Wings & Horns

Visualizing the Drought in Lakes, Wetlands, and Bogs

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INTRODUCTION

Looking through a scientific and an artistic lens, I strive to describe and bring to focus the world around me. I employ a diverse range of mediums, including printmaking, ceramics, video art, installation, and sculpture, to express my deep concern for the ecological disturbances caused by human behavior. In particular I am delving into the issue of the desertification of lakes, using art as a powerful tool to raise awareness and provoke thought.

While listening to the news from my home country, Iran, I learned that the water of the Miankaleh Wetland was drying up. Flamingos who had migrated to this wetland were discovered deceased due to botulism caused by the low water level. In south Iran, bulls who need to wade in the wetlands to cool down were found with burned skin. I discovered that this environmental occurrence is happening in other parts of the world, like The Great Salt Lake in Utah, The Caspian Sea in Russia and Iran, and La Mancha in Spain. Photographs of these catastrophes profoundly affected me and made me wonder how I could encourage people to consider lack of water in the world? Do they realize that many lakes and habitats are endangered? How can I raise better awareness about these issues as an artist?

Salt is the combination of two minerals: sodium chloride (NaCl). Sodium is an alkali metal with pH value 7 and it belongs to Group 1 on the periodic table and readily forms alkaline solutions when reacting with water. Chloride is a weak base and considered neutral in combination with sodium. Salt is essential for human life, from preserving food to its significance in religious ceremonies. Salt has historically become more valuable than gold, leading nations to war. Salt is also found in lakes. When the water in these lakes evaporate, it leaves behind a dry lake-bed covered in salt, known as a salt pan. I have harnessed this naturally occurring process in my artwork, creating eroded portraits of nature that warn of future ecological impact.

When water levels decrease, crystallization happens, causing salt to travel through the soil's surface. I have integrated this naturally occurring scientific insight into my printmaking and sculpture, that serves as a unique and innovative warning of future ecological impact. In my experiments, I discovered that salt interacts chemically with printmaking inks, creating a unique effect with ceramics and natural salt crystals on the surface of my work. This allows me to visually interpret the subject of impending ecological disaster in a striking and thought-provoking way, showcasing the unique perspective and creativity that I bring to this issue.

Water is not just a significant source of life for humans; it is also crucial for the survival of the biotic community. Unfortunately, half of the world's lakes have shrunk in the last 30 years. Water evaporates and rains elsewhere, but rainfall level are less than the evaporated water.

In my work, I use natural features and science to repeat and remind people of the familiar portrait of life. I was deeply affected by the news of the deaths of thousands of migratory birds, which inspired me to create this collection of artworks. In my pieces, I portray the coexistence of joyful people and cheerful birds, thriving despite unstable and varied conditions. Although they appear happy, they also face unpleasant challenges and difficult situations in life.

ART & SCIENCE

The shrinking of wetland and salt lakes is an issue that intertwines society, culture, the environment, and natural processes including chemical interactions. To enhance my artwork, I began incorporating real salt crystals using a simple crystallization method I learned in elementary school. This has sparked my curiosity about other artists in history who have blended science with art.

The study of art history reveals that many artists have sought to blend science and art to express their ideas more effectively. During the Renaissance, scientists had to sketch plants, animals, human anatomy, and stars, as there were no cameras available. Often artists had to conduct experiments in order to create these scientific drawings and studies. For instance, Leonardo da Vinci learned how to draw by dissecting cadavers. (Zhu) 2019

In the past, art and the science of geometry helped create traditional Islamic architecture. In Islamic society, the use of the human face and body is restricted, so artists turned to geometrical composition, the play of light, plant forms, and lettering in manuscripts. Islamic arabesques motifs were employed as a symbol of heaven, whereas geometric shapes represented natural order. In combination with the dome shape, representing the sky and galaxy, these icons symbolized the entrance to paradise when someone enters a building.

My work incorporates mathematics, geometry, and art, blending elements of art and science. ***"104"*** (Figure 1) is a piece not included in the thesis show, but it served as a reference for my art piece ***"XYZ"*** at the exhibition. **"*104*"** is a piece featuring 100 ceramic bullheads with four oxpeckers perched atop their horns. They are arranged on a wall in a square of 40x40 inches. Incorporated into the square is a blue-hued, salt-encrusted geographical landscape shape, printed on the plaster is a topographic image of dried lakes. The motifs and colors used in this piece were chosen to reflect the variety of bulls and the regions where they live. I created a hundred bullheads; each bull represents another year passing by and the continued shrinking

of wetlands. Through this piece, I ask the viewer, what will happen in the next hundred years if we no longer have water for water buffalos to wade in?

