A JOURNEY TO THE EDGE OF PERCEPTION

A CREATIVE PROJECT

SUBMITTED TO THE GRADUATE SCHOOL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE

MASTER OF FINE ARTS

BY

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JULY 2017
ABSTRACT

CREATIVE PROJECT: A Journey to The Edge of Perception

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DEGREE: Master of Fine Arts

COLLEGE: Fine Arts

DATE: July 2017

PAGES: 35

A Journey to The Edge of Perception explores the potential of glass and light to affect our perception of the world. Through explorations of scientific phenomena and open-ended material investigations, I have created artworks that challenge our expectations of everyday materials and our perception of the natural world. Presented as stand-alone sculptures and interactive installations these artworks invite the viewer to explore and discover the dynamic aspects of each work. Encouraging participation from the audience allows for a deeper more personal connection with the artworks while challenging the traditional role of artist and spectator.
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Statement of The Problem

As an artistic medium, glass is often used to create decorative objects, utilitarian designs, and to replicate and reconfigure existing objects to express an artist’s concept or narrative. I use glass to explore peculiar scientific phenomena that I find challenges my intuition. My project investigates the physical and optical properties of glass and its ability to shape light and space. In this creative project, I am combining multiple elements of glass and light to create a series of sculptures that confront the viewer’s expectations about these common materials and their capacity to transform our environment. I focus on the simplicity of the material and present the exhibition in a minimalist style to showcase each artwork’s unique qualities. The clean and minimalist style of my work allows the viewer to engage and experience each piece without distraction. This body of work will be successful if the audience questions their understanding of light, space or the potential of the everyday materials used in this exhibition.

At the core of this body of work is how my research as an artist focuses first on the properties of the materials with which I am working, unlike many contemporary artists who develop their work in support of their initial concept or narrative. I typically use a more scientific approach to explore a material or medium. I begin by isolating and exploiting its properties and characteristics, testing and experimenting until the material transcends itself. An element of play becomes crucial to the development and discovery of each material’s capabilities. Critical observation and constant testing of the material inspires the content and direction of my work.

I relate my studio practice to that of one of my favorite artists, Robert Irwin. He describes his practice towards the beginning of his career, “I used my paintings as a step by step process, each new series of works acting in direct response to those questions raised by the previous
series.”¹ In my creative process, I think of an idea or question that I want to explore with the material. Then I test it and through each experiment discover something new that leads me to the next question to explore. This process continues to grow, challenge, and shape my work. Irwin sums it up best with his comment regarding the problems that came up during an installation process at the Chinati Foundation in Marfa, Texas, “But that’s the beauty, the fun in this game. It’s this incredible thing in which all challenges are possibilities, and you have to figure it out as you go along.”²

My artwork is inspired by the journey and artistic process of Robert Irwin, as well as the work of James Turrell, and Olafur Eliasson who also work with light and space to create a sensory experience for their audience. James Turrell creates visual illusions using light, color, and space. His works typically demand control of an entire room to create the proper viewing conditions. For example, his Corner Shallow Spaces [Figure 1] series uses projected light in a controlled space to trick the eye into thinking a real solid object is floating in space right in front of you. However, it is merely the clever use of light, space, color, and architecture to produce the phenomena. He creates a similar experience in his Wedgeworks [Figure 2] series by using projected light to make perceived walls or barriers. Parallel to this style of work, Irwin and Eliasson manipulate simple elements such as light and water to produce illusions, which have the capacity to challenge the audience’s perception. For example, his use of light and shadow in his work Untitled [Figure 3] tricks the observer, forcing one into questioning where the object is actually located. Like these artists, my work also utilizes light and space to create unique experiences for the viewer and emphasizes the interactivity and activation with the artwork.

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activation of an artwork involves the viewer’s proximity or movement around or within the work to have a direct effect on the composition of the artwork. By allowing the audience to participate in the manipulation of an artwork challenges the traditional relationship between the artist and spectator.

The overall goal of my work is to create engaging, minimal, and interactive sculptures that inspire playful curiosity through experience. Influenced by the minimal and science-based installations of Turrell, Irwin, and Eliasson, I continue to challenge and push my investigation into perception with light, space, and glass to create captivating and beautiful works of art accessible to everyone.

**Review of Influences and Literature**

I view some of my earliest experiences as key influences for this creative project. All my life I have been curious about how things work. As a young boy, I would take apart anything around the house that was mechanical. My dissections began with mechanical pens and developed into discarded toys, tools, and electronics. I would often take them apart and investigate how they operated and would then reassemble them if possible.

