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## Creating 'Reflection and Refraction'

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## Creating 'Reflection and Refraction'

### Abstract

This essay offers personal narrative about the creation of *Reflecting and Refracting*, a collage artwork integrating literary and scientific texts regarding light. *Reflecting and Refracting* was made specifically for the *STEAM* journal's first issue and elements were incorporated into the issue's collaborative cover image, *Equations of Light*. The current essay, however, is the first time the original artwork is being published in its entirety.

### Keywords

STEAM, art, collage, cover, physics, light, literature, poetry, James Joyce

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## **Creating *Reflection and Refraction***

Tara Prescott

Although literature and writing have always been my strongest subjects and passions, I was into a little bit of everything when I was a kid. Children do not make distinctions between loving dinosaurs, constructing LEGO cars, wondering why dogs pant, and counting to a billion.

When I was younger I participated in science fairs and collected toothpaste-box-coupons to send to “Save the Trees” campaigns. I memorized constellations and read horse encyclopedias. Over the years my tendency toward the eclectic has grown with me. In 2013 I travelled to China and watched Americans act out Goethe, drove to Long Beach to scuba dive inside the tropical tank at the Aquarium of the Pacific, and wandered through Joshua Tree National Park photographing the visual contradiction of snow falling onto cacti in the desert. In my professional life I teach writing to Business Economics majors but I am also editing a book on Neil Gaiman’s comics. I grab opportunities because they are fun, not because they fit the narrow idea of what my job or degree or society says I “should” do.

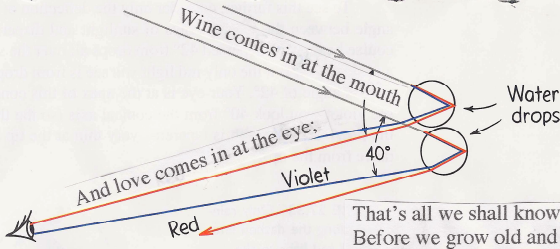
This is also the playful approach I took to designing a piece of original art for the *STEAM* journal’s inaugural issue, “Luminare.” Elements from my contribution, *Reflection and Refraction*, appeared as part of *Equations of Light*, a collaborative piece containing elements from eleven different artists, all ruminating on properties of light and working on the same canvas. In thinking about my own happy transversal of STEAM fields, I recalled my college General Education (GE) courses at UCLA. As an English major, I was particularly unsure about the relevancy of my science GEs. Then an unexpected thing happened: I took physics and fell in love with its precise and exquisite diction. Despite its hefty price, at the end of the course I did not sell back my textbook, Paul G. Hewitt’s *Conceptual Physics*. I just knew it was the type of book that belonged with me. I have schlepped it cross-country multiple times to Baltimore, San Francisco, Philadelphia, and back to Los Angeles again. Right now as I type, I can see it on my

color-coded vertical bookshelf, its freckled-universe-blue spine tucked between John Green's *The Fault in Our Stars* and James Merrill's *The Changing Light at Sandover*.

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Chapter 27: Reflection and Refraction 499

Lolita, light of my life. fire of my loins. My sin, my soul.

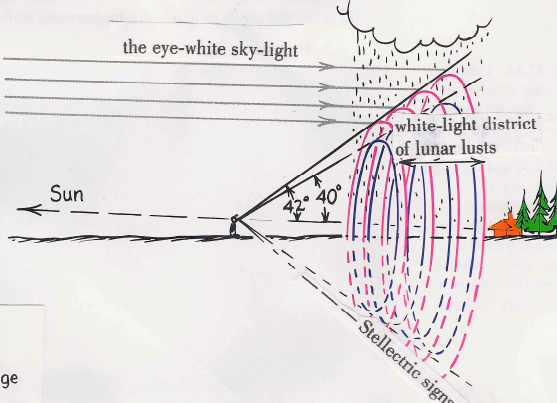


black clothes  
feel it more.