Wilhelm Dilthey, in the 19th century, drew a clear line between the humanities and experimental sciences, asserting that natural science pursues objective explanation, while human science seeks understanding. Martin Heidegger, too, used poetry and philosophy as metaphors to depict the relationship between understanding and knowledge. From their standpoint, science and art are distinct categories and disciplines. However, some artists, in a certain era, made a concerted effort to straddle both. This doesn't disprove the theories of these two eminent philosophers, Rather, it serves as a testament to the fact that artists have heightened their awareness of empirical sciences and objective experience to better articulate their world in scientific structures that are more familiar to the audience. Nonetheless, many who explore art and science state that one discipline informs their work in the other. (D'Alleva) 2020

In art history, many artists have established a connection between science and art, drawing on observation and interpretation. In the 19th century, neurologist Santiago Ramón y Cajal earned a Nobel Prize for his research on brain cells. In 1939, Alfred L. Copley, also known as Alcopley, studied the flow properties of blood. These figures, who used scientific principles and methods to express their artistic concerns, inspired me to visually document my daily investigations and struggles and how they relate to my subjects and artworks. (Zhu) 2019

I began writing, recording, collaging, and sketching about my daily life and subject on paper. This process revealed to me the deep connection between my subject and my life, particularly when I was affected by the death of immigrant flamingos at Miankaleh Lake. Some of my notable works, each with its own unique significance, include **"*Day One*"** (figure 2) (which won the purchase award at the Bradbury Museum), **"*Still, I'm Alive*,"** (figure 4) **"*Not Now*,"** (figure 5) **"*Royal Kingdom*,"** (figure 6) and **"*A Good Mourning*."** (figure 7)

"*Day One*" (figure 2) features an image of Princess Diana, which I printed while contemplating my projects. My daily items such as receipts and daily work lists were placed on top of it (figure 3). I took a picture of this arrangement and transformed it into a print using the Reductive CMYK mono-print technique. For this technique I first covered the surface with CMYK colors (cyan, magenta, yellow, and black) and then progressively removed ink in specific areas to create a design. Each layer is done separately and printed on top of each other.

"***Still, I'm Alive***" (figure 4), describes the experience of culture shock I had for two years after migrating from Iran to the United States. I struggled to communicate with anyone, and the clash between my previous and new identities left me feeling depressed. While working on my project, I noticed something that caught

my attention: migratory flamingos also contracted botulism and died after arriving at the Miankaleh Lagoon. I compared these migration experiences in my work. During my battle with depression, I reminded myself that I am still alive, fighting for a better life, which gave me hope to keep going.

CONCEPT OF INSPIRATIONS AND INSTALLATIONS

Wetlands play a critical role in controlling water supply, groundwater recharge, flood control, sedimentation, nutrient storage, energy production, water transportation, and people's life. Lakes and wetlands are not only crucial habitats for birds and animals, but they also provide extensive ecosystem services as habitats for many species of endangered invertebrates and vertebrates, such as the tiger beetle in the lakes of La Mancha in Spain. These beetles are active predators and contribute to the natural control of insects. (Sudabeh) 2021

Conceptually, my recent works portray my emotional connection with the organic forms of lakes, animals, birds, and plants that depend on wetlands and water reserves for survival. The flamingos and bulls, in particular, have become poignant symbols of inspiration. Their plight – the death of thousands of flamingos and the entrapment of numerous bulls in drought-induced fires – has deeply moved me and found expression in my art.

I create my art using ceramics, video art, and printmaking techniques. Clay allows me to make three-dimensional installations that bring my ideas to life. Through ceramics, I want to express the delicate and time-intensive aspects of life. In addition, I use various printmaking processes, such as relief, pressure print, cyanotype, reductive CMYK mono-print, and silk screen, to create my artwork. The initial printing process is quite time-consuming. However, its main advantage lies in the ability to produce a large number of prints quickly. In some of my work, I explore the concept of repetition by featuring multiple bull heads, while in other pieces, I intentionally disrupt this idea to create unique monoprints. I utilized printmaking techniques creatively, not just for repetition and reproduction, but to establish a contemporary identity for each of my artworks.

I use crystallizing salt to create artwork naturally, which is my scientific method. Salt symbolizes dryness, signifying the aftermath of dried lake water. First, I place my artwork on top of a bed of salty water with a membrane between my work and the salt water. The membrane usually consists of an egg carton to allow the salt to accumulate naturally from the bottom to the top surface of my artwork. This process affects my prints, causing them to fade and eventually disappear over time or become completely covered with salt crystals. As a mineral, salt creates chemical reactions with the printmaking ink, metal, and other materials I use.