I began working with my father, a stonemason and carpenter, as soon as I was capable. Together we built additions to houses, created award-winning fireplaces, walkways, and even a stone bridge that was protected by the local historical society. From those experiences, I’ve learned the value of hard work and I’ve also seen first-hand how simple elements can come together to create something even more impactful. Similarly, I assembled most of the artworks in my show from multiple elements that produce a larger and more complex whole.
My interest in how things work did not stop at dissecting electronics or creating masonry work. From an early age, I have investigated the natural world and the processes at work shaping it. The projects I did with my father often required us to work in remote locations surrounded by forests, streams, and other natural wonders. My fascination for how things worked was piqued while observing nature and wildlife. This curiosity led to my undergraduate study of physical sciences. I have been most interested in the unseen or often overlooked forces shaping our world as well as the instruments used to help us understand them.

Serendipitously, it was during this time that I discovered the art of glassblowing. Molten glass was a material that exhibited several physical laws simultaneously, many of which were the invisible forces that I was striving to comprehend. I found the more that I worked with the material the better I could understand and predict the physical forces at work affecting the glass. I found that experimentation with the medium led to new discoveries about its potential. I applied the scientific method that I had learned in my science classes to the study of glassblowing and the material’s properties. This approach to my exploration of glass still influences the direction of my work today.

It is through hypothesis and experimentation that I have come to focus on the optical properties of glass. I am most interested in how glass affects the ways we see. It was not until I began to mirror blown glass elements that I began to investigate glass’s optical qualities. Unlike a traditional mirror, my blown glass pieces with uneven thickness bent the light and imagery with a high level of distortion. This distorted view of the world related to my lifelong interest in perception.

Being colorblind has caused me to constantly consider that the way I view the world is different from what other people experience. This defect in my vision has developed into a
broader investigation into other physiological and psychological mechanisms that affect man’s perception of the world. Throughout this investigation, I realized that man is capable of being greatly mislead by false information gained through the distortions of our perception. Cognitive psychologist Richard L. Gregory in his book, *Eye and Brain: The Psychology of Seeing*, explains, “Sometimes the eye and brain come to the wrong conclusion, and then we suffer hallucinations or illusions. When a perceptual hypothesis - a perception - is wrong we are misled, as we are misled in science when we see the world distorted by a false theory. Perceiving and thinking are not independent.”

Within my research I present sensory experiences that highlight and challenge our assumptions about the world. The simple act of questioning our perception is becoming ever more critical in this information age and the era of “alternative facts.”

The work of Olafur Eliasson has a strong influence on my artwork. I appreciate how Eliasson's work is unpretentious and direct, avoiding complex conceptual content that feels elitist and patronizing. But more specifically, I enjoy how his installation artworks allow his viewers to participate in them. His installation *The Weather Project* [Figure 4] changed the way people viewed and interacted with contemporary art. Visitors to this exhibition chose to lie down on the floor and interact with their reflections in the mirror that covered the ceiling, creating imagery and text with their bodies, challenging the initial intent of Eliasson. This work unintentionally invited the interaction of the visitors who began to experience some authorship in the ways in which *The Weather Project* was experienced. This relationship between his artwork and the audience was not intentional but still highlighted people’s desire to become involved with contemporary art. My research integrates this desire for audience interactivity with the artwork. I

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designed my installations to rely on audience participation to reveal the full potential of the work.

I admire Eliasson’s use of elemental materials to evoke meaning and experience. He often uses light, water, fog, and dirt to create artworks that question man’s relationship with the environment. He often removes materials out of their usual context, simplifies them, and creates opportunities for them to be experienced in a novel way. In his work *Your Circular Now* [Figure 5], he utilizes light emitting diode (LED) lights and mirrors to create a life-sized interactive kaleidoscope. He describes this viewing machine as “questioning perceptual habits, inviting the viewer to a more open, felt experience.”

Eliasson’s artwork also invites one into a contemplative space through beauty and phenomena. Another example is his *Riverbed* installation [Figure 6], in which he brought tons of rock and gravel into multiple galleries and recreated a small stream that meandered through the galleries. My research also investigates the use of natural phenomena as an artistic medium. I present these effects with a minimal yet pristine aesthetic to entice the viewer in and to explore the work in more detail. As the participant approaches the work, they begin to affect the artwork, transforming the visual field. With Eliasson’s artwork, the audience is predominately a spectator. With my artwork, I intentionally blur the line between artist and observer. They do not create the work, but they still become a critical variable in how the artwork will reveal its content. An excellent example of this is my piece called *Introverted Logic* [Figure 7] which distorts, flips and magnifies a collection of black lines through two panels of clear glass lenses. With each step left or right, forward or backward and with a change in viewpoint by moving up or down, new descriptions are constantly created, inviting the viewer to move around the panels of lenses to

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experience the optical mystery and beauty created. I create work that is not just illusory but is presented in an immersive way causing the viewer to feel a part of the artwork.

