careful defense of the idea that emotions are types of "affective appraisals" of the world. Her account of expression, the "new Romantic theory," is a revised version of the position articulated by R. G. Collingwood, who held that artists work out their ideas and emotions in forms suitable for embodying them.

In its primary sense expression is something intentionally brought about by an artist that consists, roughly speaking, in the manifestation and elucidation of an emotional state of a persona in the expressive character of a poem, a painting, a piece of music, etc., such that the work provides evidence for the emotional state of the persona and the persona's emotional state is communicated to other people . . . through the character of the work. (2005, 270)

On Robinson's account, an artwork gives evidence that a persona in the work has experienced an emotion.<sup>14</sup> The emotion is intentionally put in the work and in turn perceived by the audience; in this process the artist and audience both become clearer about the emotion.

Robinson outlines how her account can be applied to examples of expression in various artistic genres ranging from music to literature and painting. She writes, for example, that some musical works "should indeed be experienced as containing a persona whose unfolding emotional life is portrayed in the music" (2005, 333). The case is similar for painting. Here Robinson writes:

Representational paintings can also express emotions in a double way. On the one hand a painting can convey a point of view by presenting a vision of the world as

seen from the viewpoint of a person in the throes of a particular emotion. On the other hand, a picture can also convey something of what it is like for a person to view the world in that way: it can show the person himself or herself and how the emotion affects him or her. (2005, 279)

As examples, Robinson discusses various representational works by Friedrich, Delacroix, Munch, and Kirchner. Stylistic features such as "violent brushwork and lurid colours" can express a painter's attitude, "or that of his artistic persona" (2005, 276).

What about nonrepresentational works? Despite not depicting characters, Robinson argues, abstract works can also manifest expressive actions—as for example with Pollock's drip paintings. We can see the actions constituting these works, and such paintings might express emotions in a way comparable to how dance does, by enacting gestures or behaviors of someone manifesting an emotional state (2005, 276).

Robinson's "new Romantic theory" of expression offers a promising avenue for describing Rothko's use of color. Remember that we can recognize intended expressive aims in works without necessarily experiencing the emotions that are expressed. This way of putting things helps fill out missing details of Thomson-Jones's idea that even abstract art can provide illumination about our emotional and moral life. It is more accurate to say that people who are moved by Rothko's paintings are moved by seeing the world in a new way or realizing something about emotional life than to insist on a direct transmission of feelings, as Rothko did (along the lines defended by Tolstoy).

We see and understand the emotional expressiveness of Rothko's works because of very specific ways in which the stylistic components (especially colors) function in his mature paintings. Bianca Bromberger offers some help on this: "His paintings, he believed, were 'dramas' and the presences of light in the pictures were 'performers.' These shapes 'have no direct association with any particular visible experience, but in them one recognizes the principle and passion of organisms'" (2008, 12–13, citing Rothko 2004, 33 and 35).

Rothko himself gave reasons for viewing his central shapes as playing the role he claimed for

them, as the counterpart of figures or organisms.<sup>15</sup> He felt a very strong need to eliminate the human figure in his works. He wrote:

I belong to a generation that was preoccupied with the human figure and I studied it. It was with most reluctance that I found that it did not meet my needs. Whoever used it mutilated it. No one could paint the figure as it was and feel that he could produce something that could express the world. I refuse to mutilate and had to find another way of expression. (Rothko, quoted in Greene 2015, 168)

Of course, we do not have to take Rothko at his word about how elements of his paintings work. We could dismiss his claims as grandiose, as Danto apparently did. But I think it is fruitful to consider relationships between the central blocks of color in Rothko's paintings as dynamic and therefore gestural. The simple-looking rectangles of color of the mature canvases function like dramatic figures engaged in intricate relationships. The shapes and their interactions can be regarded as personas that manifest emotions; they are stand-ins for the personas Robinson wrote about in representational works, showing us how it feels to be in the throes of certain emotions, or how the world looks to someone with those emotions.<sup>16</sup>

To begin filling this out, let me cite a descriptive analysis of one of Rothko's works. This is from the Phillips Collection (2017) website concerning the painting *Ochre and Red on Red*:

In *Ochre and Red on Red* a buoyant effect is created by the blazing yellow square, which, in comparison to the darker red of its surroundings, appears to surge out of the composition into the viewer's space. *Ochre and Red on Red* becomes an example of Rothko's highly emotional works with its high-keyed pigments and vibrant colors.

This analysis makes a good start at identifying the expressive components ("personas") of *Ochre and Red on Red*. The features cited here are of the right sort. They involve specific facts about *this* work with expressive potential: its yellow square and its red background and how they are related. These parts are characterized by use of terms like "blazing" and "high-keyed"; the yellow square is "surging out of the composition."