First, this process represents the natural transfer of "change and disappearance" concepts in my work, reflecting the disappearance of animals and organisms whose lives depend on water sources, amplified by climate change and other factors. As my prints start disappearing, I explore how salt interacts with my work. Some of my works, such as **"*104*"** which I mentioned earlier, also features a symbolically dried lake covered with salt crystals, which have accumulated on the ceramic surface of the bullheads. Second, salt has become permanently ingrained in the materials I used, as whenever I wash off the salt crystals, they reappear after a few days. This experience illustrates how long this issue might persist, and the effects are not only visible in my artwork. It provides a small glimpse of a more significant issue affecting the entire world, suggesting that the lake may never be restored.

I have been inspired by Rafael Lozano-Hemmer's installations, (figure 8) which combine math and minimalism to explore the concept of the order of the universe. Climate Parliament (figure 9) is a group of international multi-partisan legislators working to combat climate change that has led me to contemplate the philosophy of order and disorder. This interactive project delves into the complexities of human nature by utilizing sound to communicate vital research on climate change. Through strategically placed speakers, the findings of climate researchers are broadcast to engage and inform the public. (Lebowitz) 2018

Climate Parliament inspired my work, **"*They Are Whispering Behind the Window*."** (Figure 12) With this piece, I aimed to foster a connection between individuals by reinterpreting and transforming the public comments that people have shared on social media platforms. For example, on Reddit, people wrote, “Rain falls eventually *somewhere*. Just not always in a place that can refill the lake.” This approach highlights the diversity of voices and encourages a deeper reflection on the dialogues surrounding climate issues in contemporary society. By reshaping these comments, I invite viewers to consider how our collective thoughts and experiences can influence environmental discussions.

"*XYZ*" (Figure 13) is an installation consisting of 217 whale tails arranged in a geometric order on the back wall of Gallery 130. The whales are white, symbolizing the declining population of whales due to environmental challenges such as water scarcity and human hunting. Despite the gravity of these issues, I aim to find expressions of hope amidst the complexities of contemporary society in my work. The philosophy of hope is a theme, evident in vibrant colors and depictions of happy animals and birds. For example, in the **"*XYZ*"** (Figure 13) installation, the whales are in motion, and the herd is swimming in one direction, symbolizing happiness and vitality.

In my daily records, I found a strong connection between my memories and the environmental issues I address. As an artist and an immigrant woman I discovered similarities between my life story and the story of migratory birds. I connect both of those narratives under the “HOPE” theme, which we, as immigrants,

seek. I incorporate the message of hope and happiness into my work while being aware of the challenges of migration.

Most of my works are a comparison between me and migratory birds. As an immigrant to the United States hoping to find a better life, I draw parallels to the journey of migratory birds. Birds migrate thousands of miles to find food and nesting locations in areas with more resources. However, a lack of water or pollution at their destination can cause them to die soon after arriving. In 2020, it was reported that 6,000 migratory birds died mysteriously in the Miankaleh peninsula. The artworks **"*A Good Mourning*"** (Figure 7), **"*Mother of Nature*"** (Figure 10), and **"*Not Now*"** (Figure 5) reflect my thoughts and daily life experiences, exploring themes of immigration, life, death, and my reactions to current events. Through color, I aim to convey hope from the perspective of animals, illustrating their pursuit of happiness in their lives. (Unknown) 2020

FACTORS CONTRIBUTING TO GLOBAL DESERTIFICATION

Art and science share more similarities than many people realize. Both artists and scientists strive to describe and understand the world and our universe. Although they may use different methods, they both require an "aha" moment. Sometimes, their paths intersect, leading to great discoveries. Art and science extend beyond traditional boundaries; they have recently merged with AI. This fusion of technology and art represents one of the most exciting new avenues in the art world. When art, science, and technology merge, they become a conduit for change, inspiring real-world solutions to global issues.

I have extensively explored the reasons behind the dryness of lakes and water sources from various perspectives. My research has also focused on the adverse effects of technology on the environment. I have delved into video art and digital media, focusing on the interaction between technology and the natural world. **"*Birds Watching US*"** (Figure 14) and **"*The Birds*,"** (Figure 15) vividly portrays the impact of sound on animal mating and the unsettling disappearance of mammals from their oceanic herds.

In my work titled **"*Birds Watching Us*"** (Figure 14), a ceramic eyeball is surrounded by six relief-printed wings. The installation features a video projected out of an eye onto the viewers' chests, creating the impression that an eye is flying and watching them. The video showcases a glowing blue bird, symbolizing a deceased seagull that used to soar joyfully. The shimmering dots in the video represent drying lakes. This piece aims to implicate viewers by projecting a video onto their chests, fostering a sense of connection to nature as an integral part of themselves. In **"*The Birds*"** (Figure 15), a circular ceramic piece with a drain on top invites viewers to look inside. Sound coming out of the drain captures their attention. When they peer inside, they can watch a short time-lapse video of flamingos whose color tones have changed to red, serving as a metaphor for the effects of global warming. I want my viewers to feel like they are watching a

documentary in a library of deceased birds that were once alive but are no longer here as a reference to the 6000 deceased flamingos at Miankaleh.