The work of James Turrell, in particular his *Skyspaces* [Figure 8] series, explores and decontextualizes perception through his manipulation of light and space. Viewers look up at a skylight, but the way in which he manipulates the interior lighting transforms the way they see the sky, changing its color, suggesting that we create the colors we see and our perception of reality is relative. Turrell explains, “My work has no object, no image, and no focus. With no object, no image, and no focus, what are you looking at? You are looking at you looking. What is important to me is to create an experience of wordless thought.”\(^5\) This desire to create a meditative experience in which we begin to question our constructs of reality like Turrell has a significant influence on my work and artistic practice.

In contrast to Turrell’s artworks, which often require months or even years to construct, another artistic idea that influences my work is spontaneity. Many of the early Zen painters in Japan and Sung Dynasty painters of China were monks whose paintings represented Zen/Daoist principles. To these practitioners, inspiration was not the result of hard work and careful planning, but something that came suddenly, like a flash of lightning. They employed a painting method known as *p’o mo*, also called broken or splash technique. An impulsive brush stroke or a splash of ink would begin the composition, typically a landscape, and the painter might then add small details to complete the painting. This spontaneity of the idea or action to generate a work of art is a practice I often employ. In my process, I embrace chance incidents during both the design and execution of the work. This freedom in the creation process is also influenced by *wu wei*, another tenet of Daoist philosophy. *Wu wei* celebrates the relationship between man and

nature, suggesting that one must flow with life and nature rather than fighting against it. For example, during the creation of $H2O/SiO2$ [Figure 9], I embrace chance and spontaneity as I create the bubble patterns inside the glass water bags. When creating the floating bubbles, I impulsively create depressions in the glass that will eventually trap air bubbles that become a major feature of the work. As I gather more glass to build the volume for the final form, the heat and motion from the gathering process cause the bubbles I placed to move and distort. The form itself is then sculpted with a high level of detail bringing a harmonious balance of spontaneity and control to the finished work.

**Description and Images of the Artworks**

*A Journey to The Edge of Perception* is an exhibition that explores how we view and perceive the world around us through thoughtful and engaging artworks. The intent behind this exhibition is to challenge the viewer and question what they are seeing by creating opportunities to distort and play with their perception through a clean, minimalist aesthetic. I exhibited *A Journey to the Edge of Perception* in The Atrium Gallery in The Arts and Journalism building at Ball State University. I had access to two adjoining galleries and a vitrine on the exterior of the gallery. It was critical that the lighting in the galleries was as controlled as possible because each artwork required specific lighting conditions. Both rooms were darkened by masking off all the external windows with black construction paper. I also hung black construction paper as curtains over the entryway between the two rooms, allowing the second room to be as dark as possible to display the piece inside correctly. The overall presentation, when you entered the main gallery, was low light conditions with spotlights emphasizing the works on the floor and walls.
I included seven pieces in *A Journey to the Edge of Perception*. They were mindfully placed for an optimal viewing experience and to create an overall flow within the gallery space. When you entered the gallery, you immediately experienced the shift in light, setting the tone of the exhibition. I removed all track lighting from the gallery except for the few needed to spotlight the works, creating dramatic lighting that supported the theme of the exhibition.

I placed *Straight Lines* [Figure 10] near the entrance of the gallery, just slightly to the right, intentionally helping viewers determine a route in a circular direction around the exhibition. Most visitors first moved to the left, drawn into the illuminated hallway, *Cross Walk* [Figure 11]. Guests could take their time moving through the tunnel, playing with the different shadow effects before exiting out the other side to flow into *Desperately Seeking Modernity* to the right [Figure 11]. The circular set of up of the binoculars had plenty of space just out from the back-right corner so guests could walk entirely around the piece in order to see it from all sides without any interference from other artworks. Turning back towards the gallery entrance, the pillar in the middle of the room helped keep traffic moving back towards the right-side wall where they found *Introvert/Extrovert* [Figure 12] placed strategically in the middle of the gallery. Again, this provided enough space so the viewer had room to engage the piece from many angles. I purposefully positioned this piece strategically to allow a unique view of some of the other works in the reflection, adding to the many facets of discovery in the show. Following this piece, viewers were drawn back to the two spotlights near the front of the gallery, where they stopped to view *Straight Lines*, then finished the first room with *Introverted Logic* [Figure 13] before heading into the dark room off the first gallery to experience *Cumulonimbus* [Figure 14]. Visitors could stay in the second gallery space to view the fluorescent tube display for as long as they liked, while it was cycling on for spurts of seven seconds and off every thirty seconds.
Finally, on the way in or out of the exhibition visitors and people passing by could enjoy the trompe l’oeil of H2O/SiO2 [Figure 9] in the galleries exterior vitrine.

