

PULLED APART

Terry Berlier, Adam Chin, Cynthia Hooper,
Carrie Hott, and Gail Wight



UNIVERSITY OF
SAN FRANCISCO

Thacher Gallery

This catalog was created to celebrate the first cohort of USF's Engineering Program in conjunction with the online exhibition, *Pulled Apart*, presented by the Thacher Gallery at the University of San Francisco from March 1-April 25, 2021.

www.usfca.edu/thacher-gallery/pulled-apart

Co-presented with USF's Engineering Program

Design: Andrea Gonzales ('21, USF)

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Cover images: Clockwise, starting at top left: Adam Chin, *Obama* (detail), 2020, Machine Learning generated, gelatin silver print, 43" x 10"; Carrie Hott, Still from *A Room Of Edges (part one)*, 2021, digital video, 2 minutes; Gail Wight, *Anatomies* (detail), 2003, 9 pigment prints, aluminum bar, and silk cord, 68" x 42–54" each; Cynthia Hooper, *Gas-Well #16-E*, 2004, oil on panel, 6" x 9"; Terry Berlier, Installation view of *Waiting for the Other Shoe to...*, 2020, shoes, motors, Arduino, pulleys, ethernet cable, electronics, and wood, 30' x 15' x 20'

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Introduction

When we at the Thacher Gallery first announced a focus on systems for the 2020–21 exhibition season, none of us had a glimmer of how relevant such discussions would become in the months ahead. As the global pandemic revealed the challenges in our governmental structures and millions spoke out with Black Lives Matter against the violence of systemic racism, the exhibitions for this year also invited visitors to interrogate the institutional infrastructures in which we all participate.

For *Pulled Apart*, the gallery has collaborated with five artists and the University's new Engineering Program to continue this investigation, shifting our focus to physical and cyber systems. Using the mechanisms of gadgets, scientific instruments, and computer technologies, these artists' practices bring our awareness to the seen and unseen systems that help shape society.

Each artist approaches engineering in a unique way. Terry Berlier adapts mechanical systems, microcontrollers, and software to build kinetic sculptures and installations that explore the precarity of human relationships. The works seen here playfully suggest that we are at the brink of something. Levers move, but the wheels do not turn. The self-leveler *almost* tips over. The shoes fall and then rise again.

Using Machine Learning neural networks trained on databases of actual photographs, Adam Chin creates portraits that exist between the real and the imitation. Whether it be an iconic president or a self-portrait, the machine's inaccuracies ask, "how do we recognize one another?"

The detailed paintings and videos by Cynthia Hooper show human infrastructure intersecting with the natural environment, while Carrie Hott's videos of an evolving miniature room bring us indoors to explore how constant connectivity and hidden networks inform our decisions. With images of landfills, waterways, scientific instruments, as well as a cluttered desk, both artists draw our attention to the overlooked yet ubiquitous structures and grids we've built around us.

Finally, through Gail Wight's anatomical studies of mechanical toys we see the uncanny ways that nature and the human-made reflect each other. These prints suggest the play, curiosity, dissection, manipulation, symmetry, and assembly that are so much a part of both art and design.

Together, these five artists' works illuminate a subjectivity that we do not always associate with the STEM disciplines. Whether it be the use of the 16th century Cardan Gear or 21st century computer algorithms, each artist's approach reminds viewers of the possibilities of engineering as well as our complex relationship with the systems we've created.

—Glori Simmons, Director, Thacher Gallery

Artists

Terry Berlier

Installation view of *Waiting for the Other Shoe to...*

2020

shoes, motors, Arduino, pulleys, ethernet cable, electronics, and wood

30' x 15' x 20'

photo credit: Terry Berlier

(Installation photo from Stanford Art Gallery)

Terry Berlier is an interdisciplinary artist who investigates the evolution of human interaction with queerness and ecologies. She has exhibited in solo and group shows in North America, Europe, Asia, South America, and Australia, including at the Yerba Buena Center for the Arts, The Contemporary Jewish Museum in San Francisco, and Contemporary Art and Spirits in Osaka, Japan. Berlier is an Associate Professor and Director of the Sculpture Lab in the Department of Art and Art History at Stanford University.