Taking this lead, we can identify numerous factors in Rothko's paintings that make their colored sections—rectangles, backgrounds, and edges—function expressively. Because of the paintings' scale, their surface treatment, choices of pigment and its application, and color relationships, they do appear to manifest expressive actions and attitudes. It is important to remember the works' size. Rothko's mature canvases (1950–1958) are typically quite large, as large as six by nine feet.<sup>17</sup> When viewed from close up—Rothko recommended a distance of just 18 inches—the paintings envelop our visual field.<sup>18</sup> (This enveloping strategy will become even more salient, as we shall see, in the light installations of Turrell and Eliasson.) Rothko wanted the works to be hung at eye level and with indirect, even dim, lighting. He typically painted over the edge of the canvas. These factors work to heighten the envelopment effect and to bring the simple components of the paintings to our attention.<sup>19</sup>

In Rothko's signature works these components are two unequally sized rectangular shapes with indefinite edges that appear to float against a different colored background. He employed various techniques to apply the paint, including staining, so it is rare to see evidence of brush strokes, though one can discern streaks, patches, feathering, and underlayers. The colors are distinctive and saturated, but not uniform. Standing eye to canvas we can notice textures and subtle differentiations in color along with individual quirks such as a block's blurred edges. The dynamism of the forces at work results from specific aspects of the composition, including hue and saturation, intensity, and edge treatment. We should also notice the selection of backgrounds and the thin lines of border colors that are sometimes interposed between the two central masses.

Especially when a viewer stands very close, the large vague shapes of these paintings, with their indefinite boundaries, seem to *move*; critics comment that the shapes appear to pulse from within. Sometimes the material substance of the picture seems to be either receding or pushing outward. (Remember the remark above about how yellow of *Ochre and Red on Red* "seems to surge out . . . into the viewer's space.") Within their typically vertical format, due to the uneven size of the rectangles, it can look as if the shapes are not in balance: either one is erupting upward or one is pressing the other down. Elkins comments in

a similar vein about one of the Rothko Chapel paintings that “the black rectangle is up at the top as if it has floated there against the law of gravity” (2004, 5). The active interaction of the shapes is akin to the gestural interaction of dancers.

### III. RESOURCES FROM COLOR PSYCHOLOGY

I have tried to sketch an application of Robinson’s theory of expression to Rothko’s mature paintings by focusing on features like their scale, pigments, and compositions. But surely the specific *colors* and their relationships in each work are central to how Rothko’s paintings function expressively. These are at times uplifting and pleasant, at others uneasy or jarring, because some color combinations work differently than others. Rothko claimed that viewers associate “certain specific emotions with the effects of light” — where by light he clearly meant properties of a luminous colored surface (2004, 23). An important resource to help account for the expressive power of Rothko’s works is the psychology of color. There are numerous psychological studies of how viewers perceive the affective properties of colors. We do not need a color psychology expert to tell us that paintings in very dark colors like those in the Rothko Chapel create different moods than paintings in brighter colors like yellow, pink, and orange.

Color psychology researchers have moved well beyond popular website advice pages about links between colors and emotion. Lots of money is spent annually on focus groups studying the effects of color in branding, logos, and marketing (Singh and Srivastava 2011). Philosophers of art have been reluctant to draw on the resources of the psychology of color. I suspect one problem is that much of the research has been conducted within practical fields like interior design or restaurant management, and such studies may seem too pragmatic or even venal to be reputable. I say “venal” because they serve efforts to manipulate us. But could we not agree that this is also what artists are, in effect, aiming at—at least, to move or stimulate us?

There has been some surprisingly detailed research concerning people’s preferences and assessments of harmony in color combinations and relationships.<sup>20</sup> In their study, “Aesthetic Response to Color Combinations: Preference,

Harmony, and Similarity,” psychologists Karen B. Schloss and Stephen E. Palmer tested subjects’ preferences for specific color combinations and their judgments about which combinations were most and least harmonious. The authors criticize theoretical views, including those of Chevreul and Albers, as “riddled with confusions and contradictions” (Schloss and Palmer 2011, 552). Their tests involved combinations of the 32 chromatic colors generated as larger and smaller contained squares on a computer monitor, shown against a neutral gray background.

Schloss and Palmer found that color combinations were most preferred when they involved the same hue for figure and ground (differing in saturation and lightness) and became progressively less preferred when the hues became less similar. In the second experiment, which tested the subjects’ judgments of color pair harmoniousness, the researchers found results “strikingly similar to the pattern of results for pair preference ratings but somewhat more exaggerated” (2011, 559). Preferences for color pair combinations were not quite the same as ratings of harmony, but “both increase as hue similarity increases” (2011, 551). Schloss and Palmer write, “As was also true for pair preferences, there is virtually no evidence supporting Chevreul’s (1839) claim that contrastive hues are harmonious” (2011, 560).

Obviously, we can make only limited comparisons between Rothko paintings and the stimuli used for controlled studies like these. But note that assessments of both color pair preferences and harmoniousness *increased* with hue similarity and *decreased* with contrastive hues. The hue relationships were assessed based on the field of color science, which attempts to identify “objective” features of colors defined in various way in relation to surfaces, lights, perceptions, color vision, and so on. Schloss and Palmer used one way of systematizing color similarity, the Swedish Natural Color System. On the NCS color wheel, red and green are at opposite poles.<sup>21</sup> Mohan Matthen (forthcoming) explains, “red and green are experiential opposites and cannot be experientially mixed.”