The theme of the show was about how glass, light, and space affect our perception and assumptions of the world. Each work highlighted this idea in a different way. I intended to create a sense of mystery with the lighting conditions and isolating each work from the rest of the space. The minimalist aesthetic, lighting conditions, display, and mostly monochrome color theme helped to highlight the phenomena occurring within each work in the exhibition.

Inspired by Bob Miller’s *Light Walk (1982)* Exploratorium video in which he describes the nature of light as acting as a projection of the image of its source\(^8\), I explored his use of arranging fluorescent tubes in the shape of a cross to create unique shadow effects. For my installation, *Cross Walk* [Figure 15], I expanded on this phenomenon. I created an interactive hallway for the viewer to pass through with the light source on one side, and a stretch of two glass panels with round vinyl stickers placed on the surface, on the other side. The light source is composed of two fluorescent tubes attached in a cross shape that projects towards the glass sheets of circles, creating curious shadows on the wall behind [Figure 16]. What is unique about the shadows is that they are not round shadows of dots as you might expect. The shadows are composed of the same cross shape as the cross-fluorescent light. When the viewer blocked most the light source as they moved through the hallway, the shadows momentarily shifted to round shadows then back to squares and crosses when they moved past the light source. Another interesting effect was, due to the cross pattern of the light source, the shadows cast by their bodies also created geometric outlines. If you looked close enough, you noticed the effect you were seeing looked geometric because your shadow was composed of hundreds of thousands of

crosses and squares. The significance of this work was in the way the light and shadow behaved in unexpected ways. Unlike our shadows cast from the sun, which are round, clean lines, this experience challenged the viewer to make sense of what they were seeing. With this installation, I left space for the viewers to interact with the work, offering an opportunity to experience and discover the unexpected properties of light.

The methods carried out to bring this idea into reality began with creating and isolating the cross fluorescent light fixture in a controlled space. I started by sourcing a used fluorescent light fixture I found at a local garage sale. I disassembled the wiring and ballast from the metal fixture and then discarded the parts not essential to the function of the light. I purchased extra wire and reconfigured the lights into the shape of a cross. I then made a wooden framework to serve as the temporary fixture. Using lumber and drywall I built a sixteen-foot wall with a ceiling to isolate the light and to invite the audience to walk through the space. Once the hallway and lights were built, I began sourcing sheet glass to serve as the screen for the vinyl to cast shadows. I first hand cut various sized circles out of vinyl masking tape to explore the effects of different sized shadows. I discovered that the smaller the circle was, the more the shadows became a cross. The larger the circle, the more they became square. I also found that there was an ideal focal length between the light, glass, and wall. It took some adjusting to figure out the right distances for the best resolution of the shadows. Once all the parameters were finalized, I built the final wooden fixture to house the lights. I constructed the cross-shaped fixture with the wooden edges that rose halfway up the sides of the fluorescent light bulbs. I designed it this way to help protect the bulbs from being knocked loose. What I discovered is that the sidewalls helped direct the light and gave the shadows an even more refined resolution. This progress is very typical for my artistic practice and workflow. As I continued to develop the work and test
out different possibilities, I learn something new each time, helping to direct and guide me to the final piece.

The placement height of the light and glass also became an important factor to consider. Since the work is designed to be interactive and to reach as broad an audience as possible, I could not have the light up too high or shorter patrons would be excluded from participation. The standard exhibition viewing height is fifty-eight inches, but I decided to lower it to fifty-one inches on center. At this height, the light was as low as twenty-seven inches and as high as seventy-five inches. Therefore, even a small child could participate in the activation of the work.

The final stage of construction was the design of the vinyl that would go onto the glass. It was important that the vinyl dots where white. I wanted the design to almost dissolve into the background, adding an extra element of discovery for the viewer. I also did not want to create a dynamic color palette with the vinyl design and distract the viewer from the shadows that lay behind the glass. I created the various circle sizes using Adobe Illustrator and had them cut with a vinyl plotter. Once the vinyl was cut, I began placing the circles on the glass individually, starting with the largest diameter. I put these stickers on at random. I continued to build the pattern with my focus on the ways that the shadows interacted with each other and was less concerned with the patterns the dots themselves created. This practice was inspired by the Daoist practice of p’o mo, where the process begins impulsively with the final details added later. One thing I found interesting, and pleasantly surprising through the layering process, is that the pattern began to resemble fractal patterns like the Mandelbrot Set. Gentle arcs of decreasing sized circles created the interlocking square shadows.

