

2022 Benjamin
MENSCHEL
Fellowship
EXHIBITION



THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART

AERIN CHAVEZ ^{AR'24} | DENISE CHOLULA ^{AR'24} | REBECCA JOHN ^{AR'24}

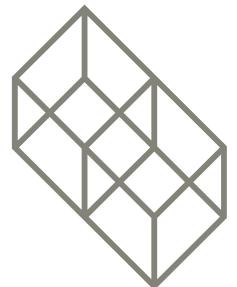
ADRIANA AMELIA CORDOVI ^{A'23} | CARMEN MALDONADO ^{AR'23}

AMENEH ARSANJANI ^{AR'23} | YUNRU DAISY CHEN ^{AR'23}

DOV DIAMOND ^{AR'23} | FREDERICK (DIDI) RAPP ^{AR'23}

EARL KWOFIE ^{AR'23}

AMANDA BLANCA ^{A'24} | NICOLE JOSEPH ^{BSE'23} | LUCIA RHODE ^{EE'23}



**JANUARY 31–
FEBRUARY 16, 2023**

This year's Benjamin Menschel Fellowship projects continue our attempt to provide a space where artists, architects and engineers can collaborate on projects that further the mission of the Fellowship, and support and enhance the Cooper Union's core values. Through collaborations and partnerships that are only possible at the Cooper Union, the six projects on display at the 41 Cooper Gallery engage with challenges in the world outside Cooper, whether in its immediate environs, or in distant parts of the country and world.

Ninad Pandit
Director, Benjamin Menschel Fellowship



The Material Ecology of Mycelium

Aerin Chavez | Denise Cholula | Rebecca John

AR'24

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AR'24

Today's climate crisis has motivated architects and designers to move towards using materials that are less harmful to the environment. The terms used to describe these materials, such as "sustainable," "natural," "zero-waste" or "energy efficient," tend to obscure the energy-intensive and laborious processes used to transform materials found in the earth into new products, buildings and landscapes. As consumers we are mostly removed from these processes but tracing these invisible journeys of materials from sourcing to building can help us ask more informed questions about the material ecologies of typical construction assemblies in order to understand and assess their social and ecological efficacy or deficiency. By documenting these processes, we can ask whether a material is natural or sustainable,

and if material choices are enough to constitute a sustainable process of construction. We decided to document the impacts of material choices at the manageable scale of furniture, instead of the building or city scale, in order to track its construction process and the journey of the materials used as closely as possible.

The material we chose to research is mycelium, which has become popular with designers because of its compressive strength, biodegradability and design possibilities. Mycelium itself is a series of natural polymers that, when coupled with a substrate of various products such as agricultural waste, can bind to each other and create solids. As a result, it can grow into virtually any shape, provided it has the right mold.



Inoculating substrate bags in Mushroom Queens

We chose two companies to source our mycelium material from, Ecovative and Mushroom Queens, and researched their production process, material sourcing and labor networks. Ecovative has been experimenting with mycelium products since 2007. Through their subsidiary, Grow Bio, they sell a pre-made "Grow It Yourself" bag of hemp hurds inoculated with an IP-protected mycelium strain. It's ready to be shipped anywhere, and after packing it into a mold, can become solid in five days.

Mushroom Queens, founded in 2015, grows different varieties of mushrooms to sell at farmer's markets or directly to restaurants in New York City. On a visit to their farm in Queens, New York, we studied how a day's worth of mushroom bags are made. One of the main substrates used in their process, hardwood pellets, was chosen for its ability to cultivate mushrooms. To create a homemade version of Ecovative's GIY kit, we used these hardwood pellets and mixed it with the spawn from the Reishi mushroom, also grown and sold by Mushroom Queens.



Chair using material from Ecovative

The furniture designs were created using 3D modeling tools and then hand-cut and assembled with cardboard. For our exhibition, we wanted people to be able to sit on our furniture while viewing the comparative spatial and temporal illustrations of how they were created through maps, photographs, and diagrams we produced. We believe this can help provoke critical questions about our current understanding of sustainability and hope it gives people visiting our exhibition a new frame of reference through which they will feel compelled to ask similar questions about other material-to-product processes.