A similar idea is present in the **"*XYZ*"** installation (Figure 13), which features a video of ink effects projected onto the white whales, symbolizing pollution and violence. The white tails of the whales memorialize the declining population of these magnificent creatures worldwide. The video aims to highlight the impact of human actions that contribute to the endangerment of their population.

Human activities such as land use, industrial activities, and poor agricultural practices peaked from the middle to the end of the 19th century. These activities, particularly the use of fossil fuels, are the main contributors to climate change on our planet. They emit 75% of global greenhouse gases and around 90% of carbon dioxide gas. These gases remain in the Earth's atmosphere and trap the sun's heat, leading to global warming. Natural cycles have resulted in prolonged droughts, increased floods, severe storms, and rising sea levels. The result of these human activities is the destruction of nature, and the scale of this natural disaster is so significant and uncontrollable that finding a solution is challenging. Though our efforts to reduce global warming may seem small, they still have the potential to make a difference in preserving our planet. **"*Death and Life*"** (Figure 16) is an installation that combines ceramic and printmaking techniques. It features a human skeleton with a fishtail and wings hanging from the ceiling. One side of the wings is attached to the skeleton, while the other side is pinned to the wall, creating the illusion that the skeleton is flying. This piece narrates the themes of death, rebirth, humanity, and nature. It symbolizes Mother Nature, traversing the world and disseminating the story of life. Additionally, the image of life incorporates into the relief carving on wings, such as blossoms, otters, birds and flamingos, juxtaposed with the ceramic skeleton reminds us of the ecosystem cycle and highlights human neglect. It illustrates that our actions on Earth will ultimately return to us in the form of consequences. We are interconnected and must care for each other and the planet for the sake of future generations.

According to NASA, many of the world's largest and most well-known lakes are facing a grim future, as reported in scientific journals. The findings show that 53% of the world's rivers have lost 22 billion metric tons of water over a 28-year period, and a quarter of the world's population depends on these lakes. Furthermore, the United Nations predicts that more than three-quarters of the world will face drought by 2050. This includes some well-known lakes such as Lake Mead in Colorado, the Caspian Sea bordered by Turkmenistan, Iran, Azerbaijan, Kazakhstan, and Russia, Lake Urmia in the Middle East, the Aral Sea, the Sea of Galilee in Israel, the Salton Sea in California, and the Great Salt Lake in the western hemisphere. (Paddison) 2023

Drying lakes is a natural process that has been happening for years, but recently, it has been speeding up due to climate change. There are several significant reasons behind the dryness of lakes' water supply. The

issue primarily revolves around supply and demand, where the weather plays a decisive role. If the climate causes a higher ratio of water loss or evaporation from a lake than the water entering it, the lake will not be able to hold water and will eventually dry up.

Deforestation and land-use changes disrupt the water cycle and not only causes soil erosion but also affects the water levels in lakes. Pollution caused by industrial activities pollutes water resources, subsequently affecting the ecosystem. Additionally unsuitable agricultural practices in inappropriate areas and unauthorized hidden water wells reduce underground water reserves, leading to barren and degraded land. This acceleration has led to severe consequences such as dust storms, impacts on migratory birds, reduced aquatic life, increased forest fires, and adverse effects on global tourism and fishing industries. As mentioned previously inside **"*The Birds*"** (Figure 15) a video plays, inviting people to look in and listen. Color tones in this video are inspired by the climate change map, red colors usually indicate warmer temperatures or greater levels of climate change impact, while blue colors represent cooler temperatures or lower impact. Additionally, darker shades of these colors signify more extreme temperature deviations from the average.

The concept of **"*The Black Hole*"** (Figure 11) (not presented in the thesis show) represents the consumption of the environment, similar to how a black hole in a galaxy devours everything around it. When humans consume and alter the environment for their benefit, they often ignore the consequences of climate change. This artwork is created from ceramic and a bathroom sink stopper. The entire piece was immersed in saltwater, resulting in the formation of crystals on its surface.

"*They Are Whispering Behind the Window*," (Figure 12) is a reductive CMYK monoprint with a small ceramic frame adorned with paper ribbons attached to the surface. The ribbons are crystallized with salt, and the printed words reflect public attitudes toward climate change. In this piece I used several elements: 1) Iranian architecture and 2) a study of social media and people's attitudes towards drought. This work references my homeland, South Iran, through the shape of local wooden windows that are commonly used for ventilation and as a place for people to gather and converse. The printed words came from social media and popular thoughts reflecting their beliefs.