Exiting Crosswalk, attendants are greeted by Desperately Seeking Modernity [Figure 17]. A circular formation of antique binoculars mounted on mid-century camera tripods. The circular
arrangement and undulating heights encourage your eye to follow the binoculars around. Each pair of binoculars peers into the next to create a feeling of endless searching, the circularity reinforced by the crisp shadows cast on the floor beneath. This work speaks to the binoculars’ functional use, their ability to expand our eyes and our perception. Each time you use them you must adjust them to fit your eyes, like using another’s vision to expand one’s horizons.

The opposing meaning this work has for me relates to the era from which these items come. Through the late nineteenth century to the mid-twentieth century, great leaps in science and technology helped to create the modern technological era we enjoy today. However, many of the ethics, knowledge, and societal models from that era have remained stagnant, continually repeating and referencing themselves, refusing to adapt and evolve. The dualistic concepts present in this work propose a narrative to the exhibition; that our capacity to recognize the limitations of our perceptions will determine our ability to navigate towards a productive future or one that will continually repeat itself.

Desperately Seeking Modernity was slowly created over the course of seven months by researching and collecting old-style binoculars and tripods of a similar visual style. As I discovered each component for this piece, I started to mix and match different binoculars to various tripods to find the ideal pairings. Once I had connected each binocular to a tripod, I utilized open space in the gallery to work with different arrangements of the series. I found that trying different configurations and taking photos of each was helpful to analyze the piece from a different perspective. It also allowed me to compare different arrangements side by side to see which was most appealing visually and aligned with my intent. After reviewing the images, I made a few more attempts at arranging the binoculars to explore the piece and decided what felt right in the overall flow and content of the show.
"Introvert/Extrovert" [Figure 12] is a wall mounted mirror composition that is composed of thirteen different triangles. The mirrors are adhered to ball joints that allowed me to position each triangle at precise angles. The left half of the mirror angles out of the picture plane and away from the center point. When viewing the work from the central point, your image disappears [Figure 18]. Conversely, on the right side, the mirrors angle into the picture plane and towards the center. When viewing this half of the artwork your image is reflected in every triangle [Figure 19]. This work speaks to the most common personality types who either spend most of their time thinking internally or those that spend their energy focusing on the outside world and others. Many people transition between the two personality types and both contribute to how we see and perceive the world around us. "Introvert/Extrovert" is dependent on the positioning of the viewer. Therefore, the audience has control over its engagement with the artwork. If the observer does not activate the work from the two focal points, the mirror simply fractures the environment to which it belongs, creating a novel way of experiencing the space.

The capacity of the work to transform the environment, invite audience participation, and create an opportunity for discovery reinforces the key elements of this exhibition.

"Introvert/Extrovert" is made up of only a few basic materials, supporting my overall aesthetic of simplicity. The whole piece measures twenty-seven inches long by eighteen inches tall. It began as one sheet of glass that I divided up into triangular sections ranging in sizes, utilizing the entire mirror. I used a scoring tool along each drawn line to break the surface tension of the glass and caused it to break along that exact line when snapped or pressed. Most triangles split apart from the body of the mirror seamlessly. However, there were some pieces with edges that were rough and unfinished after breaking it apart. This hiccup in the process required me to get more material and re-cut the triangles that were not successful.
After each triangle was cut and the edges finished, I attached a ball joint to the backside of each one. I strategically chose a ball joint so that I had optimal control over the angle of each mirror panel. I used Hxtal glue, a specialty glue perfect for gluing glass to metal, to attach t-nuts to the back side of the mirrors, which connected the mirrors to the ball joints once the adhesive had time to dry and the attachments were firmly in place. I installed the work on the other side of the wall created for Cross Walk, a great central location to catch and reflect the gallery space. I intentionally left open space around this piece so viewers had room to reposition themselves relative to the mirror. This allowed them to experience not only the effects it had on their reflection, but also on the architectural space around them.

Moving from Introvert/Extrovert, visitors naturally progress towards Straight Lines [Figure 15]. Straight Lines, like almost all pieces included in my exhibition, encouraged the viewer to move and engage with the piece. A sculpture in the round, there were many facets to explore with each new angle and position. Remaining grounded in my minimalist aesthetic, I utilized pristinely clear glass blocks stood in an upright position atop the pedestal, strategically spaced in a checkerboard-like manner. On the surface of the pedestal, I used charcoal to draw straight, diagonal lines with varying thicknesses. The lines became distorted and bent once the crystal blocks were placed on the pedestal. The glass pieces created many distortions that easily tricked the eye. The once simplistic diagonal lines became complex geometric shapes and patterns through the reflective qualities of the glass, producing a kaleidoscopic effect. As you moved around this piece, the more the pattern changed.

I created and produced Straight Lines using my preferred and typical style of making in which I play with the properties of the material and use a trial and error method to hone the final piece. The original idea of this piece started out as something much different than the work
displayed in the show. The fun and challenging part of being an artist is being able to work through an idea and staying open to evolving the work while still maintaining the integrity of your concept.

