This year’s graduates pursued the development of their thesis projects amid a pandemic—an experience and a reality we don’t yet know how to put into words. At the conclusion to this tremendously long journey of learning to cope and persevere, these graduates would like to pose the profound question of “what-if.” With their creativity, they tell us the kind of world they would like to live in, the kind of world we are in, the future toward which we are headed, and how we can make it better.

The MFA in Design at UC Davis is a two-year program that encourages interdisciplinary approaches through research and practice aligning with social and environmental responsibility. We offer graduate students a unique opportunity to work with faculty in the Department of Design and across departments in one of the nation’s top public research universities. Design faculty expertise includes design theory, exhibition, fashion, history, information, interactivity, interior architecture, immersion, lighting, product, textiles, time-based graphics, visual communication, wearables, and more. Students are encouraged to build connections across campus to expand perspectives and deepen disciplinary understandings. Students progress through core courses alongside their cohort members while advancing their individual research. Core courses are augmented by graduate-level independent and group studies and upper-division undergraduate level electives. The MFA program culminates in a written- and project-based thesis presented in a major graduate exhibition. The program is committed to equity, diversity, inclusion and public engagement.

Jiayi Young
Associate Professor | Chair, MFA Graduate Program
Department of Design
University of California, Davis

Simon Sadler
Professor | Chair, Department of Design
University of California, Davis
As consumer electronic products reach the end of their lifespan (either through obsolescence or disrepair), their benefits, as products, start to become a burden, as waste. For many electronic products, this label as e-waste has them shipped to developing countries where they are burned for valuable raw materials, in turn harming the environment.

To make matters worse, major corporations make it difficult for users to prolong the lifespan of their products by incorporating elements of planned obsolescence (i.e., using proprietary hardware and software, using non-modular design) with the hopes that users will be forced to purchase the newest iteration of their product. This practice has turned into a power struggle between the producer and consumer. Many of these major companies (i.e., John Deere, Apple) have been fighting against Right to Repair legislation that would prevent them from incorporating planned obsolescence into their future products.

The following work explores the process of extending the lifespan of obsolete technology by incorporating modern functionality using rapid prototyping (3D printing, laser cutting) and hacking with open-source hardware (Arduino Uno, Teensy 2.0 microcontroller boards).

The designer Erik Contreras hopes the lessons from this work will be part of a greater product design approach where the users can extend the lifespan of their product through modification based around future functionality. By helping the user to make these modifications, Erik hopes this would also shift the power dynamic between the producer and consumer.

Each of the prototypes in the collection have been salvaged from local dump sites around Davis, CA and modified based on the design principles previously stated. The modifications range from using adapters, leaving the obsolete tech untouched, to removing the electronics and using the empty enclosure to house modern, open source, technology.
Erik Contreras is a multidisciplinary designer with a background in manufacturing methods and mechanical engineering. His works ask the question “what does it mean to extend the lifespan of technology”? A lot of his motivation comes from growing up in the Silicon Valley where “disruption” is a key mantra in product development. During his graduate studies at UC Davis, Erik is working towards an MFA in Design and MS in Mechanical Engineering. He hopes to start a career in industrial design and create products that will help facilitate repair and modification for the user.

While the general focus of this exhibition is directed towards consumer electronics, the design principles of hacking to extend a product’s lifespan can be applied in other products, such as furniture.

Steelcase Desk: A mid-century metal desk that underwent a massive restoration for the exhibition. The 3D printed drawer pulls were inspired by the inductor component symbol used in electronic schematics.

Norwegian Håg Office Chair: A 1980s office chair that was reupholstered for the exhibition.

Red Office Lamp: Originally found without a base at a dump site, a new one was made using 5-pound weights and a 3D-printed connector.
Arduino AutoType: An early 90’s Smith Corona Mark VI daisy-wheel typewriter that has been hacked to print out text documents from a modern computer. This hacked product is compatible with current-day operating systems such as Windows 10 and MacOS 10. Inspiration for this project came from teletype machines from the mid-twentieth century.