Mushroom Queens' incubation room.

Ghostland: An Exploration of a Non-Place

A ghost town is an abandoned space (village, town, or city) that holds traces of its past inhabitants in the visible remains of its buildings and infrastructure. All ghost towns have untold stories lingering within desolate, neglected places once filled with people who longed for a chance at a better life. Devoid of their inhabitants, their use-value, and, ultimately, their meaning, ghost towns become non-places. Bodie, California was the chosen location to study a remnant of a bygone era as an emblem of a tangible non-place. By focusing on one ghost town through the lenses of erasure, migration, dispossession, and displacement, we were able to capture the haunting nostalgia of the past, which allows us to think of such spaces as sites of an encounter with a perseveration of lost time. The objective of this project was to uncover how art might revive these spaces as symbols of lost histories and past lives.



Bodie, like many other ghost towns, was originally a mining camp on the sprawling westward frontier. Located east of the Sierra Nevada Mountain range in Mono County, California, it is said to be a town “frozen in time.” Founded in 1859, William S. Bodey discovered gold near Bodie Bluff and two years later, in 1861, the Bunker Hill Mine and Mill were established and the town grew. Bodie started with 20 miners and grew to an estimated 10,000 people with 2000 buildings by 1879. The town supported 30 mines, 65 saloons, gambling halls, saloons, several churches, a few banks, and a school. Bodie had more of a reputation for its lawlessness than its promised riches, which was one of the factors that warranted the decline of its boom by 1882. The Reverend F.M Warrington described it in 1881 as a “sea of sin, lashed by the tempests of lust and passion.” However, the apocryphal prayer of a little girl from San Jose, whose family was planning to move to the mining town, more succinctly captures Bodie’s amoral essence:

“Goodbye God! We are going to Bodie.”

By 1882, the town had already started to decline as smaller mining companies went bankrupt and people began to leave the area in search of better opportunities; that year Bodie’s population dwindled to 3,000 inhabitants. However, the two major mines, the Bodie and

Adriana Amelia Cordovi | Carmen Maldonado

A’23

AR’23



the Standard, merged in 1997 and continued to operate successfully for the next two decades. There were two devastating fires that caused Bodie’s population to deplete. The first fire was in 1892 which ravaged the business district, and then the fire of 1932 destroyed 95 per cent of Bodie’s buildings. Nevertheless, a few people continued to live in Bodie until after World War II, when the last operating mine, the Lucky Boy, was shut down. By the end of the 1940s Bodie was an abandoned ghost town. In 1962, it became a State Historic

Park, honored as a National Historic Site. Today, over 200 buildings are maintained in a state of “arrested decay.” Many people who fled and moved out after the fires packed what they could in their wagons or trucks and left the rest behind. The original buildings that still stand look much like they did over 80 years ago when the last residents left, acting as a reminder of a lost memory in time. Settlements like Bodie date back to the gold rush migration and the ideology of Manifest Destiny.



This was the mid- to late-19th century belief that the United States had the divine right to expand westward and Americans were divinely ordained to settle the entire continent of North America. Thus, sprung up on the backs of the gold rush and the ideology of Manifest Destiny and westward expansion, these 19th century, wayward, haphazard towns existed as transiently as those who passed through, serving a purpose until the wells (or in this case mines) ran dry, and them with it. Along with those wells drying came the drying up of the dream of Manifest destiny, of those skeletons and those structures left behind when those dreams died.

In our exploration of this one ghost town, this project's purpose was to document the town's lost history and find answers to questions like:

- What does it mean for a space to be built only for temporary use?
- What type of culture is fostered in temporary communities that are not meant to last?
- How have these sites deteriorated over time and what can be inferred about their futures?
- Do these sites have the opportunity for regrowth?
- Is the nature or the environment around this ghost town reclaiming this land?
- How can one document the presence of something that is not present—"a ghost"?
- What material was left behind? What stories does the remaining landscape show through its decayed architecture?