Adam Chin

Woman #1

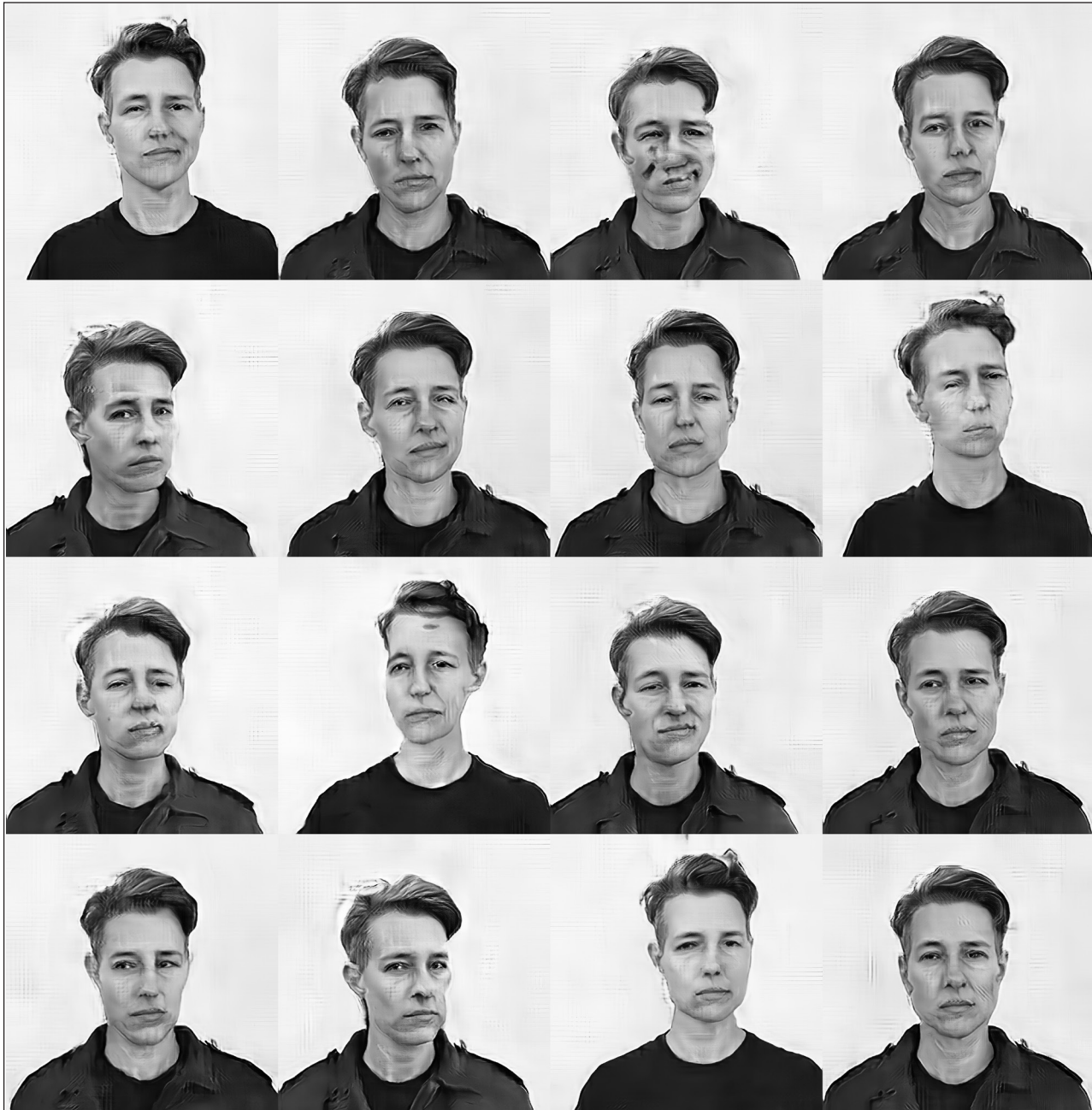
2020

Machine Learning generated

archival pigment print

22" x 22"

Adam Chin is a fine art photographer who spent a career as a computer graphics artist for TV and film, working on such films as *Shrek 2*, *Madagascar*, and *How to Train Your Dragon*. He studied photography and printmaking under Barry Umstead at RayKo Photo Center in San Francisco. He currently practices using Machine Learning neural networks trained on databases of real photography to render images.



Cynthia Hooper

Still from *Jefferson's Monuments*

2010

digital video with sound

7 minutes, 54 seconds

Cynthia Hooper's videos, essays, paintings, and research-based projects examine infrastructural landscapes in the United States and Mexico. She has exhibited and screened her work at The Center for Land Use Interpretation in Los Angeles and the Museum of Modern Art in Mexico City, among other cultural institutions. Grants and residencies include the Graham Foundation for Advanced Studies in the Fine Arts and Headlands Center for the Arts. Publications include *Places Journal* and *Arid: A Journal of Desert Art, Design and Ecology*. She currently lives and teaches in Humboldt County, CA.



Carrie Hott

Still from *A Room Of Edges* (part five)

2021

digital video

4 minutes, 35 seconds

Carrie Hott is an interdisciplinary artist based in Oakland, California. She is invested in documenting and disentangling the technological systems that deeply shape our lives. She has presented her work as part of exhibitions and projects across the country, most recently at Yerba Buena Center for the Arts, Recology San Francisco, and the Museum of Capitalism in Oakland. She is the recipient of the Artadia Award, a Cultural Humanities grant, and has had residencies at Mills College and Headlands Center for the Arts. She currently teaches in USF's Department of Art + Architecture and UC Berkeley's Department of Art Practice.