Drawing from color psychology and science could help explain why Rothko’s paintings vary in expressiveness. He did many works juxtaposing blocks of yellow in different shades, and they tend to look beautiful and peaceful, such as *No. 10* (1957).<sup>22</sup> These paintings

simply do not generate the frisson of uneasiness we get from, say, the juxtaposition of forest green with saturated maroon or red.<sup>23</sup> The green-red contrasts employ opponent colors, whereas different shades of yellow are more closely related.

There is still work to be done to explain how colors function *as parts of expressive forms* in Rothko's artworks. Consider that Rothko did four paintings between 1952 and 1956 predominantly featuring red and green. These are opponent colors, so the works might be expected to be disharmonious. I saw two of them in a Rothko retrospective in 2015 and found them jarring. There are contrasts of red and green in *Untitled*, 1952 (29 $\frac{5}{8}$  × 65 $\frac{1}{2}$  inches) and *Untitled*, 1956 (95 $\frac{5}{8}$  × 81 $\frac{1}{2}$  inches).<sup>24</sup> In the 1956 painting, the contrasts are particularly sharp. I found it literally hard to look at, as the two colors seemed to strobe where they met. This is partly because there is no intermediary light blue as in the earlier work; rather, the red and green figures are "face to face" with one another. In addition, the application of color in the rectangles is much flatter than in the 1952 work. With less depth, the shapes sit solidly on the surface. The red in the 1956 work is more bright and vibrant than the maroon-toned hue of the earlier work. The edge of the green rectangle is more clear and straight, not blurred. These features of the 1956 painting all add up to what comes across as an uneasy, almost violent, juxtaposition. Using Robinson's view again, we can say that this painting shows us characters of a very dissimilar nature forced into proximity and therefore radiating discomfort or hostility. This does not mean that the painting makes *me* feel hostile. However, it makes me feel uncomfortable—just as I would in recognizing hostility manifested among some people I encounter in a room, even without knowing more about them.

I have only begun to suggest ways to answer my question about how color functions expressively in the works of a painter, using Rothko as an example. Color psychology offers empirical resources for describing our visual response to color in relation to paintings. Theories of expression like Robinson's also offer resources for understanding even abstract works like Rothko's. Her "new Romantic theory" of expression prompts us to analyze visual elements within Rothko's mature works as agents that seem to have experienced emotions in ways the audience is intended

to recognize. Put another way, they are proxies for characters (personas) who show us emotions we can recognize. These include forces like the "surging" and "blazing" yellow square in *Ochre and Red on Red*, the tense green-red confrontation of *Untitled* 1956, or what Elkins described as the "empty black holes" that somehow still manage to "bear down" on us in the Rothko Chapel murals.

#### IV. COLOR, EXPRESSION, AND CULTURE

I must mention a caveat about drawing on resources of color science and psychology to understand expression in art. Color science attempts to give universal explanations of how vision works, based on studies of human color vision. But people vary, and cultural factors also affect emotional responses to colors. Results of studies of color in relation to cultural influences are inconclusive (Hardin 1988; Whitfield and Wiltshire, 1990). Let me supply a brief, but I hope interesting, example of an artwork from China for purposes of illustration.

In July 2013 the Chinese American artist Jennifer Wen Ma collaborated with computer expert Zheng Jianwei on a light installation project in Beijing titled *Nature and Man in Rhapsody of Light at the Water Cube* (Figure 3). The skin of the enormous Water Cube, an aquatic center built for the 2008 Olympics, was illuminated by an LED display directed by a computer program. The cube displayed varying colors in diverse patterns, brightness, and rhythms to reflect the results of a daily analysis of emotional states. This in turn was generated from two factors: (1) readings and daily summaries from the *I Ching* (the "Nature" part of the work), and (2) analyses of the emotional expressions (the "Man" part) of participants on the Chinese social media website Weibo (a Twitter equivalent). Wen Ma commented, "We hope that the daily expressions of the Water Cube will convey the current mental state of the Chinese people, as well as reflect upon the traditional view that China holds of the world" (quoted in Zhao 2013).

One fundamental background color was used in each daily display, based upon a selection from among the eight natural elements of the *I Ching*, interpreted by a relevant expert. Then other display factors were calculated based on analysis of



FIGURE 3. *Nature and Man in Rhapsody of Light at the Water Cube*. Artist: Jennifer Wen Ma; lighting designer: Zheng Jianwei. Beijing National Aquatics Center (“The Water Cube”), Beijing, China 2008. Photograph by Jennifer Wen Ma, courtesy of The Water Cube. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

75 different emoticons gleaned from Weibo. The speed of changes on the display was coordinated with overall moods; sadness was linked to slow movements and happiness to fast ones, and so on. The result was an animated surface on the exterior “skin” of the Water Cube.