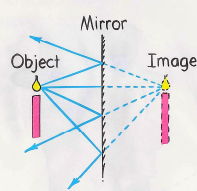
Black conducts,  
reflects,  
(refracts is it?),  
the heat.

That's all we shall know for truth  
Before we grow old and die.  
I lift the glass to my mouth,  
I look at you, and I sigh.

FIGURE 27.32 When the sun is shown off to the left and the water-drops are to the right, the rainbow you see is the edge of a 3-dimensional cone that extends through the water-drop region. Violet is dispersed by drops that form a 40° conical surface, red is seen from drops along a 42° conical surface with other colors in between. (Innumerable layers of drops form innumerable 2-



Throats iron eternities, drinking heavy radiance,



That evening she danced merengues with us.  
Then Ephraim, summoned, had her stand between  
Two mirrors—candle-scissorings of gold;

Reflection and Refraction by Tara Prescott

*Conceptual Physics* helped me in my first year as a medical writer when I was suddenly tasked with writing an Occupational Safety and Health Administration (OSHA) guide for driving forklifts. I went home and used the college textbook to refresh my memories of center of gravity, balance, fulcrums, and inertia. *Conceptual Physics* came

in handy again when I turned 30 and decided to pursue my PADI Open Water scuba diving certification. Neutral buoyancy, currents, light refraction, color absorption, air expansion and compression—suddenly all of the terms from the textbook came to life within my body as I slowly descended through the thermocline, feeling my neoprene wetsuit compress, carefully reading my gauges as I moved into the increasingly bluer depths.

The language of physics is striking and elegant in its precision. I have always appreciated writers who use scientific language in their work, who understand both the economy of these words and their utter beauty. That is one of the great things about being an outsider looking into another field: you can make observations that people who are masters of that area cannot see. People who use subject-specific terminology daily no longer see the jargon as anything other than what it means. But a stranger can see the words in and of themselves, can peel away what they reveal about culture and metaphor, storytelling and musicality. To a pilot, an aileron is simply a part of a plane's wing that performs a specific function; to a lover of languages and myth, the Aeolian harp, the god Aeolus, and the wind itself are all embedded in that piece of metal.

To create a work of art for *STEAM* that revolved around understandings of light, I started by taking *Conceptual Physics* and tearing out a page *Dead-Poets-Society*-style. (Although I did photocopy the page to reinsert into the book for future use). Page 499 comes from a chapter on reflection and refraction and includes illustrations of sunlight hitting water drops and separating out into different colors. This is the page that explains the garden hose rainbows we all know so well.

Using the page as my base, I then performed a found poetry exercise. To make a found poem, all you need is a dark marker and a chunk of text, something that is meant to be functional rather than literary. The more mundane the original source (think of menus, graffiti, street signs, SkyMall catalogs), the more striking and unexpected the finished product can be. Once you have the text, skim around for interesting words, being sure not to “read” the text in the typical sense. Circle any words that interest you without worrying about sense or meaning. Then read them together and you will “find” a poem you did not even realize was there. According to *The Teachers & Writers Handbook of Poetic Forms*:

A “found poem” is a piece of writing that was not intended as a poem, but is so declared by its “finder.” Parts of newspaper articles are often declared to be “found poems,” as are lists, notes passed among children, scraps of conversation, and other incidental uses of language. [...] The odd thing is how the found words seem to take on an added power when removed from their original context and presented alone. [...] Writing a found poem often requires creative skills similar to those used in the actual creation of art. (Padgett, 1987, p.82)

Following these guidelines, I used a Sharpie to circle words on the *Conceptual Physics* page that jumped out at me: “consider,” “drinking,” “light,” “sun,” “edge,” “violet,” “conical,” and “colors.” The juxtaposition of “drinking” and “light” made me think of the artist and writer Wyndham Lewis. There is a line from his strange and wonderful play, “The Enemy of the Stars,” that has always thrilled me: “Throats iron eternities, drinking heavy radiance.” Something about it makes me think of what it would be like to drink sunlight, to consume radioactivity, to sample heavy elements. These lines hint at something powerful and poisonous, intangible and liquid. I took these lines from Lewis and placed them next to “Consider / drinking / light” on the found poem I created out of the *Conceptual Physics* page. Next, I pulled light associations from Lewis’s friend and fellow artist-poet, Mina Loy (1996). Her “Stellectric signs” made their way onto the page (p. 81).