Gail Wight

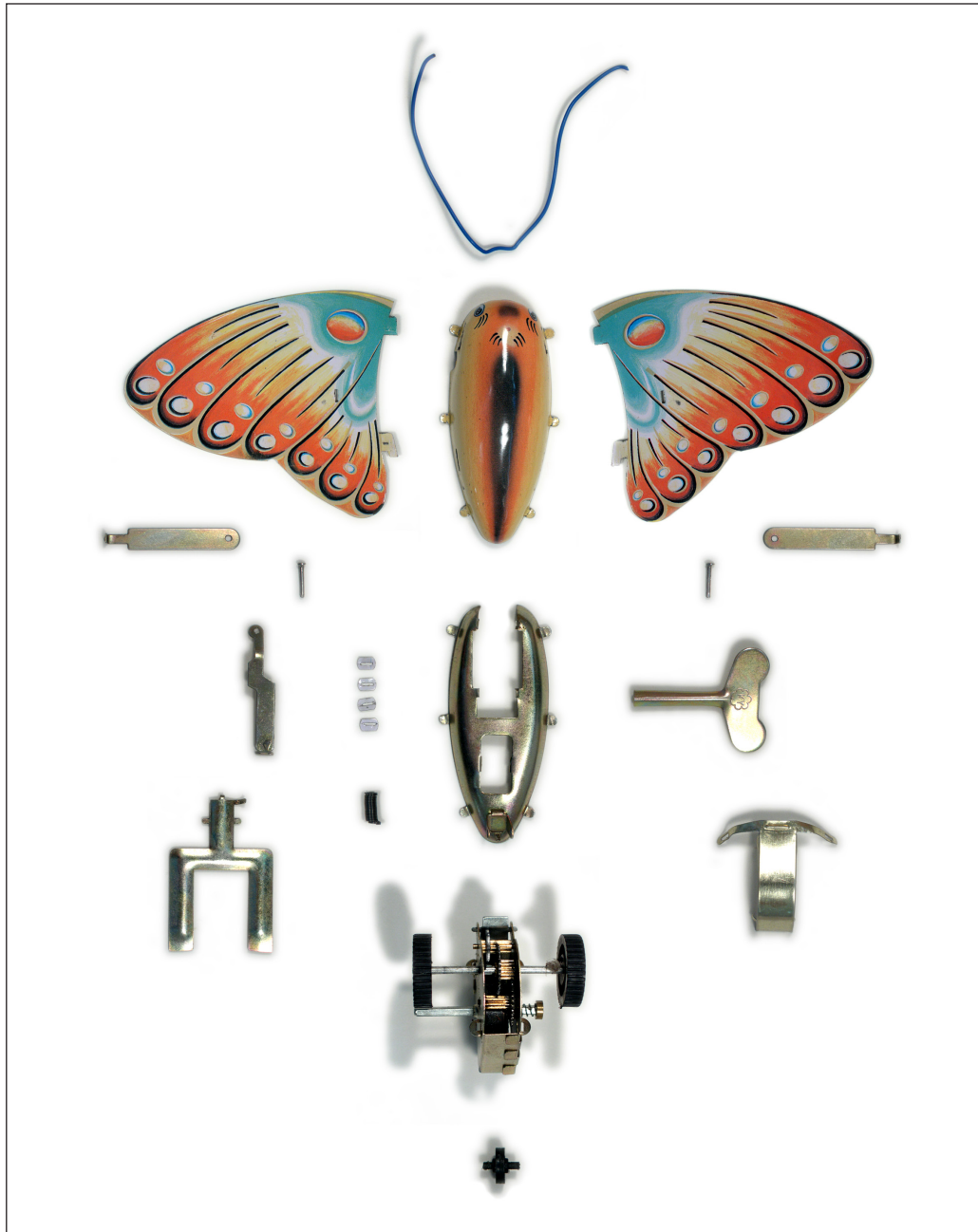
Detail from *Anatomies*

2003

9 pigment prints, aluminum bar, and silk cord

68" x 42–54" each

Gail Wight has taught in the Art Practice program at Stanford since 2003, focusing on experimental media. Working primarily in experimental photography, video, interactive media, and printmaking, Wight's work examines the interplay between art and biology. Her exhibition record includes dozens of solo exhibitions throughout North America and Great Britain, and her work has been collected by numerous institutions including the Museum of Modern Art, Yale University, and Centro Andaluz de Arte Contemporáneo in Spain.



Exhibition

Terry Berlier

In my practice, I interweave movement and sound to investigate the evolution of human connections with queerness and ecologies. This results in kinetic and sound-based sculptures and multimedia installations that work as metaphors for both harmonious and dissonant interactions. Emphasizing the essential roles played by cultural memories and environmental conditions in the creation of our identities, I excavate material objects to challenge our understanding of progress and reveal how history is constructed within a cultural landscape. Orienting, disorienting, and reorienting, my work provides tools to recover and reanimate our faltering connections with self, queerness, nature, and society, often through humor. My collaborators include engineers, composers, architects, and natural scientists.

I approach my creative practice as a playful, open-ended, experimental process. Whether taking apart an instrument, toy, everyday object, or an old technology, I look for ways to reappropriate systems to speak to my queer body experience. This way of working is a queer phenomenological approach which, for me, speaks to my ways of working, and how I understand and orient myself towards the systems I take part in and use in my practice.

Most recently I have been using desire lines, the landscape architecture term for marks left on the ground when one veers from the normative path, as a point of departure to explore queer persistence. These deviations leave temporary paths that, when used repeatedly, change the landscape. They address the small and particular ways we move, delineate, and protect ourselves amidst environmental and political crises. I'm interested in calling attention to forced invisibility together with attempts to see oneself, to be seen.

Through research in queer archives, I examine collective responses to political threat and those repeated micro-actions and interactions enacted in everyday life. Conceptually, my work weaves between world instability with overlapping environmental, political, social crises to queering the possible, an enduring, even grasping, pursuit of a sense of completion. I utilize a variety of tactics including humor, failure, and altered mechanical systems to emote human interactions and idioms. My work lends form and visibility to those things that are often felt but unseen.

—Terry Berlier, 2021

Left: Installation view of *Waiting for the Other Shoe to...*, 2020, 30' x 15' x 20', shoes, motors, Arduino, pulleys, ethernet cable, electronics, and wood
Photo credit: John Janca
(Installation photo from Stanford Art Gallery)

Right: Installation view of *Waiting for the Other Shoe to...*, 2020, 30' x 15' x 20', shoes, motors, Arduino, pulleys, ethernet cable, electronics, and wood
Photo credit: Terry Berlier
(Installation photo from Stanford Art Gallery)

Project Team:
Eric Rawn: 20+ networked and programmed motor units, developed code, electronics, built, and tested the units
Tom Trzpit: Motor system



"Our country moving closer to its own truth and dread, its own ways of making people disappear." —Adrienne Rich

Here, I have continued ongoing threads in kinetic and sound sculpture with humor and political critique, using the common American saying "waiting for the other shoe to drop" (referring to a sense of impending doom) as my departure point. Gestures between silence, waiting, and collapse suggest the tension between stasis and action. The illusion of progress, which lulls us to complacency, is interrupted by dissonance and a clearer call to action. I selected a variety of my own and my family's shoes. Each shoe developed its own character through color, weight, and gravity. For example, the high heels slowly fall and surprisingly often land upright while a steel toed boot slams loudly on the floor and rolls. Similarly to their fall, they each wake up and rise up, rolling over to lift up into the air again. The shoes rise and fall intermittently seemingly on their own and gather, hover, and hang every fifteen minutes before falling as a crescendo. All are controlled by an Arduino and a series of twenty mechanical motor and pulley systems.