Obviously, color is not the sole expressive element of this installation, but it is one element, and an important one. Some of the color links chosen to coordinate with the *I Ching* elements would seem natural to Westerners: the Fire theme was red and the Water theme blue. However, other color choices seem odd, perhaps because for many non-Chinese people there simply are no relevant associations at work. Thus, the Earth theme was yellow, the Thunder theme involved certain greens, and Heaven was signaled by a sort of pinky-purple-beige color.<sup>25</sup> My point in mentioning this example is to highlight the fact that cultural factors can affect viewers’ emotional responses to color in abstract works of art. Even though Western viewers could no doubt appreciate much about the design and appearance of *Rhapsody of Light*, many probably lack the traditional Chinese cultural associations with the *I Ching* that would enrich responses to the piece.

#### V. JAMES TURRELL AND OLAFUR ELIASSON

My discussion of Jennifer Wen Ma’s work has introduced an example of light installation art. I now turn to a more detailed consideration of how color functions expressively in other such installation works by James Turrell and Olafur Eliasson. Here color no longer involves pigments, since the medium is light itself.<sup>26</sup> This changes the terms of the analysis. We must move beyond talk of how painters use pigments to questions about the nature of light and visual perceptions. Typically Turrell and Eliasson do not employ colored light to *represent* anything. They do see themselves, however, as continuing and expanding the lengthy tradition of artistic explorations of color in painting. They also each use colored light in ways that are emotionally expressive, as I will illustrate; but the explanation of *how* will prove to be complex.

As it turns out, each man has commented explicitly on the fact that they found inspiration in a painter’s work. Turrell explains that his work was stimulated by the example of how Monet worked with pigment in the well-known serial paintings he did of Rouen Cathedral and of haystacks in different seasons and times of day. Turrell remarks:

Monet started painting the cathedrals [of Rouen]. You see the light and the light aspect on things, but with the haystack paintings he begins to take out the haystack. You forget the haystack but not the light, and this was interesting to me. . . . The Impressionists really did this in a manner so that you're really just looking at light, and that's the depiction of light in painting.

I guess I was very American about it—like space is colour going to the moon as opposed to exploring how you are in space already, here—I didn't understand why we didn't just use light instead of painting light. (Turrell, quoted in Govan and Kim 2013, 89)

Turrell managed to create “objects” made of light in some of his early *Projection Works* of the 1960s and 1970s. These involved bright light projections in a corner of a room otherwise illuminated with a deep color light. They induce belief in the viewer that there is a solid shape hovering in that corner in the form of a cube or pyramid.<sup>27</sup>

Like Turrell, Eliasson has also cited the influence of an earlier artist, in his case Turner, who was devoted to the study of light and color. In 2014 Eliasson created seven unusual new works, the *Turner Color Experiment Paintings*, as both commentary and counterpoint to a major Turner exhibit at the Tate Modern in London. Eliasson commented:

For Turner, color was never an autonomous phenomenon or an aesthetic end in itself—he used it to create ephemeral effects and to leave traditional depiction behind. The paintings are almost abstractions, and I remember my reaction when I first encountered Turner in an art history book as a child: I thought, “Wow, what is such an abstract painting doing here before all these more conventional, realistic paintings?” (Eliasson, quoted in Almino 2015)

The *Color Experiment Paintings* are large, disk-shaped works, each digitally generated after detailed analysis of the colors in specific paintings by Turner. Eliasson said he was fascinated by Turner because of his “distinct emotional ability to shape and frame light.” He made the paintings in a disk format because “the circular shape . . . generates a feeling of endlessness and allows viewers to take in the artworks in a decentralized, meandering way” (quoted in Almino 2015). But the circles of these paintings are surely also a nod to the tradition of the color wheel. Eliasson has devoted considerable attention to studying colors, with

the aim of identifying the exact colors of “each nanometer” of the visible spectrum (quoted in Alderson 2015). After his team had identified up to 60 distinct colors in the Turner paintings' palettes, they distributed them on the disks' surfaces to represent those colors in proportion to the way they were shown on the original canvases. For example, *Color Experiment No. 57* was based on Turner's *Burning of the House of Lords and Commons*, 1837.

Colored light functions in complex ways in the two light artists' works. Turrell explores subtle gradations among colors in light, using a strategy that places viewers into contained spaces. He asks us to slow down, observe, and respond to a measured sequence of changes in the light. Perhaps the best examples of this are Turrell's skyspaces. These are buildings or earth structures, often in a pyramid or mound shape, that include openings to the sky. In the interior space, colors modulate in complex ways linked to environmental factors including seasons and times of sunrise and sunset. I will discuss two of these spaces in Houston, *One Accord*, at the Live Oak Friends Quaker Meeting House (2000) and *Twilight Epiphany* (2012) (Figure 4) at Rice University. The venues are, of course, different: the first is part of an active religious institution, whereas the second is an art installation on a university campus.