The initial idea for this piece came while I was on a weekly hike. Hiking is also a very critical part of my work process. Stepping away from the studio and unplugging in nature helps me clear my mind, find clarity in my ideas and allows me to re-approach my work with fresh eyes. During one of my weekly hikes, I came across a reflector that had fallen off a bicycle. I was initially curious about the technology utilized to make an efficient reflector out of a small chunk of acrylic. Just as I’ve always done as a kid, I broke apart the reflector to learn about the geometry responsible for the reflective qualities. I was intrigued by the pattern used and began to brainstorm how I could transfer this idea into glass. I first set out to determine the dimensions necessary to replicate the pattern three-dimensionally with individual pieces. After several attempts to cut prototypes out of wood, I found the correct dimensions to reproduce the geometry of the reflector. The overall vision for this piece was a clear glass structure composed of crystal blocks glued together in such a way that mimics the effects of the bicycle reflector. Once the entire structure was fixed together, I had planned to water-jet cut the whole piece in half to display the full range of facets created.

From there I began to think through the material and how I would get the glass blocks needed to create this piece. After researching, I knew my best option was to custom order the blocks from a crystal glass manufacturer as it was not time or cost effective to produce the blocks myself. Once I had the crystal blocks, I began bonding them together with Hxtal, a glass adhesive that would guarantee the strongest and cleanest bond. After investing a month of gluing the blocks together, I was unable to find a reliable local resource to water-jet cut the structure
that aligned with my original vision. I was at a crossroads and needed to decide how to move forward. I revisited my overall theme of perception and continued to play with the glass blocks. I stacked them into different structures and held them in front of various objects and backgrounds to understand how the optics distorted the environment. Through this experimentation, I discovered the direction of the final piece displayed in the exhibition.

I played with different patterns to see how I could place the blocks around imagery for the most thought-provoking visual effects. I displayed the glass on a pedestal so that you could view and experience this artwork from every angle. The final piece presents engaging visual depth that changes with each new viewpoint, encouraging the observer to move around the piece and explore the dynamics of the optical glass.

*Introverted Logic* [Figure 16] also acted as an interactive piece like *Straight Lines*. While *Straight Lines* was focused on observing how the pattern and dynamics change through the internal reflections of the glass blocks, *Introverted Logic* utilized the bending and flipping of light through glass lenses. I took apart and deconstructed camera lenses to not only understand how they work but also to see how I could recycle them into something new. I attached the lenses onto two separate, flat, transparent panels of glass using Hxtal. The panels were mounted vertically and parallel to each other on top of a pedestal. On the wall behind, I applied a pattern of horizontal and vertical black stripes of vinyl. They varied in width to create a sense of depth for the audience and to help distinguish which parts of the imagery are distorted through the different lenses. As the viewer stood behind both panels of glass lenses to see the image, they found the two-dimensional, symmetrical vinyl transformed into an ever changing, visual spectacle. The black lines continued to respond as the observer shifted their viewing angle by
flipping upside down, expanding the magnified areas and creating dynamic compositions when viewed.

The pedestal holding the glass panels is positioned strategically about three feet away from the vinyl imagery, allowing viewers the space to step outside of the lenses to study the components of the piece individually and collectively. Providing opportunities for the audience to play an active role in digesting the artwork encourages them to question and explore the phenomena of the piece on a more personal level. Additionally, providing walkable space in between the pedestal and vinyl provides the viewer with a chance to look through the lens from the other direction, as well as a view of the gallery space and perhaps other visitors walking by. I feel this piece was very successful in not only evoking questions of perception by the viewer but also providing an opportunity to connect with others.

In the adjacent gallery, Cumulonimbus quietly hangs in darkness [Figure 17]. On a timer activated by the gallery attendant, a 250-thousand-volt Tesla coil fired for seven seconds illuminating 175 four-foot fluorescent light bulbs suspended in the air. A deafening electrostatic buzz filled the silence and the bulbs on the edge of the cloud flickered, until it ended as abruptly as it started. My intent was for this work to be startling and confounding, but at the same time surreal. At the entrance of the room hung black curtains with high voltage warning signs. Some visitors were hesitant even to enter the gallery. The initial shock struck surprise and even a flash of fear in some visitors and the loud buzz of electricity triggered the fight or flight response. The curiosity of seeing a suspended cloud of fluorescent bulbs illuminating without the use of power cord caused most visitors to stay and endure the discomfort.