The idea of a retrospective project came to us following a conversation about our experiences as immigrants and the displacement of a past "self." We see migration as a story of who we are and how we got here. Like the waves of people who participated in massive migration settlements in the 19th century, we sought to move in hopes of creating a better life. Through the ghost towns we hope to uncover lost sources of this ever-present idea. Through our exhibition we aim to stitch together a visual representation of a lost American dream through the emblems of towns like Bodie. Bodie points to fleeting dreams and hopes, decay, and ghostly presences that continue to linger. This project intends to create a visual representation or photographic archive of the afterlife of spaces thought to be "dead" or "erased" over time.

Blow-Up: An Inflatable, a Living Pod, an Adaptation

Ameneh Arsanjani | Yunru Daisy Chen

AR'23

AR'23

This project did not begin with us, and it will not end with us. It is a contribution.

On an island of 1.6 million people, it is usually assumed that recognizing strangers is next to impossible. For us that was not the case. Many months ago, shortly after returning to school post-pandemic, we noticed a blue balloon under the scaffolding on the corner of 8th Street

blue blanket belonging to an unhoused person. It was attached to what we later understood to be the exhaust of a building. This blanket was being inflated by the relief air being blown into it and was providing warmth to the unhoused person. What struck us most was the fact that this balloon was unlike other indicators of homelessness seen throughout the streets of the city, as it had a parasitic relationship to

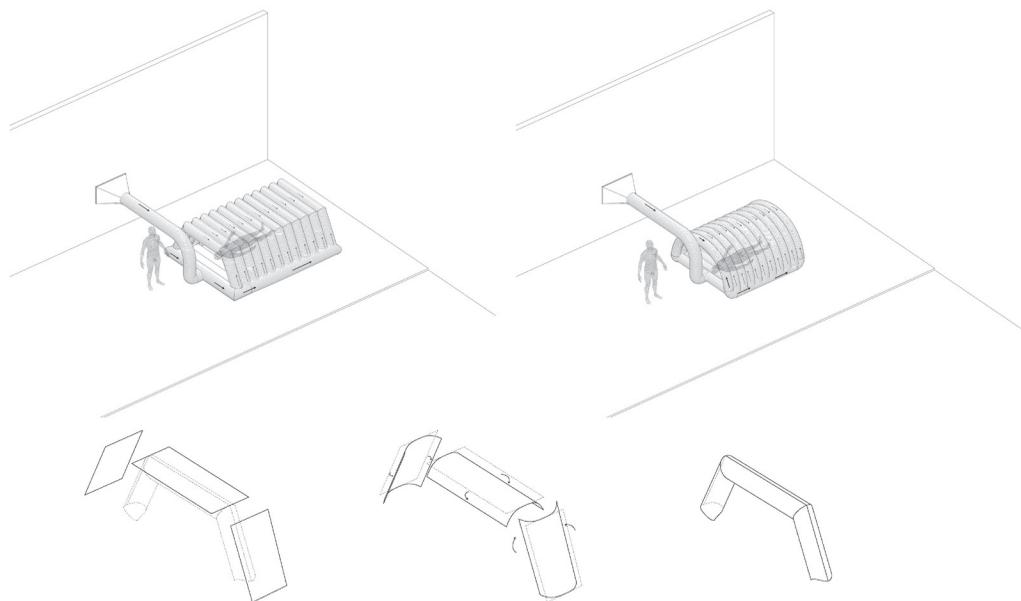
This condition was unique and fascinating, but the new focus on air quality and circulation that the pandemic had brought also made it scary. We started to think about the social issue that exists around us: many people sacrifice health in exchange for basic human needs such as shelter and warmth. Would it be possible for us to design something that could provide temporary living pods for people who are currently in situations of homelessness and are

finding ways of sheltering themselves? This project begins as a singular unit but is seen as a kit of parts to be distributed and made available at scale to address the issue of homelessness around NYC. The Project's outcome is the design of an inflatable living shelter powered by building exhaust systems and is based on research and an understanding of what is needed and useful to those experiencing homelessness.