A controller module was used to facilitate the interaction between the computer input and typewriter. The module contained: An Arduino Uno, two shift registers, and an array of relays. The Arduino Uno and shift registers would take the user-inputted text and “translate” it into a 16-bit binary output that would control the relay array. Specific relays in the array would be “switched on,” which would trick the typewriter’s microcontroller into thinking specific keystrokes were being made on its keyboard. This would prompt the typewriter to type out the user’s message.

Echo Answering Machine: An Amazon Echo Dot that has been housed inside of a Panasonic answering machine from the early 1980s.

The original electronics from the Panasonic answering machine were removed along with the cassette mechanism to make room for the Amazon Echo Dot. To provide a more seamless look, 3D printed housings were made to mount the Echo onto the answering machine case. This included a separate housing for the Echo speaker. Once everything was assembled, the Echo functioned normally in its new home.

This prototype was an exploration of product identity. Does obsolete tech still maintain its identity when the original electronics are removed, and its purpose is changed completely? Future work with getting user feedback will be needed to answer this question. Additional work also includes finding an open-source alternative to the Amazon Echo, such as the Arduino Oplà.
WebCam/corder), a Sony Hi8 Handycam camcorder that can be used as a webcam using off-the-shelf adapters (Elgato 4k Camlink, and HDMI to RCA adapter).

This was an exercise to use off-the-shelf solutions to hack obsolete products. While this piece is fully functional, the hack was expensive and used proprietary software: two design aspects that should be avoided. Future work on this project would involve finding a cheaper, open-source solution and receiving user feedback.
As demographics, climate change, and recreational interests of the US population shift, golf courses in the Western United States are being decommissioned due to water shortages and insurmountable debt. Given the historical context of environmental and social injustices associated with both private and public golf courses, alternative land transition approaches have the potential to promote ecological and habitat restoration, revive spaces for sustainable agriculture and empower communities to improve recreational access to underserved populations. The intent of the research is to apply creative design principles to identify and develop solutions that engage diverse communities in land stewardship opportunities. Part of the development of the project introduces purpose-built restoration kits. These include engineered speculative tools that become playful instruments, sparking curiosity, and helping reimagine environmentally equitable landscapes. Through the design of interactive models for re-built spaces, community outreach moves beyond the traditional planner’s methods, providing “hands-on” opportunities to generate productive inspiration for public involvement. These engagement tools include balloon aerial photography, soil testing probes, grazing animals, seed collection, specialty bioremediation shoes and a mobile rain and fog collection device.
Elyse Marguerite is a designer whose work targets recovering and regenerating manipulated landscapes. She uses an interdisciplinary approach merging art, ecology, fabrication and activism to create experiences which spark community action. In addition to an MFA at UC Davis, she is seeking a certification in Landscape Design with an emphasis in restorative environments. Elyse’s current project facilitates creative design solutions related to reimagining decommissioned golf courses. As an outdoor adventurer, she focuses her research on designing accessible and equitable outdoor spaces in both urban and wilderness settings with an emphasis on investigating design techniques to bolster landscapes’ resilience to climate change and human influence.
About Half (or 50%) of US-published picture books are about white children. Animal representation (and non-human or other) takes up about 25% of picture books. The remaining smaller percentages are picture books about People of Color and Black folks. The lack of Black representation within picture books is a microcosm of how we culture children to view Black people: the sole shortage of quantity leads to erasure, tokenization, and distorted representations. Though this project isn’t the solution to racism within publishing (that’s up to publishers to fix), it’s an opportunity to disrupt distortions of Black representation by subverting certain tropes that perpetuate anti-Blackness, colorism, and toxic masculinity. With influences from critical race theory, My Brother has Thorns focuses on counterstorytelling through the lens of speculative fiction. The project explores (de)militarization, mental illness, and intersectional Black representation within the character design considerations, world-building, and narrative.
In a tiny house, with tightly closed curtains and doors locked shut, lived an older brother covered in thorns.