I was surprised that many people still do not believe in the drought, based on studying comments on social media platforms such as Reddit, Instagram, and Facebook. Some believe that water evaporates from one place and naturally falls in another. At the same time, scientific data shows that the amount of water lost to drying is greater than the valuable rainfall received. Second, in some areas of Iran with arid weather, such as the south, traditional architectural designs include a unique arrangement of bricks in the windows of the underground rooms for air conditioning. These windows are not only used for cooling the rooms but also served as a means for people to communicate with each other. In my work, I use traditional Iranian

architectural designs to highlight the voices and whispers of people from behind the windows and to bring attention to the calamity humans face due to the absence of flamingos.

CONCLUSION

In his speech at the California School of Arts and Crafts 1994, Richard Serra said: "As artists, we can show people any problems, but we don't necessarily have to find a solution for that." As an artist, I believe we should draw the attention to others and made them realize the problem. Even a tiny change can be considered important and influential for the future.

In my thesis exhibition named "***Wings & Horns***", I designed an immersive experience that invites the audience to engage with my artworks. Attendees are encouraged to touch the pieces, listen to accompanying audio, and watch videos integrated within ceramic installations. This interactive approach aims to foster a dialogue between the audience and the artwork, creating a dynamic communication that deepens the viewers' connection to the themes presented.

One of the primary intentions behind my work is to provoke thought and discussion about lake of water and desertification. By engaging with the pieces in such a tactile and auditory way, I hope that viewers will reflect on their habits and attitudes towards this precious resource. Ultimately, my goal is to inspire a shift in the audience's awareness and behavior regarding water use, encouraging them to consider the impact of their choices. I aspire for my artworks to be catalysts for change in perspectives and actions surrounding environmental sustainability.

PICTURE REFERENCE

Figure 1- 104, 40x40 in, Ceramic, Cyanotype, Natural Crystallization on Plaster, 2023