Originally exhibited in early 2020, the exhibition closed two weeks early and remained inaccessible for six months due to another shoe dropping, a worldwide pandemic and Stanford's campus lockdown. The shoes originally referenced global political and social instability leading to mass migration, environmental decline, and the persistent stripping away of human rights for BIPOC, queer, and trans individuals—all tragically highlighted as COVID-19 ran unbound on the world.

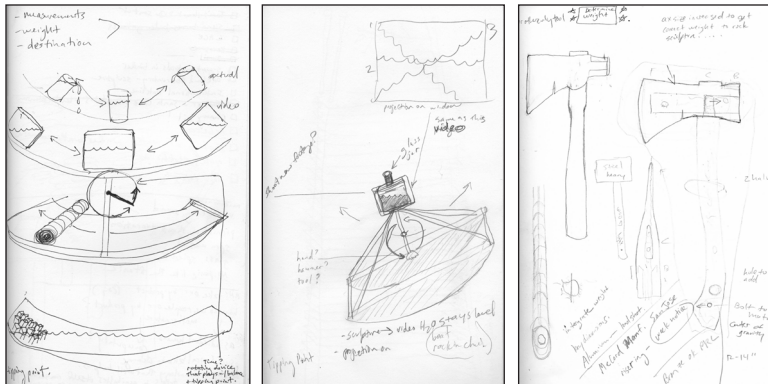
(Adrienne Rich quotation from the poem, "What Kind of Times are These," *Dark Fields of the Republic: Poems 1991-1995*)

Engineer's Insight

Terry Berlier's work first struck me as beautiful examples of combining art, physics, and engineering. Beyond being visually striking, her art provides inspiration for an engineer's work. She focuses on collapse within our world—climate change in *Tipping Point* and the general idea of collapse in *Waiting for the Other Shoe to...*—and comments on our wastefulness by using reclaimed materials. Exposing these issues through art provides a new means of motivating all of us, engineers included, to try and prevent these collapses from happening. The solutions to these problems will undoubtedly be complex and will only be accomplished through interdisciplinary collaboration. We are reminded of this key fact when we realize that Terry's thought-provoking art is also the result of collaboration between seemingly disparate areas including sculpture and computer programming.

As I looked past the big concepts of her work I began to see more subtle lessons and was drawn in further. A key mantra to my teaching is "learn to be comfortable being uncomfortable." Rarely do impactful ideas/inventions come from a place of comfort. They come from pushing oneself in directions that are new and unexplored and therefore, associated with a sense of discomfort. There is an uneasy feeling that comes with viewing Terry's art. Whether it's the fear of the Tipping Point going too far, the anticipation as you Wait for the other shoe to..., or the confusion of watching wheels move without making progress as in Third Wheel, there is a sense of disquietude. I can't help but feel that through her art, Terry is teaching all of us to embrace discomfort. Her brilliant and playful weaving of art, technology, social commentary, and dissonance can educate and inspire all of us if we let it.

—Gennifer Smith, PhD, Professor, Department of Engineering



Sketches for Self-Leveler

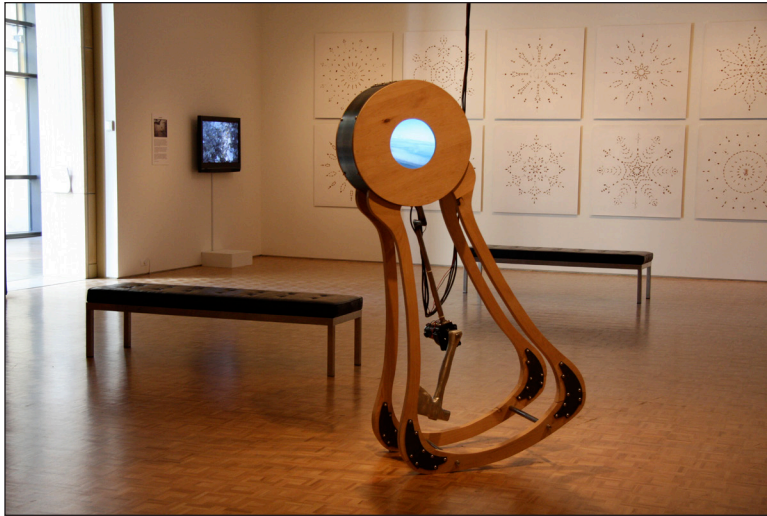
Artist Readings

Ahmed, Sara. *Queer Phenomenology: Orientations, Objects, Others*. Duke University Press, 2006.

Freire, Paulo. *Pedagogy of the Oppressed* (Rev. ed.). Continuum, 1970/1994.

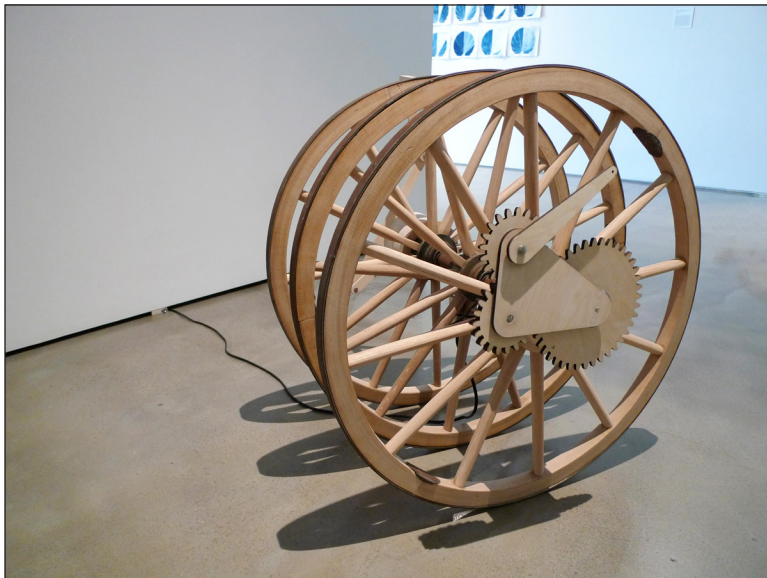
Morton, Timothy. *Dark Ecology*. Columbia University Press, 2016.