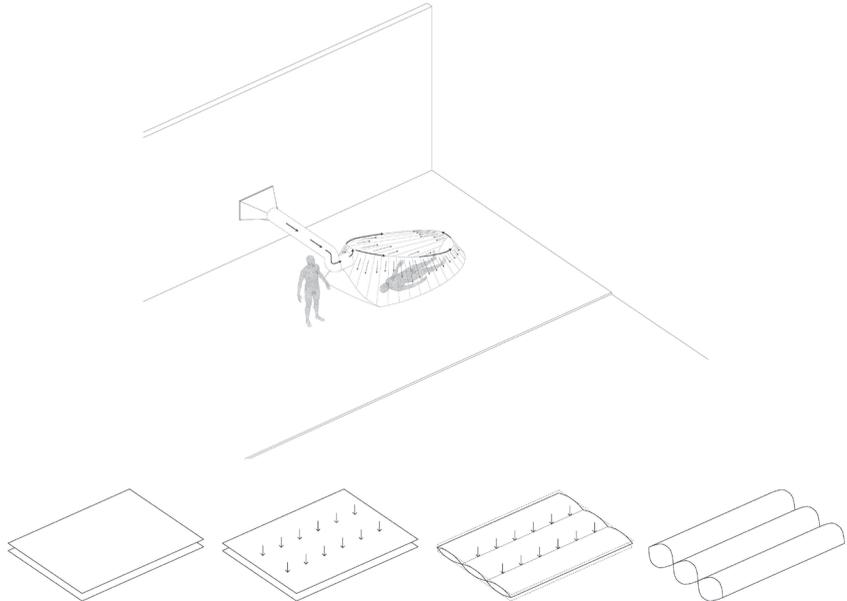


The research includes interviews, and conversations with currently homeless people who are willing to share experiences and thoughts on what they feel would be ideal in a portable living kit. We also researched how building exhaust systems work, what air is safe to breathe, and what air is not safe to breathe. Our research showed that among available options, relief air is the most ideal to power an inflatable living shelter. Relief air is air that is circulated through normal spaces that do not contain chemicals or toxins. This air is circulated through buildings around every four hours, and then released into the exterior through certain exhaust systems. Typically, this