The fluorescent light bulbs are arranged at ninety-degree angles to each other and occupy fourteen by eight by eight feet of space. The bottom most bulbs hang three feet off the floor. The
highest bulbs are eighteen feet in the air and five feet from the ceiling. The width of the structure is roughly seven feet from three walls of the gallery, with fifteen feet between the viewing area and the closest light bulb. Due to the potential hazards created by a Tesla coil, I had to ensure a safe distance from the Tesla coil to any visitors. To keep attendees away from the coil and the light bulbs, I roped off a narrow viewing area with white rope and stanchions.

The development of *Cumulonimbus* began with an interest in creating an installation using a variation of neon called plasma. Unlike neon, various mixtures of noble gasses are pumped into an evacuated glass tube, and an electrode is fused onto one of the ends. The electrode charges the gasses in the tube at a high voltage, separating electrons from the atoms creating plasma. Through this investigation, I discovered that plasma behaves like a Tesla coil. One of the phenomena that the two share is that the electromagnetic field generated ionizes air particles within a given vicinity. Placing neon filled tubes or fluorescent light bulbs near the electromagnetic field ionizes the gas inside the tube, illuminating it.

This phenomenon became the seed that fueled the desire to investigate Tesla coils. I found a manufacturer that built Tesla coils and through discussions with them, decided that the 250-thousand-volt Tesla coil would be the most appropriate size for the volume of space I wanted to occupy. Once received, I began suspending fluorescent tubes around the Tesla coil in a variety of arrangements to test the aesthetic possibilities of the phenomena. To my surprise, the Tesla coil was deafening. I had a vision of hiding the coil and then, unbeknownst to the viewer, the light bulbs would illuminate wirelessly in silence. I quickly discovered this was not an option. I also realized that the environment needed to be as dark as possible to notice the illumination occurring. Another limitation I found was the coil could only run periodically or else the transformer would overheat and cause a malfunction. As my research carried on, it
became apparent that the perceived danger of this installation was high and I knew there would be concern from the University’s administration. The thought of this project getting shut down caused me to seek out the expertise of The Office of Risk Management on campus. I knew that Tesla coils are safe enough for public display. Science museums and most physics departments use them to demonstrate the nature of electricity. After a consultation with the Environmental Specialists and the Director of The School of Art, I received clearance to show this work, but only if I followed the prescribed safety protocol.

The safety procedures caused me to alter my initial plans for the work. I could no longer have the work viewed in the round due to the size constraints of the gallery and the size of the electromagnetic field generated by the Tesla coil. I needed to create a viewing area at a prescribed distance from the coil. This viewing area would also reduce the likelihood of anyone touching the light bulbs or the Tesla coil. I was also required to have an attendant on duty at all times with an emergency shut-off switch at hand. This restriction helped me to resolve the method for how the device would turn on and off. I created an emergency shut-off power box with a programmable timer that continually cycled on and off at specific intervals. Once the Tesla coil was plugged into the timer for the day, the gallery attendants would turn the power on to the system once someone entered that room and would switch it off when the area was empty. This system worked out well. Initially, I was concerned that the Tesla coil firing off every thirty seconds would distract the viewers from enjoying the works on display in the other gallery, this was not the case. When the galleries had many visitors, the sound of the Tesla coil surprisingly generated curiosity for the viewers who hadn’t yet seen the work.

I named this piece *Cumulonimbus* because the intensity of the Tesla coil and its effects on the surrounding light bulbs are reminiscent to me of an ominous storm cloud. The aesthetic of
the cloud was a reaction to the visible tendrils of electricity that come from the top of the Tesla coil, called the toroid, that look like lightning bolts. Though lightning bolts create much more acute angles when the tendrils branch, this branching still inspired the rigid geometry of the light bulb placement. I put each bulb in either the x, y, or z-axis and kept them as level and square to each other as possible. I began to assemble this structure around the toroid of the Tesla coil, being careful to keep the bulbs far enough away from the toroid so that the tendrils would not reach the bulbs and create a hot spot. I decided to minimize any hardware that would suspend and connect the bulbs to the support system by using a small gauge monofilament to tie each bulb into place. This helped to create the illusion that the bulbs were floating in space.

After all the adjustments and safety concerns, I was very delighted how *Cumulonimbus* turned out. The size, configuration, sound and light from this piece were possibly the most impactful of my entire exhibition. It was certainly a piece that evoked a reaction and created dialogue among visitors. It was truly rewarding as the artist to witness the guests experience this artwork.

A vitrine on the exterior of the gallery held a series called *H2O/SiO2* [Figure 9]. A work composed of six hot sculpted glass pieces that look strikingly like clear plastic bags filled with water. This work was inspired by *trompe l’oeil*, or trick of the eye, which traditionally applies to two-dimensional drawings or paintings made to look three-dimensional. In this context, however, my sculptures are made to appear like the object they represent. My intent with these sculptures is to undermine the viewer’s assumptions about the world as it appears. They are sculpted to defy gravity and imply motion, particularly in the air bubbles that seem to be momentarily frozen as they rise to the surface. These details cue the viewer that something is amiss, and they are not simply bags of water but something else entirely. The title references the materials used and the
molecules they represent. The molecular formula for water is two parts hydrogen to one part oxygen, and the simplified molecular formula for glass is one part oxygen to two parts silicon.