Other serendipitous associations quickly followed. I recalled the famous opening lines to Vladimir Nabokov’s *Lolita* (1989): “Lolita, light of my life, fire of my loins. My sin, My soul” (p. 9). I added these lines to my quotes about light and optics and love and kept going. *Conceptual Physics* uses a cartoon candle to explain mirror imaging, which I connected to James Merrill’s *The Changing Light at Sandover*, a gorgeous fantasia of a narrative poem about men who use an Ouija board to converse with a spirit. One line describes standing “between / Two mirrors—candle-scissorings of gold” (Merrill, 1995, p.23). It is both exquisite and scientifically precise. In describing plane mirrors, *Conceptual Physics* notes, “Suppose a candle flame is placed in front of a plane mirror. Rays of light are sent from the flame in all directions.[...] When these rays encounter the mirror, they are reflected at angles equal to their angles of incidence. The rays diverge

from the flame and on reflection diverge from the mirror” (Hewitt, 1998, p. 489). Merrill condenses these diverging rays reflected in multiple mirrors into a single, beautiful compound noun: “candle-scissorings.”

In the sciences, researchers often coin new terms for phenomena that have never been described before. The same is true for poets and writers who create neologisms to describe emotions and impressions in fresh ways. I particularly love when these types intersect, such as the researcher who found inspiration in James Joyce’s *Finnegans Wake* (1976) to christen a new subatomic particle (“three quarks for Mister Mark!” p.383). In some ways, Joyce paid the favor forward by creating the hero of *Ulysses*, Leopold Bloom, an amateur scientist of sorts. Bloom has just enough schooling in the sciences to get it all slightly wrong, but even his wrong information uncovers a curious kind of truth. For example, he gets warm while wearing black mourning clothes and tries to work out scientifically why this happens. He thinks, “Specially in these black clothes feel it more. Black conducts, reflects, (refracts is it?), the heat” (Joyce, 1986, p.46). What I love about Bloom is not that he gets some of his science wrong—but rather that he tries to get at what science cannot explain. When we are in mourning, when we are in black, we do feel more—the pain of loss, the fear of death, the grief of what was left unsaid. Yes, black absorbs the most heat, but Bloom imagines it absorbing much more: feelings that can’t be measured scientifically, as much as Bloom imagines they can.

After adding Merrill, Lewis, Loy, Nabokov, and Joyce to the mix, I then searched my memories for other intersections of literature and light. I recalled an evening during my year studying abroad at the National University of Ireland, Galway, when I learned many toasts and ballads, including W.B. Yeats’s (1996) “A Drinking Song.” The lines “Wine comes in at the mouth / And love comes in at the eye” have always sounded to me like a playful pseudo-scholarly analysis of drunken infatuation, of giving in to beauty and sensuality (p.34). It is to analyze love as Bloom does, as if the process of love could be a neatly illustrated figure on the pages of *Conceptual Physics*.

At the end of my exercise, of playing with images and words and memories, of thinking of what I loved about science and literature, I finally had my finished work: *Reflection and Refraction*. The playful blending of intentional association and

serendipitous accident reminds me that nothing in the world exists completely in isolation. Part of what I love about science, technology, engineering, art, and mathematics is not only how interconnected they are, but also how they continue to unfold and expand when you bring the perspectives or works of one into another. Who I am as a writer is heavily influenced by having a forensic engineer for a father, a mathematics Ph.D. for a friend, and a global health naturopath for a sister-in-law. STEAM fields encourage me to think about the world that extends so much further than the narrow slice granted in a major or a degree. It allows us to play and explore once more like uninhibited children.



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