Despite this difference in mission, the visual aspects of the two Houston structures work similarly. A viewer who visits near dawn or dusk will witness changing light effects in relation to the sun's movements. After people are assembled, an opening in the roof structure is drawn back to reveal the sky. These openings are different in construction: at the Meeting House there is an aperture in the slightly sloping roof over the interior; at Rice University, a doorway opens and closes inside a knife-edged canopy standing over the structure. Interior lighting creates illuminations in the structure that shine around the opening or reflect on the ceiling in ways that frame experience of the sky. At the Rice skyspace rows of LED bulbs change color across the spectrum to illuminate the white canopy overhead. These colors change gradually as the light outdoors changes. The color of the sky takes on a wide range of new hues. It may appear to be light blue, for instance, against a darker blue projected onto the ceiling, and then shift to a much deeper shade when the interior color modulates to pale peach. The experience is fascinating



FIGURE 4. *Twilight Epiphany* (2012), The James Turrell Skyspace at the Suzanne Deal Booth Centennial Pavilion at Rice University. Photo Paul Hester. Image courtesy Rice University. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

but can also be somewhat unsettling. One's perception of the physicality of the opening above changes as things progress. Near the end of the light show, the sky became so black above that I was concerned a thunderstorm was imminent. But the black turned out to be the roof screen slowly closing: I had mistaken the black roof covering for part of the now-dark sky.

The Quaker Meeting House and the Rice University installation, like other Turrell skyspaces, take time to experience. Surprisingly in this age of Instagram and Snapchat, when I visited at Rice, even the younger people at the *Twilight Epiphany* were rapt and attentive. Of course, the Quaker Meeting House presupposes a lengthy tradition of patient waiting at religious gatherings. As a Quaker himself, Turrell is familiar with the spiritual construal of light in that tradition. He explains as follows:

Well, the Quakers talk about the light inside. In fact, the light inside everyone. . . . Even with the eyes closed, we have vision, as in a dream. My grandmother believed the purpose of meditation or contemplation was to wait upon the Lord and meet up with the light inside. The temple is within. (Quoted in Govan and Kim 2013, 40)

Another example of a Turrell work was his 2013 Guggenheim exhibit *Aten Reign*, in which

he provoked new experiences of a space very familiar to museum goers, the large Guggenheim central rotunda. He illuminated this space with a series of conical structures including LED displays to create luminous oval rings of homogeneous color in the space overhead, which included at the top an eye-like central disk or opening. Visitors responded at times simply by lying on the floor to watch the show above, "patiently staring up like it's some sort of celestial event" (Ferro 2013). This was actually appropriate, given that the work was named after the ancient Egyptian god worshiped in association with the disk of the sun.<sup>28</sup>

A similar response occurred in viewer reactions to what is probably Eliasson's best-known work, *The Weather Project* in the Great Turbine Hall of Tate Modern in London (2003). This was an extraordinarily successful installation in the Great Turbine Hall (Figure 5). It was so popular—attracting six million visitors—that it had to be extended. Like Turrell, Eliasson makes expressive use of particular colors and color combinations. Even though in many of his other works Eliasson has created a whole rainbow of colors using prisms and lenses, in *The Weather Project* he narrowed the palette to tones of yellow, gold, and orange.<sup>29</sup> These are colors with strong connotations of the sun and summer.

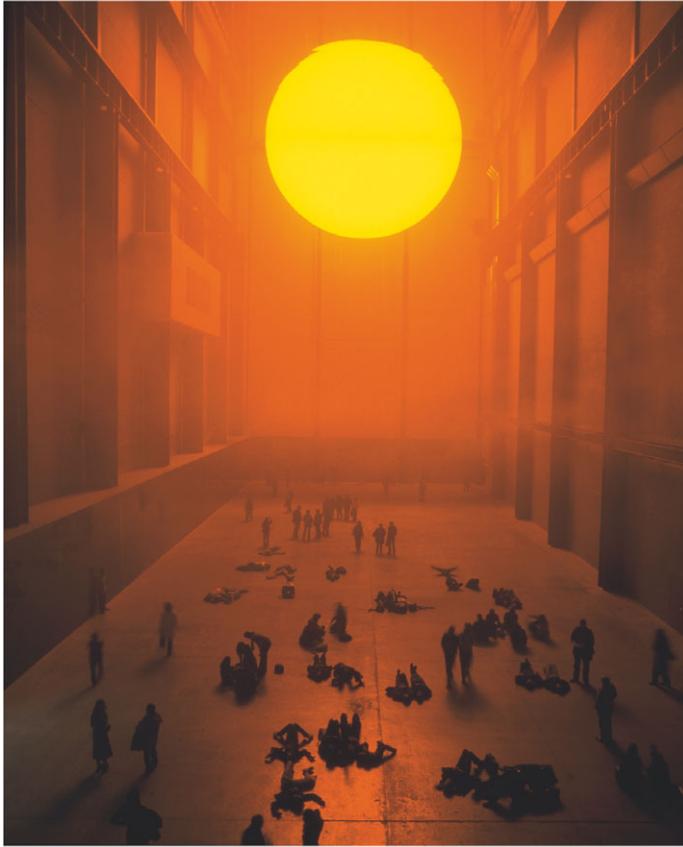


FIGURE 5. Olafur Eliasson, *The Weather Project*, 2003 (mono-frequency light, foil, haze machine, mirrorfoil, scaffold  $\varnothing$  ca. 15 m) Installation view: Tate Modern, London 2003. ©Olafur Eliasson. Photo by Andrew Dunkley & Marcus Leith. Courtesy the artist; neugerriemschneider, Berlin; Tanya Bonakdar Gallery, New York. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