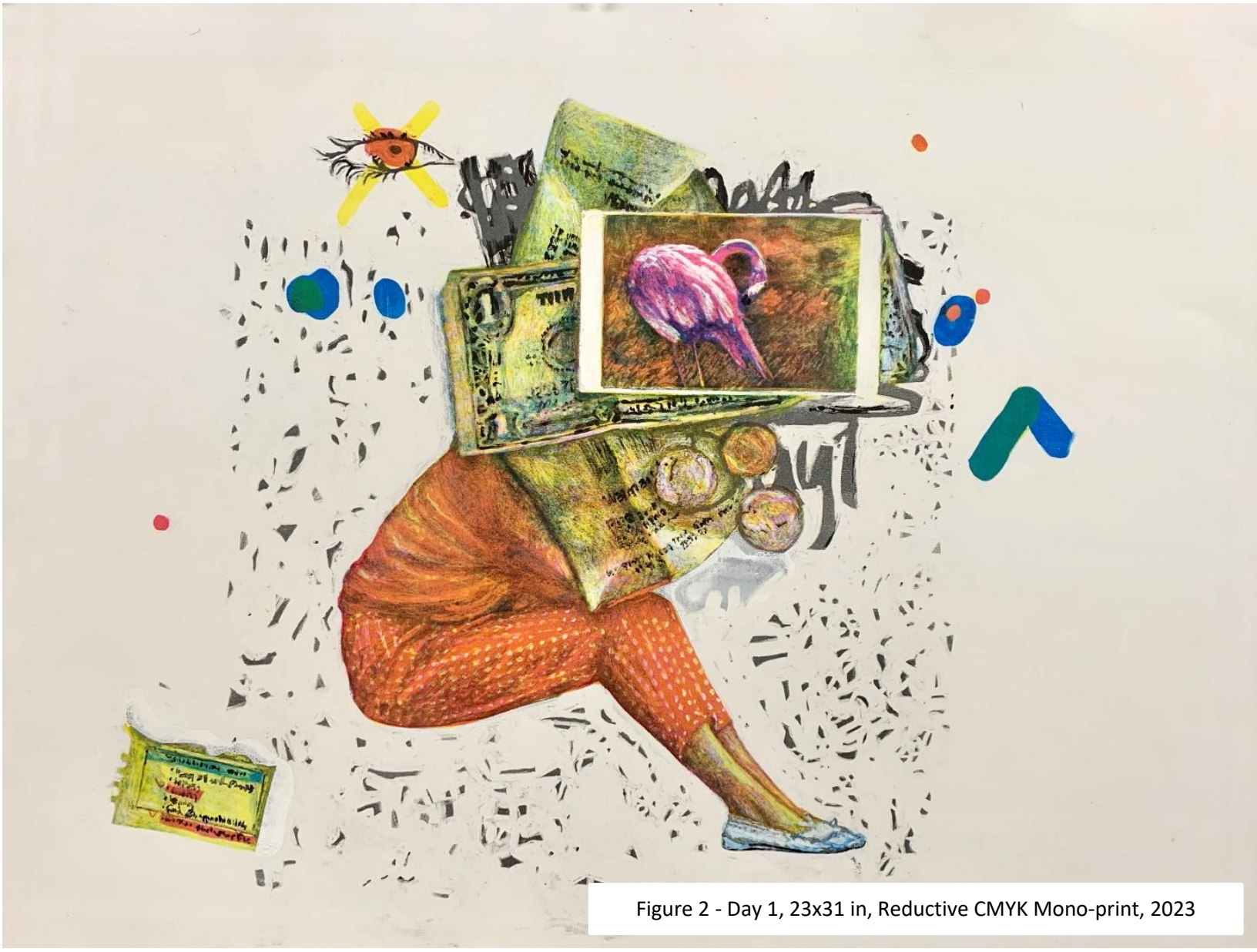

Figure 2 - Day 1, 23x31 in, Reductive CMYK Mono-print, 2023

Figure 3

Figure 4 - Still, I'm alive, 22x30 in, Reductive CMYK Mono-print, 2023

Figure 5 - Not now, 22x30 in, CMYK Screen print, 2024

Figure 6 – Royal Kingdom, 22X30 in, CMYK Silkscreen print, Digital Drawing, 2024

Figure 7 - A Good Mourning, 22X30 in, CMYK Silkscreen print, Digital Drawing, 2024

Figure 8 - Rafael Lozano-Hemmer, Pulse Topology, 2021, 3,000 LED filament lightbulbs, DMX controllers, custom-made photoplethysmography sensors, computers, covers any area between 1,000 and 5,000 square feet

Figure 9 - Rafael Lozano-Hemmer, Climate Parliament, Interactive audiovisual installation, 481 pendant speaker-lights, historical sound recordings, (RICE University website), 2024