Aero wasn’t always covered in thorns, but war changes people. Experiencing intense danger, pain, and fear, can make someone expect the worst.
Kaylani Juanita McCard
illustrated inclusive picture books, such as Ta-Da!, When Aiden Became a Brother, The Little Things, A House for Every Bird, and Magnificent Homespun Brown, which received the 2021 Coretta Scott King Illustrator Honor Award. Kaylani is the Summer Stride Artist of 2021 for the San Francisco Public Library and was born in Oakland. Though she currently lives in Fairfield, she has studied at Cal Arts, CCA, and UC Davis. Through counter storytelling and illustration, Kaylani explores representation and identity within picture books in fresh new ways. My Brother has Thorns is an ongoing project that speculates on different ways to represent (de)militarization, Black families, masculinity, and mental illness, within picture books.
COLORING PERCEPTION
How exhibition wall color affects a viewer's experience of the artwork

This thesis research investigates how exhibition wall color impacts the experience of an artwork by creating context, referencing place, culture, era, age, gender, or mood. Although some wall colors may appear to be neutral, colors are never neutral. This research critiques the ubiquitous use of white in galleries and raises awareness on how colors can be stereotyped, relied upon excessively, and marginalized.

To test the ideas, an immersive color experiment and survey were designed to gather data on audience preferences. The data collected detected trends, both expected and unexpected. The experimental conditions offer a method for testing colors with artworks. This research is intended to encourage designers and curators to expand their color vocabulary and be aware of internal and cultural biases that limit the palette. Ultimately, this study examines how color choice can best serve the artwork.
Early prototypes testing colors

Building isolated color bays for survey
Jude Mooney is a photographer, curator, and exhibition designer. Her research at UC Davis focused on the ways wall color in exhibition spaces influences the viewer’s perception of the artwork. Her thesis on using color in exhibition design encourages exhibition makers to expand their color literacy and use wall color as a way to elevate the artwork and encourage slower looking. Jude is inspired by science fiction, immersive theatre, and historical re-enactment. Jude plans to design projects in the future that are participatory, inclusive, and community centered.

### Design Museum Survey

- **Gray**: 48% thought gray was the color that best supported the artwork.
- **Red**: 16%
- **Green**: 12%
- **Blue**: 20%
- **Other**: 4%
The Atlas

With the increasing frequency and catastrophic impacts of natural disasters, there’s a pressing need for the United States to adapt disaster relief plans to this new reality. The usual government-led emergency protocols are inadequate in dealing with the recurring threat of wildfires and earthquakes in the West, hurricanes in the East, and pandemics worldwide. Due to the developing threats, current US government efforts are unable to provide an adequate amount of relief and recovery resources to communities at risk and in the path of natural disasters. The Atlas is a speculative prototype for the conversion of deserted or retired cruise ships into places of refuge serving the victims of natural disasters along both coasts. With the abundance of stranded cruise ships continuing to burn fossil fuels while floating within the ocean, due to company debt or age, this proposal aims to convert these abandoned vessels into mixed-use facilities. The design of these converted ships into areas of protection during a time of crisis or evacuation will allow for an abundance of medical services, flexible open social spaces, and hybrid of communal living spaces invoking community engagement while maintaining safety and comfort to its users.
Nurse Station
The customized nurse station reflects the concept that Atlas could be constructed from various different parts of the ship by mimicking a ship’s bow with integrated navigation lights.

Patient Rooms
Depending on the severity of the injury, patients will find themselves in 1 of 5 different patient rooms: ICU, recovery, intermediate care, limited care, or light care rooms.

Reception Area
Located on the 3rd deck, the reception area allows occupants to check on the ship where friends and family would be notified of their location. Additionally, the medical check-in point allows those who require immediate medical assistance to receive it once they enter. Located also in this entry area is what is known as the “resource area” where evacuees can get various items they may need aboard the ship (like diapers, feminine hygiene products, clothing, toothpaste, etc). These items would be donation-based.
Greenhouse
To help reduce the amount of waste on the ship, the greenhouse will allow for the ship to grow its own food and provide the opportunity for composting the ship’s food waste.