In *The Weather Project*, a large central disk was hung high in the space, composed of hundreds of lights that emitted yellow rays, creating a virtual sun. Visitors enjoyed basking in this golden light to the point of lying under it and “sunbathing,” despite the absence of any actual physical warmth.<sup>30</sup> The links between the bright yellow light and familiar summer weather were heightened by mist pumped into the hall. Mirrors added to the cocoon-like feeling by enabling people to watch themselves and others responding to the space. Eliasson has said, “I am generally not as interested in what an artwork depicts as in what it produces, its performative aspect, the way it induces you to act and behave in space” (quoted in Gilbert 2004). The work seemed to succeed in these aims—at

least, judging from testimony of the *Telegraph*’s critic Richard Dormant (2003). He noted that *The Weather Project* was crucially comprised by its participants: although people were reduced into identical faceless silhouettes by the blazing light, their behavior indicated a common humanity.

Eliasson, like Turrell, aims at enhancing our awareness of sensory access to the world. He encourages viewers to consider how perception works—to become aware of “seeing yourself seeing” or “seeing yourself sensing.”<sup>31</sup> In Eliasson’s *Your Blind Passenger* (2011) (Figure 6), people were invited to traverse a 295-foot tunnel filled with a dense mist. The tunnel of *Your Blind Passenger* was lit by white light that varied in tone from yellows to bright white to different shades of



FIGURE 6. Olafur Eliasson, *Din Blinde Passager*, 2010. Fluorescent lights, mono-frequency lights (yellow), fog machine, ventilator, wood, aluminium, steel, fabric, foil. 3.30 × 2.70 × 96 m, Unique. Installation view: ARKEN Museum of Modern Art, Copenhagen, 2010. ©Olafur Eliasson. Photo by Studio Olafur Eliasson. Courtesy the artist; neugerriemschneider, Berlin; Tanya Bonakdar Gallery, New York. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

blue, replicating illumination effects of daylight. People walking through the tunnel took tentative steps due to the limited visibility. Their skin color altered as the colored light changed, and if they moved further ahead they became indistinct silhouettes that dissolved into the fog.<sup>32</sup> Eliasson commented that although people felt lost at first, they quickly became reoriented through shifting to the use of other sensory modalities (2017). This installation stimulated participants to engage in something like a Cartesian project: an introspective search for self and certainty. We could also draw comparisons with Hume and his complaint that when he looks for himself, he finds nothing there.

#### VI. AROUSING AND EXPRESSING EMOTIONS IN WORKS OF LIGHT ART

We cannot easily account for the power of light installation works by borrowing from color science, in the way I tried to sketch above for Rothko. First, these artists employ light rather than pigment. And, second, the colors in the installations tend to shift—there is no single pair or defined combination of colors at work, as in a Rothko canvas. Perhaps some implications from research studies of people's preferences of color

combinations might still be relevant.<sup>33</sup> But there are alternative sources to draw on. Research has been conducted in a variety of fields, ranging from biology and psychology to ergonomics and architecture, concerning the effects of light on human bodies, moods, memory, and performance. The colors of light (including both brightness and wave length) affect our bodies, brains, and emotions in many ways, altering heart rate, blood pressure, melatonin levels, sleep cycles, and circadian rhythms (Stone 1999). This research has filtered out into the media of popular science and psychology. In northern climates, people know about the role of full spectrum lights in combating so-called SAD (seasonal affective disorder; Küller et al. 2007). There is much accumulated expertise about the role of types and colors of light in helping to define space, shape mood, and elicit varied viewer reactions.<sup>34</sup>

This scientific research helps explain some aspects of the emotional force of works by Eliasson and Turrell. One way they move viewers is just because the light in the works affects people directly. This is what Robinson in *Deeper than Reason* calls *arousing* emotions. She describes how this differs from, but can be related to, *expressing* emotions by using examples from music. Music can *stir us* psychologically: it can calm or excite

us, make us feel happy or melancholy. Such experience involves numerous physiological changes (Robinson 2005, 406–407). All this is similar to how the light of installation artists' works can affect people. Colored environments (especially red and blue ones) affect us physically, altering alertness, brain activity, blood pressure, respiration rates, and more (Hardin 1988, 166–167; Elliot and Maier 2014). In addition, Turrell uses his extensive knowledge of perceptual psychology to construct works that affect our vision directly. The color shifts in *Aten Reign*, for example, trigger automatic switches between photopic and scotopic vision (between use of cones and rods in our eyes; Ferro 2013). Eliasson's *Your Blind Passenger* disorients people within a world that restricts visual identification of distances and objects.