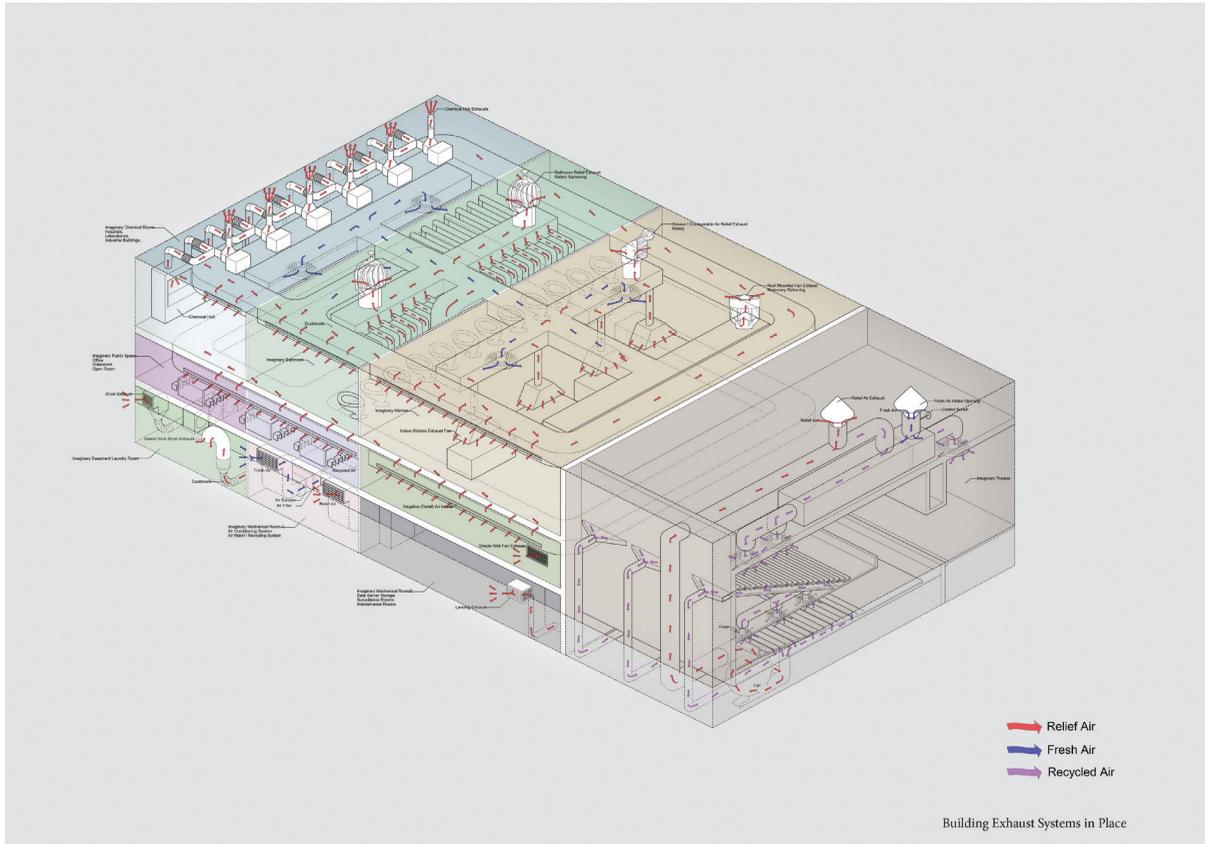
air has been heated in the winter and cooled in the summer. The temperature of this air is very important for tackling the extremes of winter and summer, since it allows the inflatable to be filled with warm air in cold weather, and cold air in hot weather. Although relief air is mostly safe, this air can still be contaminated. Air filtration systems are therefore a crucial part of this project. The inflatable shelter will incorporate a variety of air filters to allow the air to be safe and usable. After completing our research, we are now producing a series of design iterations through drawing, modeling, prototyping, and user testing.



Inflatable Type B:
Tube Extrusion



Inflatable Type D:
Conic Slices



- Relief Air
- Fresh Air
- Recycled Air

The Land is Not the Territory

Over the last several hundred years, the relationship between people and the Mississippi River has shifted dramatically from accepting the gifts of sustenance it offers to one of control and manipulation. Behind this change was a steadfast belief brought over by European colonizers that the ever-dynamic forces of the river can be strong-armed into stasis.

Yet, with the hundreds of millions of dollars spent annually in attempts to control the Mississippi River, its delta is the fastest shrinking delta on earth, losing around 1.5 acres of land every two hours.

Although subsidence, or the gradual sinking of land, is a natural process that occurs in all deltas, the Mississippi River Delta, for most of

A collapsed pier where Robert Cavalier de la Salle first claimed the Mississippi Valley for Louis XIV, King of France



its existence, had a pattern of developing new sedimented land faster than its subsidence. The reversal of the pattern of growth has numerous culprits, all tracing back to geological-scale human interventions.

Levees, dams, and lock mechanisms surgically cut off the flow of sediment deposition into the delta. Shipping canals and channels fracture

the land, supplying pathways for the encroachment and imbalance of saline waters into the wetlands. The oil and gas extraction industry along Louisiana's coast results in hydrological shifts beneath the land's surface. Sea-level rise only worsens these phenomena. This is the spatial manifestation of industry and extraction, the architecture of domination.

Two raised houses beside the bayou



Dov Diamond | Frederick (Didi) Rapp
AR'23 AR'23



T-boy's son shows us a carved coconut mask



Beekeeper resting after clearing a colony out from within a house's walls

While the Mississippi River Delta Basin is unique in its rate of change, sea-level rise and an increasing occurrence of large storms is not unique to this geography. Over the next hundred years, the once “hundred-year flood” will be an annual flood in New-England and mid-Atlantic regions. In a sense, the Mississippi River Delta Basin is living in a time that much of the earth has not yet felt—it is presently experiencing the earth's non-negotiable future.