Serenity Garden
To prevent the feeling of confinement upon the ship, multiple green areas like gardens are added to evoke the feeling of the outdoors.

Guest Suites
The ship holds approximately 600 people (which is a cut from typical cruise ship planning); the reconfiguration of suites allows for a full kitchen, 1-2 bedrooms, and pull-out couch. Suites are designed to allow personalization within the spaces, allowing guests to display photos or other items they evacuated with throughout the space. In the event of a pandemic, the design of the suites allows guests to quarantine efficiently.
Nicolle Navarete is an interior designer with a strong background in institutional and commercial design projects that span across the New York City area. Her design solutions utilize unconventional materials with minimal environmental impact to provide imaginative and enriching spaces for the occupants without compromising on style. Today at Davis, she focuses on the current climate change crisis’s impact on coastal communities. Through the adaptive reuse of shipliners, Nicolle creates an architecture of refuge for people hit by natural disasters. The liners establish new and sustainable aquatic communities to serve future generations.
We are heading for a world that will be more than 3 degrees Celsius warmer by 2100!
The crisis of climate change is unfolding at a faster rate than ever before. The impacts of this emergency have become evident throughout the global environment: expedited melting of ice on rivers and lakes, shrinkage of glaciers, early blooming of trees, and shifts in ranges for plants and animals are all visible consequences of global warming. All of the requirements of human life on earth—the health of our habitats, food security, water supply, economic livelihood, and overall security—are at risk. As a result, it will not be far from expectation to anticipate catastrophic threats to our tolerance and survival.

“CJ-2050” is a speculative and futuristic wearable technology which can become a part of our daily jewelry in a “dystopia” that may not be too far away. This wearable object demonstrates a creative solution for our survival on a warming planet. It does that by cooling the body with cold water to reduce the body’s temperature at key points in the circulation system. A Peltier module structure placed on the back of this device cools down the water which is pumped and circulated through the delicate tubes placed along the torso and the head.

By imagining the potential needs of humankind in the future, and by attempting to speculate ways to address those needs, we can turn things around before it is too late. The benefit of proactively imagining our future needs is that it encourages awareness and action.
Materials: Brass, Plastic tube, 3D printed piece with PLA
Sima Pirmoradi
Sima is a product designer who sees jewelry as a medium to demonstrate a message to her audience. She has a BA in Industrial Design, and this background equipped her with a plethora of fabrication and craft skills and empowered her to work with a broad range of materials, tools, and equipment. In the realm of fine jewelry, Sima gained extensive experience working with precious metals and gemstones. Most of her former collections were inspired by architecture, cultural identity, and her home country Iran’s ancient history. As an independent designer and jeweler, she created several collections of award-winning jewelry that were shown in international exhibitions and festivals.

During her time in the Design MFA program, she explored digital fabrication to expand on her knowledge of CAD modeling with 3D printing and laser cutting and her MFA thesis explored the theory and concepts of speculative design. While she always incorporates beautiful craftsmanship and aesthetics in her designs, she also utilizes jewelry and wearable objects as critical design mediums to address the challenges of the 21st century.
When you invent the ship, you also invent the shipwreck...

Paul Virilio (philosopher & cultural theorist)