Figure 10 - Mother Nature, 22X30 in, Reductive CMYK Mono-print, 2024

Figure 11 - The Black Hole, 10x10x5 in, Ceramic, Natural Crystallization, 2024

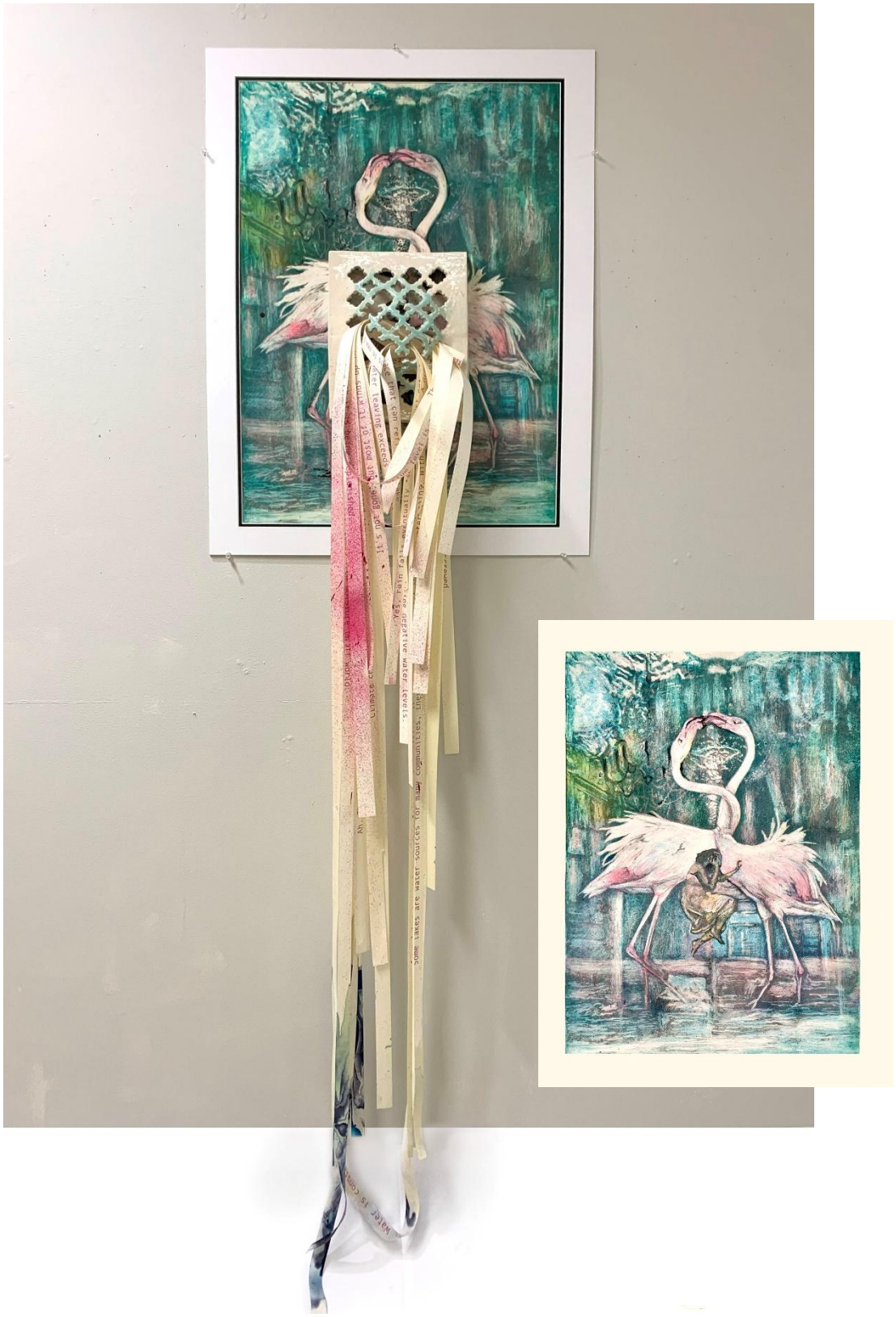

Figure 12 -They are Whispering behind the window, 22x60x5 in, Ceramic, Reductive CMYK Mono-print, 2024