T-Boy holds one of the many model boats that he crafted



Andrew and his mother fishing to the side of the road

Through the investigation of shelter, nurture, and transportation, we collected the elements that constitute a climactic subjectivity—a reality that is born out of the human relationship within a disastrous climate catastrophe and the resulting dynamic ecology. By stringing together narratives of multiple individuals living within the disappearing delta, we begin to understand the human perspectives of living with water amidst a disastrously changing climate.

The Golden Seeds

Earl Kwofie
AR'23

“The Golden Seeds” is a strategy/ puzzle game about passing down tradition. This is a project centered around the research of videogames, and a board game known as Oware, a Ghanaian “pit and pebble” game. Through a series of different Oware-inspired games and puzzles, players engage with the fragments and thresholds of these rules and strategies, getting a glimpse into the lives of the ancestors they never got to know. Through each level players get to learn something new about one of their ancestors, and at the same time the game itself.

Initially, this project was intended to be a way to investigate how the videogame medium could facilitate conversations on the larger political discourse in Ghana today. Much of the early research was centered around prevailing traditions in Ghana, and how they had been impacted by the world today. In response to this research, I started to make prototypes of games that could help elaborate these issues. The ideas ranged from a prototype for a puzzle pipe connecting game about finding ways to effectively create clean water, to a fishing

game intended to reveal the prevailing conflicts between the fishing industry and illegal miners. Eventually, I settled on a prototype of a traditional Ghanaian board game, Oware.

While this board game itself is not political, I found that the very nature of the way it is played and interpreted across regions to be very political. For instance, while I may be taught to play one way by my family, a family from a different region could be learning to play the same game in a completely unique way.

In addition, Oware is only one rendition of a series of “mancala” games that have all kinds of different boards and rules and come from various places throughout Africa. Oware, along with these other games, becomes not only just a board game to pass time, but something that brings the African people together, while embracing our differences. For this reason, I felt that choosing this game would be a great way to explore the subject matter of my earlier research.

In game screenshot



In game screenshot



Use the Arrow Keys to Move
Use Z to Pick Up Seeds
Use Spacebar to Drop Seeds
Use Q to Quit

Your Turn!



Reset

Because Oware is an existing game, the early prototypes focused on building a virtual version of the gameplay, figuring out what made the game what it was, and how to build from it. Since the rules vary from person to person, clarifying the videogame's objective was challenging, as was programming a proper computer opponent. Once I was able to recreate the game, I focused on ways to take advantage of the videogame medium.

I looked at two ways I could expand the meaning of my project through the videogame medium: environmental storytelling and puzzles. According to Jesse Schell's *Art of Game Design*, interesting puzzles always find their way into most videogame designs. Even games that do not have an apparent puzzle, or fit within the puzzle genre of video games, will intrinsically

have a puzzle due to the rules that constitute good gameplay. One difficulty I tried to resolve is related to the tutorial puzzle sequences I added to the game, to make some of the patterns of the game more explicit to the player.

In addition, I have spent a large deal of the time creating a virtual environment for people to play the game in. While I was interested in placing the game geographically in Ghana, I felt that it would be more interesting to produce an architectural concept that aligned with the concepts of the game. It was then I settled on designing a series of thresholds or frames for each level. As the player would be playing the ghost of fallen ancestors, the frame would not just be a frame, but rather an intermediate space between the player and the world before the player existed.



Initial Game Prototype that was abandoned

Gameplay Prototype



Reflections on Dance, Mobility, and Technology



Amanda Blanca | Nicole Joseph | Lucia Rhode

A'24

BSE'23

EE'23

When you're confronted with an expert storyteller, the story they are telling suddenly becomes your own—as if it's a memory plucked out of your own head. When you tell a story, you are acknowledging someone's lived experience and to many, just seeing themselves in a painting, in a performance, or even a play is uplifting. The way we use tools, space, and bodies to tell stories on stage spins its own narrative about the performers as well as the intended spectators. In investigating the intersection of dance, mobility, and technology, we have found that the people who weave storytelling into their practice are also the ones reinventing performance, movement, and the notion of dance itself.