My decision to display this work on the exterior of the gallery was a method to captivate the passerby and attempt to draw them into view the rest of the exhibition. To highlight the work and give it a strong presence in such a large display case, I used black construction paper to crop a viewing window for the sculptures. I placed vinyl mirror on the glass behind the glass bags to imply more depth and to increase the amount of light to illuminate the work. The lighting became necessary to showcase this artwork because the heavy use of black surrounding the glass would overshadow the artwork. The glass resembles water best when well-lit and when minimal shadows are created. Blacking out the unused external vitrines to the gallery brought overall cohesiveness to the exhibition’s presence in the building.

The construction of the glass water bags was a complicated process. I used a combination of traditional glass blowing techniques along with a few modern methods to create the unified work. When I began developing this work, each bag was made from one solid mass of hot glass. As I refined the techniques and increased the realism, it advanced into a three-piece construction process. I begin by gathering a small mass of glass, into which I made impressions. These impressions trapped air bubbles with the next gather of glass. Once I had the required volume of solid hot glass, I use an oxygen/propane-fueled torch to heat the surface of the glass and create the wrinkles with a knife. Once I had sculpted the solid portion, I transfered the solid piece to a punty, a solid steel rod with a small amount of glass at the end used for attaching to the main piece. This way I could reheat and shape the top of the solid section. I heated and formed the top and added a hollow blown bubble onto the upper part of the solid mass. The connection seam would get torched and smoothed out. I folded and sculpted this section of the bag to create the air
pocket section of the bag. The top and knot portion of the bag was made from another blown bubble of glass. The bubble was blown, and opened at the end, then heated, spun open and folded. I created the shape of the knot by heating and twisting this bottom portion. Finally, this section was broken away from the blowpipe, torched and fused onto the rest of the bag. I performed a final shaping to create a gestural quality, and then removed the piece from the punty rod. I placed the bag into an annealer oven and allowed it to cool over the course of seventy-two hours. Once the sculptures have reached room temperature, the bases were ground flat with wet silica-carbide grits and brought to polish for display.

The finish I produced on the surface of the bag would be extremely challenging to achieve by casting the glass in a mold. Casting the solid portion of the form would be easier to obtain, but the air pocket and the top section would be nearly impossible to achieve using any other process. The result of this process is a whimsical yet realistic sculpture that demands the eye to look again and to question if the mind is perceiving correctly.

Conclusion

My exhibition, A Journey to The Edge of Perception, showcased the ability of glass to shape light and space, and our ability to perceive ourselves and our environment. With sculptures and installations designed to allow for interactivity and activation by visitors, these works challenged the role of artist and spectator, allowing for a deeper connection between the visitor and the works of art. Combining my fascination with scientific phenomena and thought provoking installations, I designed these artworks to inspire curiosity and wonder. My creative process requires experimentation and elements of play to discover the capabilities of each material. Working in an open, unscripted manner allowed for innovation and creativity. Many of
the works exhibited began as one idea and transformed into a new dynamic creation through discovery and experimentation. It is through this approach to creating, being open-minded to each obstacle and curious about the material’s possibilities, that the work evolved. The result is work that engages the viewer as a participant and welcomes them to try on a new perspective.

**Exhibition Statement**

_A Journey to the Edge of Perception_ is a series of artworks designed to play with the viewer’s perception of light, space, and the sense of self. I create aesthetic experiences that arouse and seduce curiosity. I want to blur the cognitive boundaries of understanding and wonder, spectator and participant. To challenge the audiences’ ability to comprehend their environment with their sight and expectations of reality. Utilizing everyday objects and clear glass allows for the contemplation of the diverse properties of these materials and their role in shaping how we perceive the world.
Bibliography


Figures


Figure 3. Robert Irwin, *Untitled*. 1968.

Figure 5. Olafur Eliasson, *Your Circular Now*. 2015.

Figure 6. Olafur Eliasson, *Riverbed*. 2014.
Figure 7. Dylan Martinez. *Inverted Logic*. 2017.

Figure 9. Dylan Martinez. $H_2O/SiO_2$. 2017.


Figure 12. Dylan Martinez. *Introvert/Extrovert*. 2017.
Figure 13. Dylan Martinez. Exhibition view. 2017.


Figure 18. Dylan Martinez. *Introvert/Extrovert*. 2017.
Figure 19. Dylan Martinez. *Introvert/Extrovert.* 2017.