Robinson says that when moved by music, we may consider why and thus be prompted to interpret specific aspects of the music as expressive. In doing this, I might, for example, say that a song uses a minor key, slow tempo, and wailing voice to express melancholy, perhaps arousing in me a distinct emotion like nostalgia (Robinson 2005, 368–369). Light installation works may not be expressive as some music is, by conveying experiences of a *persona*, in the way I argued Rothko's paintings do. But, just as expressive music employs formal musical features of a song or sonata, light art installations employ specific formal features such as location, tempo, arrangement, prescribed forms of behavior, and so on. Like music, these are temporal artworks.

Environmental installations typically slow people down. They require attention and lingering to grasp meaning. Often these works create environments pointing to or recalling experiences of nature. People may find the experience provokes memories of a golden summer day, rainbows, the Northern lights, or a romantic twilight evening. Our responses involve recognition of distinct features we attend to. Similarly, in discussing our encounters with nature, Noël Carroll has argued that emotions are normal responses, which are not altogether subjective because they presuppose recognition of specific features of the environment (1993, 257–260). His view of emotions is similar to Robinson's treatment of them as types of appraisals that connect bodily responses to evaluations of a situation or action (Robinson 2005, 57–99).<sup>35</sup> Specific objective elements of a waterfall, for example, such as its size, noise, and power,

are sources of our awe and wonder. We can have similarly distinctive responses to aspects of a light installation, but, here, we are recognizing features of the world that have been *deliberately designed for expressive purposes*.

As I noted earlier, Robinson argues that art can be expressive by presenting *the world* as seen by someone in a particular emotion or showing *what it is like for a person* to see the world that way. Simplifying, an artwork provides expressive insight into *how the world looks* or *how a person feels* when viewing such a world. A nice example Robinson gives is Edvard Munch's famous painting *The Scream*. Here we see both a character in anguish and that this character's world is bizarre and twisted; it is a world, as Robinson puts it, "infected with the screamer's anguish and anxiety" (2005, 283).

Artworks like *Your Blind Passenger* or *Aten Reign* are like the Munch painting: they show the world *as experienced* in a certain way: as challenging and disorienting or as mysterious and awe inspiring. The very fact that colored light affects our perceptual awareness can stimulate conscious reflection about the nature of perception and about how we tend to experience art and museums.<sup>36</sup> Just as we can reflect on a musical work that arouses us, perhaps judging it to be expressive of melancholy, so too can we conclude that art installation is expressive of warmth and community, of human insignificance within the vast scope of nature, of the so-called light inside, and so on. Arousal of emotion contributes to but is not identical with recognition of the installation artist's expressive aims.

Context is an important contributing factor (Robinson 2005, 249). The colored lights of Turrell and Eliasson's works are set within distinctive created environments. To experience these spaces, they must be sought out; they are wholes separated from everyday life. In Turrell's skyspaces people must wait for the aperture to be opened; in Eliasson's *Your Blind Passenger* they must enter and walk through a tunnel. There is something ceremonial or ritualistic about such a venture, which takes on the nature of a pilgrimage. This is intensified if the work is in a Quaker meeting house or has become as popular as *The Weather Project*. *The Weather Project* recalled some ancient religion of sun worship, fostering community even within the vast unfriendly space of the Turbine Hall at the Tate Modern. In Turrell's works people look up at the vault of the

sky, again as in some prehistoric ritual, as if seeking the meaning behind falling stars, eclipses, or other “celestial events.”<sup>37</sup>

Art installations by Turrell and Eliasson sometimes challenge our confidence about seeing and knowing the world. An art installation that prevents our ability to see space or judge distances accurately appears to thwart our very nature. We are, after all, visual creatures as the result of a lengthy and complex evolutionary process that gave certain advantages to animals that could see and hence move more efficiently around in their environment to find mates and food and avoid predators. Nevertheless, artworks that make us ponder the nature of physical reality and of how we manage to perceive it, like Eliasson’s and Turrell’s, are valuable in themselves. Color in these artists’ works becomes something very intriguing, mysterious, beautiful, and valuable. It arouses emotions, fulfills expressive functions, and stimulates reflection about reality and ourselves. It does all this so well that I now feel better about endorsing Goodman’s claim that I quoted earlier—about how experiences of abstract work carry over when we leave the gallery or museum into the outside world by making us look at and reflect upon things very differently. Surely this is one of the best things art can do.<sup>38</sup>