Muñoz, José Esteban. *Cruising Utopia: The Then and There of Queer Futurity*. New York University Press, 2009.



Self-Leveler (aka Tipping Point), 2009, wood, metal, computer, wii remote, monitors, cables, video, motor, aluminum axe, and MAX, 6' x 3' x 20"
(Installation photo from Iris & B. Gerald Cantor Center for Visual Arts)
MAX programming: Ricardo Rivera

In order to capture the moment of catastrophe, the human-made "tipping point," this work creates an uncomfortable situation where the sculpture appears to almost fall over. I used MAX programming and a Wii remote's potentiometer to keep the video water level while the sculpture rocks back and forth with the axe's counterbalancing force. I jumped in the ocean and tried to capture a horizon line of ocean and sky. The water references rising sea levels against what scientists refer to as the point of no return. The rotating axle below references an early tool used by humans to first alter the land and extract resources. I carved a wooden pattern to sandcast the axe form in aluminum. This is one of the earliest casting processes dating back to 1300 BCE and commonly used in tool production and manufacturing. Here, a symbol of technical progress is also emblematic of environmental decline.



Third Wheel, 2013, wood, metal, motors, and hardware, 36" x 30" x 28"
(Installation photo from Institute of Contemporary Art San Jose)

Three vintage wagon wheels are rendered stationary while two kinetic movements perform. The Cardan Gear is a 16th century invention used to convert rotation motion to reciprocating linear motion without using linkages or slideways, while the four bar linkage on the opposite side draws an infinity symbol. The wheels were found at Recology San Francisco during a residency from a thrown away Levis store display and parts of the spokes were reconstructed by the artist. This sculpture alludes to the felt sense of exclusion in intimate groupings, when you recognize that you are not moving in the same ways despite being closely connected.

Adam Chin

I use Artificial Intelligence (AI) algorithms to render images and make art. In practice, I train Machine Learning neural networks on databases of real photography and have them produce new “photographs.” To do this I either have to find a database of photographs to train on, or I have to make a database of photographs.

Asking “what does a pixel know?” I treat photography on a metaphorical atomic level, which is the pixel level. Every pixel in a photograph has knowledge about the overall scene that was photographed, and I am trying to tease this information out of the pixel. For example, when you use a Photoshop or Instagram filter to alter a photograph, you are using math to manipulate the information contained in the pixels. By understanding what a pixel knows, I am trying to expand our understanding of how much information is contained in a given photograph. I am exploring what a *photograph* knows.

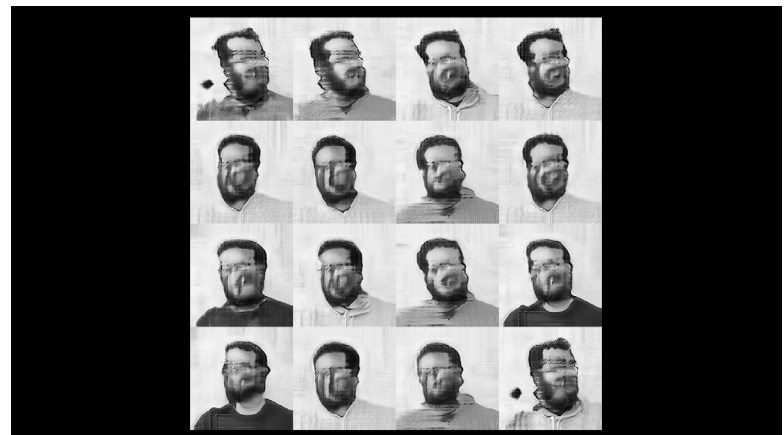
—Adam Chin, 2021

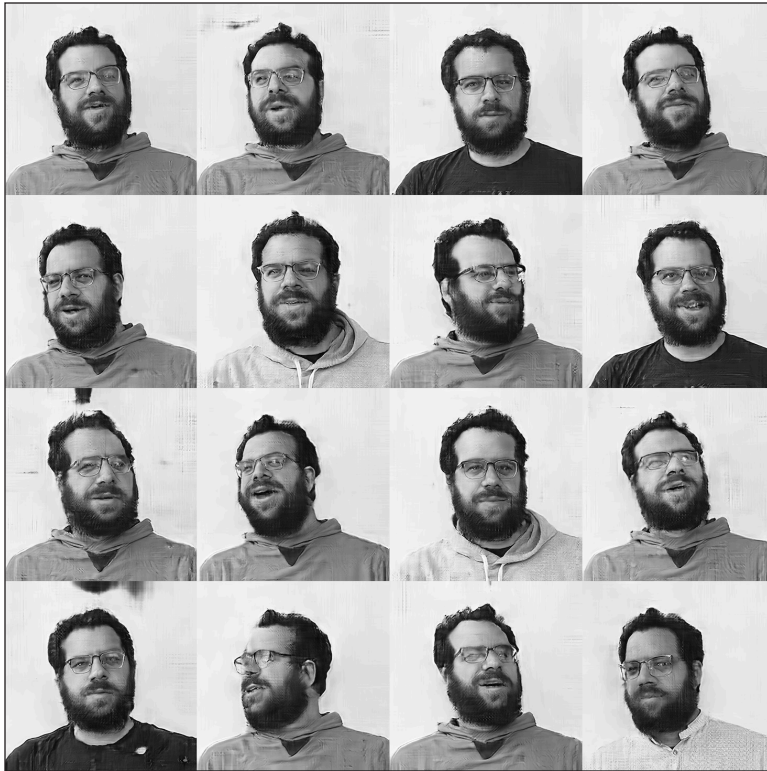
Above: *Self-portrait with N95 mask*, 2020, Machine Learning generated, archival pigment print, 22" x 22"

Self-portrait with N95 mask is the output of a neural net trained on 100 photographs of the artist wearing a N95 mask. This is the output of 4 training cycles out of the 55,000 cycles run.