As opposed to other art mediums, dance does by doing. Dance doesn't just let one theorize; it lets one enact what they set out to do. It is well-established that the political and social valence of the performing body has been shaped by history, culture, and predetermined sets of values. As much as performance can use bodies to reaffirm sociocultural expectations, it also offers the possibility of using bodies in motion to destabilize these very same expectations.

This is the kind of interventionary practice the choreographers, dancers, and stage designers we have talked to engage in. Last spring, we attended a performance and accompanying workshop by Candoco Dance Company, the first professional company in the UK dedicated to the integration of disabled and non-disabled dancers. We were amazed and in awe of their performance and wondered what other groups were expanding perceptions of what dance could be. Later that year, our research led us to Kinetic Light, an internationally recognized disability arts ensemble that combines the disciplines of art, technology, design, and dance. From intricate projection mapping to a haptics sound system, and a pulley

Vibrant projections and an architectural ramp immerse the audience as they wait for Kinetic Light's performance of Descent to begin. This intricate stage design presents an opportunity to consider "access as an aesthetic."

system for their aerial show, we immediately noticed how many elements of the performance were engineered.

What especially caught our eyes was the performance Descent, in which an architectural ramp installation with hills, curves and peaks serves as a dancer on stage and tells a story of its own. When speaking with Kinetic Light member Laurel Lawson, she mentioned that the ramp was designed by a group of freshmen engineering students. Laurel herself is also the lead for software initiatives such as Audimance, the company's app which revolutionizes audio description for non-visual audience members. The company's lighting director Michael Maag mentioned that he builds custom optics and electronics for his projections. When we asked him about his creative process, he told us that for every projection he runs, he tells his own story.

Talking to Laurel and Michael, we were pushed to think about the way we design and the stories we tell with the products we create. Kinetic Light, in an interview, invited artists, designers, and engineers "to think of access as an aesthetic. To use technology in a way that does not normalize, hide, or overcome." When dance, an embodied form of storytelling, is enhanced by technology in a performance, it will challenge the audience and subvert their previously held assumptions. When talking about the overlap between technology and mobility, the term "assistive technology" often gets brought up. Assistive technologies usually refer to prosthetics and medical aids: tools, devices, and other gear that either restore or augment the functionality of body parts. Assistive technology, and the implicit narrative it spins, implies a detached class of tools exclusively engineered for a group of people who have been identified to have "impairments"—impairments



Early experimentations with motion and technology that depict the dancing body in an abstract fashion.