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- color properties (this is partly Newall's characterization; see Newall 2006, 591), and Kulvicki (2015) of luminances.
2. See Finlay (2014, 72–73, 94–95, and 98–99) and Gage (1993, 220).
  3. It was first reported that Kapoor held a patent on the material, but he later clarified that he had acquired exclusive artistic use of it; see Voon (2016).
  4. On the problem of color constancy, see Newall (2006, 594); on correspondences between aperture color of "patches" of a subject with those of a painting, see Hyman (2000, 30–32).
  5. General philosophical discussions of color have not much considered its role in evoking human emotional response. For example, Chirimuuta's (2015) index mentions neither emotions nor moods. One exception is Hardin's book, which does acknowledge the topic and comments that "some things remain to be explained" (1988, 166).
  6. "I have finally discovered the true color of the atmosphere. It's violet. Fresh air is violet"; Monet, quoted in Finlay (2014, 97).
  7. See Gage (1993, 173–175).
  8. See Finlay (2014, 95); for more on the use of the yellow-violet complementarity in Delacroix, Monet, other Impressionists, Signac, and Neo-Impressionists, see Roque (1996, 35–39).
  9. See Gage (1969, 118ff, 173ff, and 196ff; also 1999, 162–168). Roque (1996) argues that the painters' idea that Chevreul had recommended they paint using complementary colors was a misunderstanding.
  10. See Brownlee (2009, 21–24).
  11. Goldblatt remarks: "What Mark Rothko did for the emotional use of color in 1947, with his large scale, fuzzy, floating rectangles, he continued doing until his death in 1970" (1984, 73).
  12. I like to illustrate this to my students today with the example of Grumpy Cat, the Internet sensation.
  13. Kivy's theory is meant for music, not visual art, but some have tried to extrapolate it. For a sophisticated defense of contour theory as applied to expression in painting, see Lopes (2005, 76–81).
  14. The artist invites the viewer to imagine what it is like to be in a particular emotional state, "either by showing us the world from the point of view of the emotion or by inducing in us the bodily changes characteristic of that emotion" (Robinson 2005, 276).
  15. For the terminology of Rothko's "classic period," see Greene (2015, 70–90).
  16. This account is specific to Rothko. For another abstract artist, a different account might be needed—for instance, along the lines Robinson suggested for Pollock (Robinson 2005, 276).
  17. These represent what the recent catalog calls his "classic paintings"; see Greene (2015, 70–90).
  18. I owe these points to Crow (2005, 30).
  19. See O'Doherty (2015, 129, 133).
  20. See Schloss and Palmer (2011).
  21. Schloss and Palmer used the NCS (2011, 553–554).
  22. This is shown as Cat. No. 39 in Greene (2015).
  23. For more on the perception of yellow in particular, see Hardin (1988, 164).
  24. These two paintings, *Untitled*, 1952 (oil on canvas, 29% × 65½ inches) and *Untitled*, 1956 (oil and acrylic

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1. Hyman (2000) speaks of aperture color, Newall (2006) of recognitional abilities, Lopes (1999) of relative

on canvas, 95% × 81½ inches) are both from the collection of the National Gallery, Washington. They are reproduced as cat. 28 and 35, respectively, in Greene (2015).

25. There are not simply traditional color associations with the *I Ching's* elements, but more complex color associations with *changes* that occur while moving from one hexagram to another one. (For help, I thank Wei Hong and Jing Chen.)

26. The technologies for mixing colored lights are “primitive” compared to those evolved over centuries for mixing paints, according to Shimojo (1997).

27. See Govan and Kim (2013, 51–73).

28. I owe this point to William Conger.

29. There are numerous instances to mention, such as Eliasson’s design work on the façade and chandeliers for the Harpa Concert Hall in Reykjavik, Iceland (2011) or his construction for the top of the ARoS Museum in Copenhagen, *Your Rainbow Panorama* (2004).

30. Eliasson has said that he likes the idea of art facilitating the violation of social norms of museum going—as when some people went upstairs from *The Weather Project* to the restaurant in the Tate and tried lying down up there. Unfortunately, “soon the administrative police stopped that” Eliasson (2017).

31. These are titles of works Eliasson did in 2001.

32. A video showing the work is available at Eliasson (2010).

33. In commenting on effects of certain color transitions in Turrell’s work *Aten Reign* (2013), Shaunacy Ferro (2013) invokes the language of complementary colors.

34. See Langanier and van der Pol (2011) and Steffy (2008).

35. Robinson (2005, 182–184) criticizes Carroll’s (1993) view.

36. Eliasson’s work differs from Turrell’s in showing a stronger tendency toward cultural critique and support of environmentalism. I intend to explore this comparison further in a future article.

37. Turrell has also long engaged in a project of creating viewing points for stars and eclipses using excavations in Roden Crater, an extinct volcano in Arizona. See Govan and Kim (2013, 45–48).

38. This essay was delivered as the 2016 American Society for Aesthetics Presidential Address. Previous versions of this article were read at Rice and Trinity Universities and at a special session of the Pacific American Philosophical Association organized by Jennifer McMahon, supported by Australian Research Council Grant #DP150103143 and by a grant from the American Society for Aesthetics. I am grateful to the audiences at those occasions for comments, especially to Richard Grandy, Kathleen Higgins, and Andrew Kania. Thanks to Mohan Matthen for answering some questions about color. John Kulvicki provided welcome encouragement. Theodore Gracyk prompted revisions that (I hope) improved my arguments. Finally, I thank William Howze for research on images and copyrights.