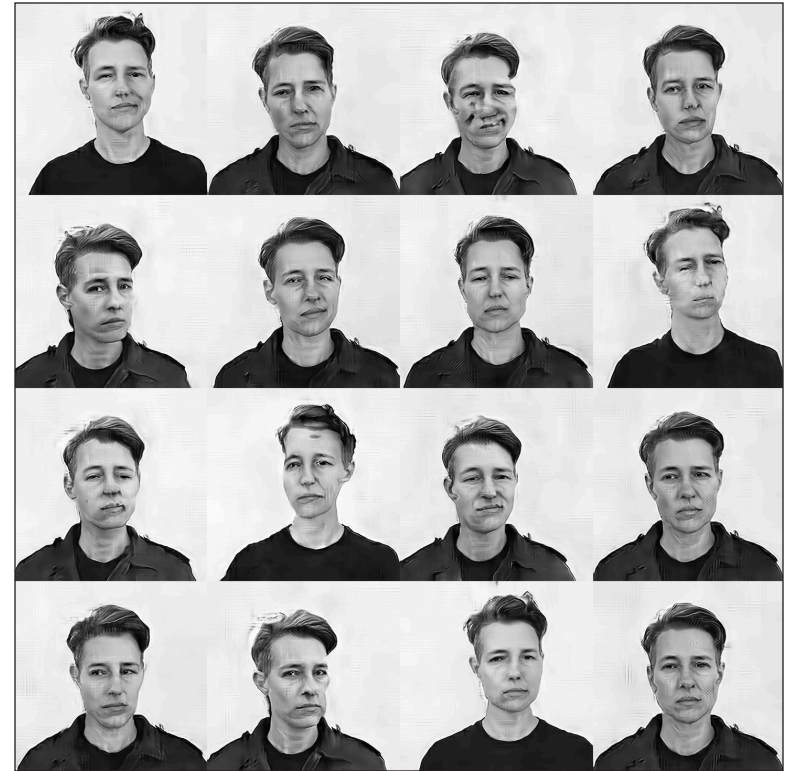
Below: Still from *Evolution*, 2020, Machine Learning generated, video, 3 minutes, 12 seconds

This video documents a Machine Learning neural network learning to draw a human face.





Man #1, 2020, Machine Learning generated, archival pigment print, 22" x 22"



Woman #1, 2020, Machine Learning generated, archival pigment print, 22" x 22"

In this SAGAN series, I use the algorithm, *Self-Attention Generative Adversarial Networks*, to generate portraits. I take a database of roughly 800 photographs and task the neural net with producing an image that looks like one of the 800 photos. The image is not a "Xerox" copy of any one of the 800, but is instead trying to look indistinguishable from the set of 800. If you were to look at all of the images mixed together, the goal is to not be able to tell the difference between the real photographs and the fake.

To me, these portraits are interesting precisely because they fail to reach that goal. The viewer can tell the difference between the real photographs and the fake. Yet on an artistic level, the Machine Learning generated images are still valid portraits of the subjects depicted. For this algorithm, the art is found in the distance between the real and the fake.



Obama, 2020, Machine Learning generated, gelatin silver print, 43" x 10"

Artist References

Han Zhang, Ian Goodfellow, Dimitris Metaxas, and Augustus Odena. *Self-Attention Generative Adversarial Networks*. arXiv:1805.08318, 2018.

Ashish Vaswani, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N. Gomez, Lukasz Kaiser, Illia Polosukhin. *Attention Is All You Need*. arXiv:1706.03762, 2017.

Ian J. Goodfellow, Jean Pouget-Abadie, Mehdi Mirza, Bing Xu, David Warde-Farley, Sherjil Ozair, Aaron Courville, Yoshua Bengio. *Generative Adversarial Networks*. arXiv:1406.2661, 2014.

The code used for SAGAN is by Junho Kim.
<https://github.com/taki0112/Self-Attention-GAN-Tensorflow>

Artist Reading List

Benjamin, Ruha. *Race After Technology: Abolitionist Tools for the New Jim Code*. Polity Press, 2019.

O'Neil, Cathy. *Weapons of Math Destruction*. Broadway Books, 2016.

Sekula, Allan. *The Body and the Archive*. MIT Press, 1986.



Obama is the output of a neural net trained on 858 photographs of Barack Obama downloaded from Flickr.

Engineer's Insight

"What does a pixel know?" At its lowest level, a pixel is data—a set of ones and zeroes. When we view those bits as groups of 16, information emerges—representations of color and luminance. When we step back and look at groups of pixels, structure and features emerge—a nose, an eye, or a freckle. Another step back, and the features combine to form a face. But where does this knowledge reside? Is an arrangement of pixels a face because of their geometry, or because we as viewers impose this meaning on them?