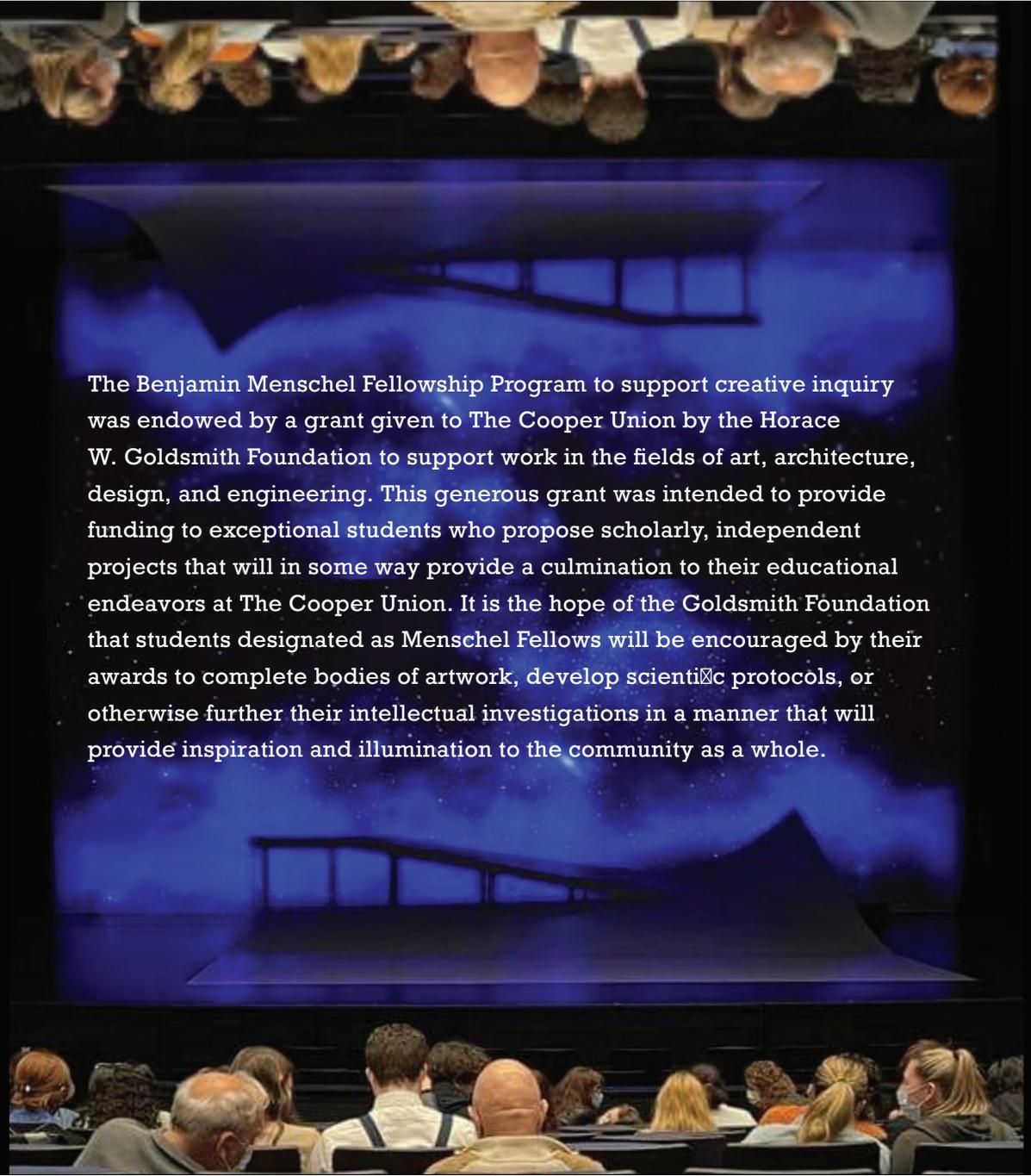


that have been socially designated as needing special attention or deviating from a normal. The technologies we invent and the ways in which they are advertised to be used convey a message about their users: about weakness and strength, agency and passivity, ability and inability. However, what if technology was used as a partner with storytelling in performance? What if it was used in a way that does not isolate, hide, or overcome underrepresented identities?

In this case, the use of technology would say different things about its users. It would allow them to be artists and creators in control of what they want to put out in the world. It would amplify their stories and uplift them. Hence, disability becomes an aesthetic, not an impairment.

As designers, engineers, and performers ourselves, our exhibition represents both the limitations and possibilities of body tracking technology. What you see exhibited in this gallery, is an opportunity to view your body as an abstract piece of art. In the future, we hope to collaborate with a dance company and implement this technology for a performance with a live audience.

Throughout this project, we have received invaluable support and guidance from Mili Shah and Buck Wanner. As we reflect on all that we have accomplished, we would like to express our gratitude to them.



The Benjamin Menschel Fellowship Program to support creative inquiry was endowed by a grant given to The Cooper Union by the Horace W. Goldsmith Foundation to support work in the fields of art, architecture, design, and engineering. This generous grant was intended to provide funding to exceptional students who propose scholarly, independent projects that will in some way provide a culmination to their educational endeavors at The Cooper Union. It is the hope of the Goldsmith Foundation that students designated as Menschel Fellows will be encouraged by their awards to complete bodies of artwork, develop scientific protocols, or otherwise further their intellectual investigations in a manner that will provide inspiration and illumination to the community as a whole.



For a full listing of past fellows and links to the full library of exhibition catalogs, visit cooper.edu/academics/research-fellowships/menschel-catalogs