As designers, I believe we have a responsibility to our society and we should welcome challenges and mainly confront the inner voices telling us to “just mind yourself.” As per the legendary Persian poet Rumi: “I came to you without ‘me,’ so come to me without ‘you.’” In this journey, my greatest passion is to view and visualize the depth of a phenomenon beyond its existence. For my MFA project, I aim to re-examine concepts such as propaganda, misinformation and social media in relation to design and our contemporary digital culture. I am trying to answer these questions, such as: How does social media manipulate our thoughts? How can visual design make people more aware of crisis? I would like to turn technology back on itself as a mirror to reveal some of its problems. We can go more in-depth with Augmented Reality, a novel technology that allows us to create new dimensions of art and design by linking traditional design methods with digital design methods. The digital layer opens the doors to a whole new world of possibilities. Designers can take visitors on a journey in time and (virtual) space and explain what lies behind, while enhancing the artwork to tell the story with more detail. To that end, I have designed a poster series using AR technology with the intention to provoke the viewer to learn more about the fake news manipulation during the Covid-19 pandemic.
Alireza Vaziri is a Designer and Art Director specializing in Graphic and Interactive Design. Over a decade of professional and academic experience has equipped him with extensive creative methods and collaborative skills in visual communication design. He has received national and international design awards. His projects have been published in several design books and websites, and displayed in exhibitions and galleries around the world. He is an MFA candidate in the Department of Design at the University of California, Davis.

“I believe Design is a way of changing the world to be a better place. A better world may have a different definition for different people: perhaps an ergonomic chair or an interface for a pioneer application, each can make one’s world a better place to live in.”
RECASTING RESILIENCE
bio-based alternatives for concrete & ceramics

This “sandbox” exhibit includes prototypical artifacts from ongoing research and development of biogenic cement composites (BCCs), resting on a layer of rice hulls from which they were made. Low-temperature, ecological alternatives to conventional concrete & ceramics like BCCs can “decarbonize” or reduce the approximately 10% of annual anthropogenic CO2 emissions coming from concrete and ceramics lifecycles. As global demand accelerates despite material shortages, climate change and other complexities, this exhibit aims to “recast” conventional material roles and perceptions.

Central to this exhibit is the debut of Aperiodic Table, a bi-modular, reconfigurable sculpture in which each module is made from a different BCC formula. Its geometry is based on Penrose tiling, resembling the aperiodic micro-scale aggregate crystallization patterns which occur in cements. Like the periodic table of elements or community quilt projects, it’s a multi-phase, collaborative project which artists/scientists will add new BCCs to and reconfigure over time. Modules are currently cast in silicone molds (see left) or directly extruded via a 3D printer modified with a paste extruder (see right). These different production processes require different BCC formulas and underscore how means of production must also be “recast” for meaningful material transitions and “decarbonization” to occur.

Dan Tran
UC DAVIS DESIGN MFA EXHIBITION 2021
Aperiodic tiling pattern of BCC castings

Early laser-cut MDF study model of aperiodic tiling pattern

Microscopic view of BCC casting surface w/ indentations of 3D printed mold

Silicon molds

Silicon mold surface

3D printed PLA module used to make silicon mold

BCC castings joint

BCC casting surface with biochar

BCC casting surface with chicken manure

BCC casting surface with gypsum board

BCC casting surface with spirulina powder

Microscopic view of BCC casting surface w/ indentations of 3D printed mold
When I look at how new materials are adopted throughout human history—the stone age, bronze age, the industrial revolutions, it’s clear that meaningful material transitions cannot be made without art movements and artists.

Tran’s interwoven art, design and research practices investigate material ecologies and applications that bridge communities between unbuilt and built environments. Tran was raised in a refugee family and trained as an architect and organic farmer; Tran’s life and work continue revolving around adaptations amid ever-changing environments. In architecture, “adaptive reuse” refers to conversion of spaces and buildings from one purpose to another, often to meet evolving needs of a community. In organic farming, “crop rotation” works similarly, relying on biodiversity and microbial activities to continually reinvigorate soil. These concepts propel his practices.

Tran has worked extensively in the adaptive reuse of plastics, and his current research shifts focus to biogenic cement composites (BCCs). Biogenic and mineral particulates like rice hulls and gypsum board are reclaimed from local construction and agriculture waste streams. Then, in collaboration with microbial cultures, particulates fuse together at the microscale. Tran aims to develop BCCs into a resilient, collaborative, expressive and ecologically responsible medium that artists, designers and others can cultivate for themselves in their creative practices.