Adam Chin's work challenges us to think more carefully about this question by using algorithmic methods to generate new and unique images from a collection of "real" images. (And what is "real" in this setting?) When we see a new, synthetic image of President Obama, one that's distorted but still clearly recognizable, are we taking in knowledge captured by those pixels, or imposing our own previous understanding and experience? And when we turn to Man #1, does that question change? Unlike President Obama, we have never seen this person before, and yet we recognize him, and fill in those missing details. The Evolution video presses this point further as we see the algorithm generate progressively more "face-like" images, even though it works without any understanding of what a face is; that knowledge emerges from a combination of the relationship between pixels and our own expectations, hardwired into our visual cortex through millions of years of evolution.

—Christopher Brooks, PhD, Professor, Departments of Computer Science and Engineering

Cynthia Hooper

My interdisciplinary practice examines infrastructural landscapes and their myriad cultural and biological entanglements—sites that include altered watersheds, reconstructed wilderness, brownfields, power grids, and industrial farmland. My work patiently frames and makes sensible the incidental and emblematic activities that define these complex places, and also offers alliance with the laborers, activists, and researchers who operate within them. My videos, essays, and paintings deploy nuanced perceptual strategies scaffolded by disciplined, research-focused inquiry.

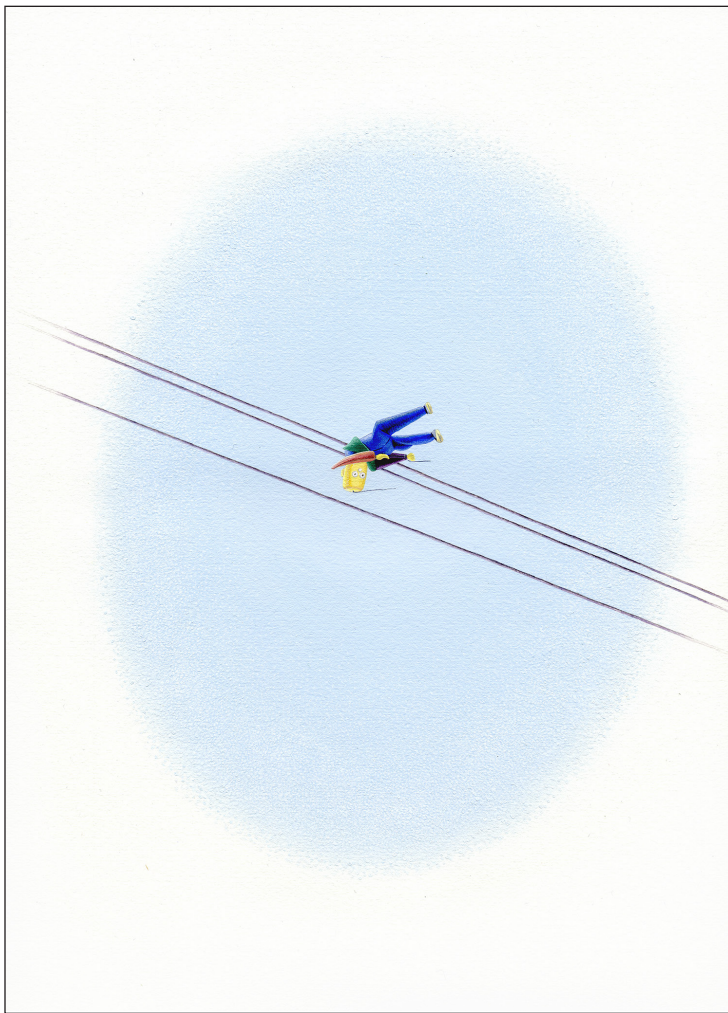
My creative practice is shaped by the conceptual rigor of science and the advocacy of environmental policy. I craft my work to functionally operate alongside these disciplines and offer accountability within their conceptual frameworks. The research that leads me to the landscapes I study includes numerous academic, governmental, and policy reports. Once in the field, I attentively capture these landscapes' manifold sensory phenomena, and carefully juxtapose this visual data to extract ineffable and allegorical meaning. Many of my projects also include accompanying essays that recoup expository content not explicitly conveyed via visual means. These essays are an entry point for cross-disciplinarity, and are calibrated for researchers, activists, and stakeholders who seek rigorous yet actionable public scholarship. The language of aesthetics and visual metaphor certainly reaches across disciplinary and ideological divides, but sometimes with less precision than writing affords.

By creating conduits between specialized fields of study, my artistic practice attempts to reshape (or at least attempts active dialog with) the technological and social systems I work with. Working across discrete disciplines can be intellectually audacious, but can also forge novel and comprehensible strategies during this time of escalating social and ecological crisis and need.