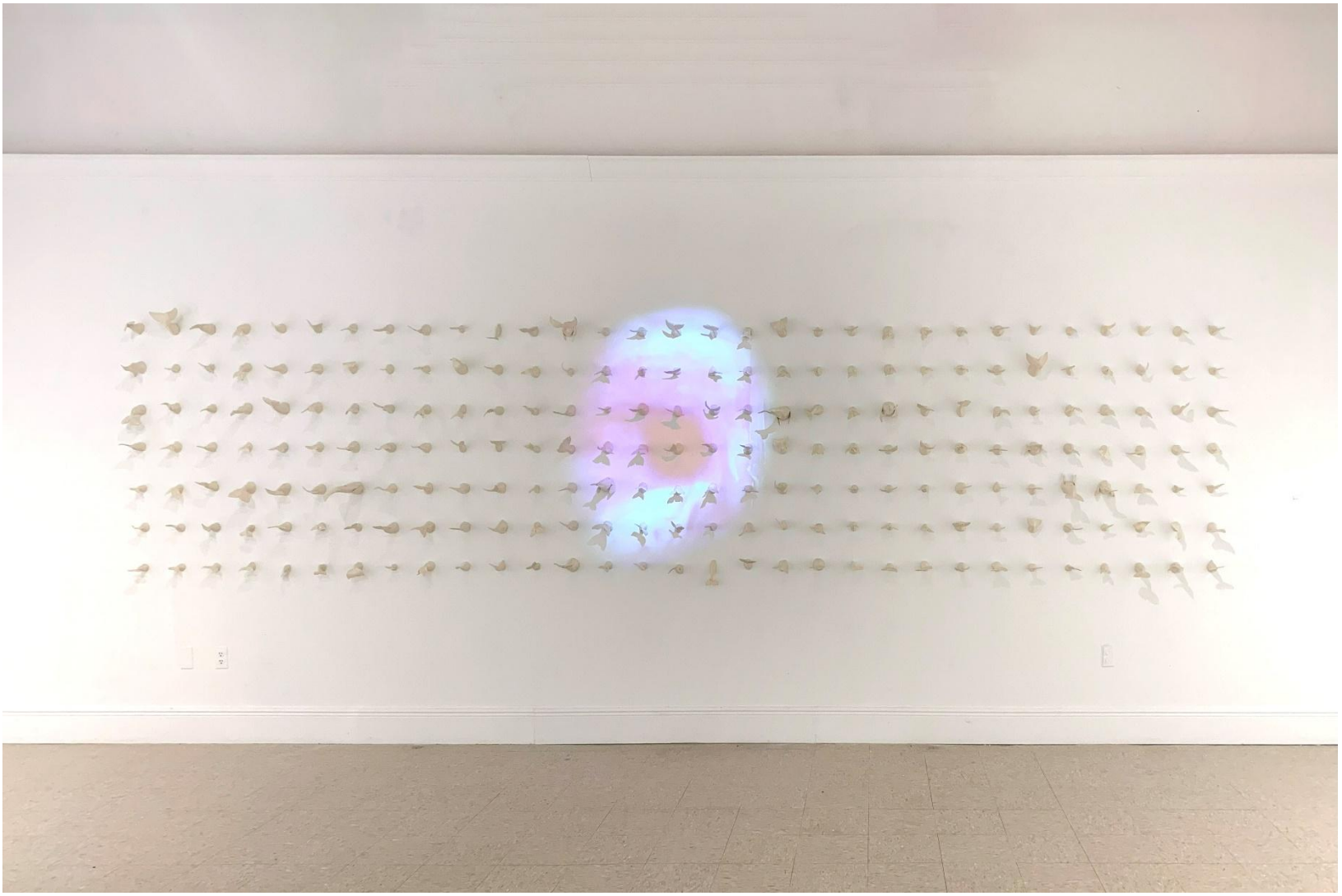

Figure 13 - XYZ, 270x80x13 in, Ceramic, Video, 2024

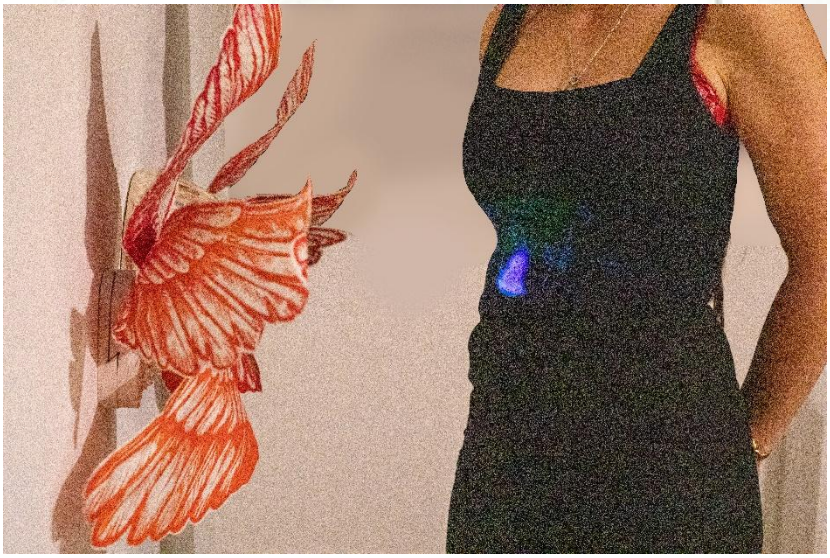

Figure 14 – Birds Watching Us, 45x35x10 in, Silk Screen, Ceramic, Video, 2024

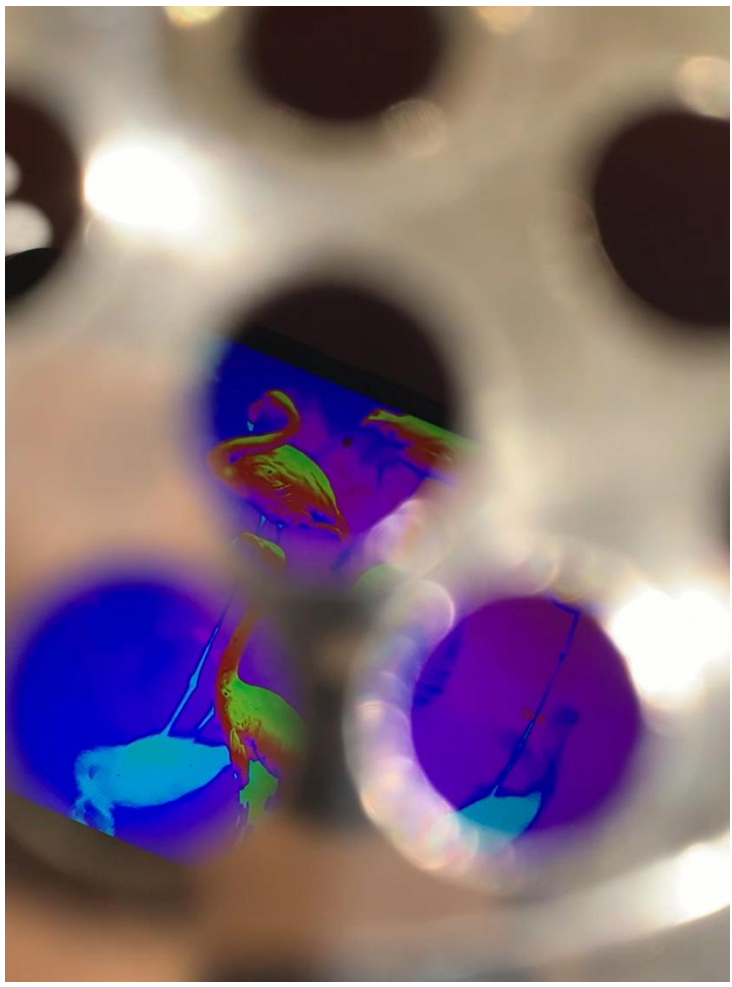

Figure 15 – The Birds, 10x10x7 in, Ceramic, Video, 2024
Video is playing inside the ceramic part

Figure 16 – Death & Life, 130x100x30 in, Ceramic, Relief print, 2024

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