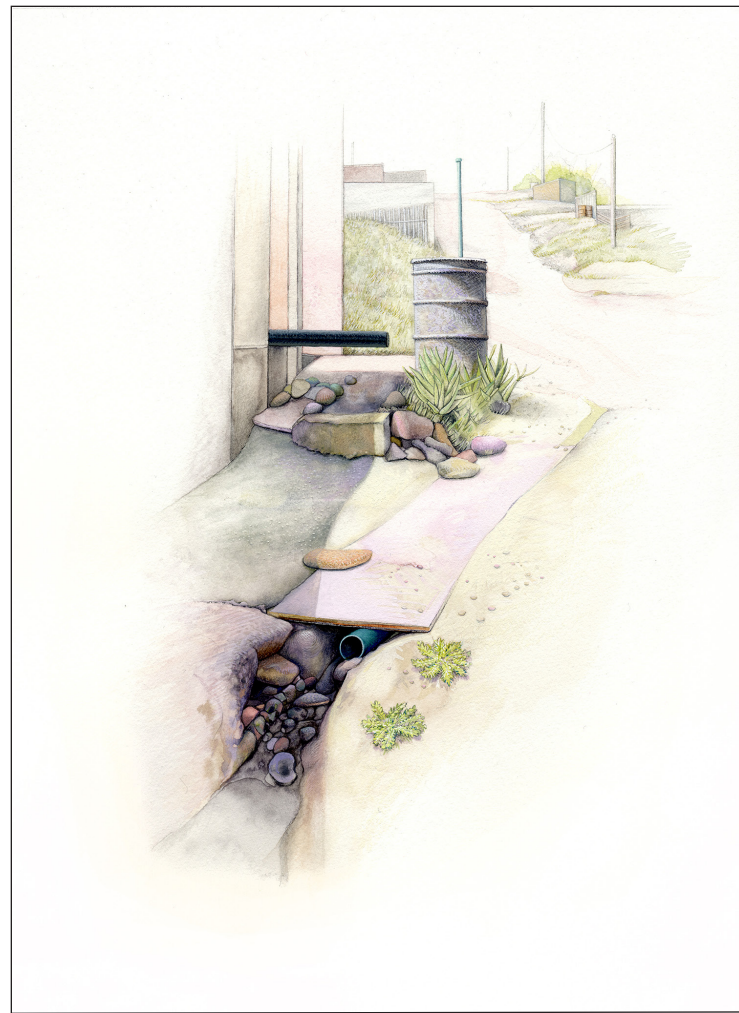
—Cynthia Hooper, 2021



Tijuana: Diamond Home, 2008, oil on panel, 11" x 14"

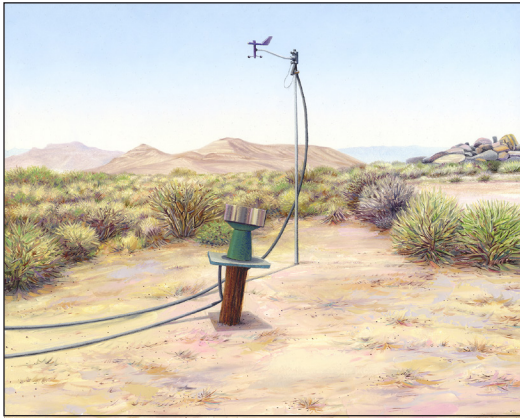


Tijuana: Infrastructure With Toy, 2006, watercolor on paper, 9" x 12"

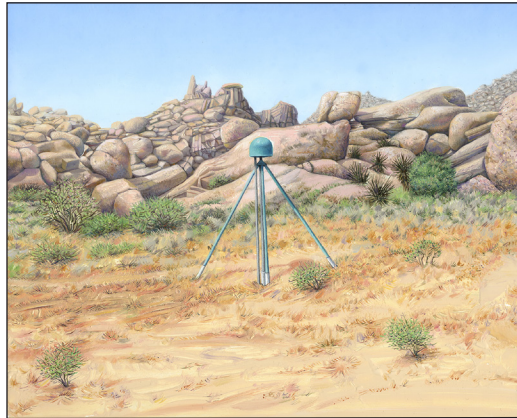


Tijuana: Watershed With Barrel, 2006, watercolor on paper, 9" x 12"

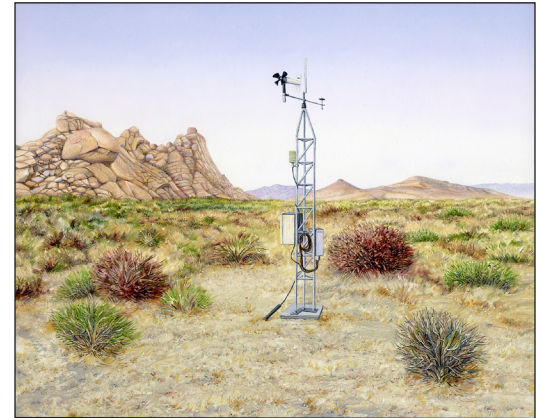
The work in this exhibition includes a video and selections from three series of paintings. *My Tijuana* paintings describe the hand-made homes and domestic infrastructure of several informal border communities—sprawling settlements borne of NAFTA-fueled upheavals in the Mexican economy. The DIY engineering that comprises these communities embodies a modest yet courageous humility; these places are built entirely from scratch with compelling improvisation and the available materials at hand.



East Mojave: Inoperative Devices, 2004, oil on panel, 8" x 10"



East Mojave: Seismic Device, 2005, oil on panel, 8" x 10"



East Mojave: Weather Station, 2005, oil on panel, 8" x 10"

My *East Mojave* paintings (above) examine unassuming scientific instrumentation at a research facility in California's Mojave National Preserve. These dainty contraptions—nestled amid the sweeping grandeur of the Mojave Desert—stoically perform plodding tasks in the service of science. Similarly, my *Landfills* paintings (right) describe the monitoring and extraction devices of a vast retired landfill near my home in northern California. Gas wells siphon methane from beneath the landfill's bucolic surface, while leachate wells pump noisome effluent from its subterranean strata.



Landfills: Drainage Apparatus, 2004, oil on panel, 6" x 9"



Landfills: Gas Well #16-E, 2004, oil on panel, 6" x 9"



Landfills: Landfill Apparatus, 2004, oil on panel, 6" x 9"

Engineer's Insight

Cynthia Hooper invites dialog on the social and environmental impacts of geopolitical and engineered systems. Her painting and landscape video pieces symbolically portray the highly complex and nuanced issues of our society that technology is often situated within. The unsaid request within her work is to create a new way of being. How might we, designers and engineers, create technology that supports environmental harmony rather than conflict?

The Jefferson's Monuments video is a compilation of short clips associated with the region's controversial dams. It is named after a mythical fifty-first state imagined for rural northern California and Southern Oregon. The construction of multiple dams devastated salmon habitat, and with it, the foundations of the local Yurok, Karuk, and Klamath cultures. Salmon could no longer swim upstream to spawn because the dams blocked the river's flow and their spawning beds were flooded. Indigenous people could no longer count on the fish that impacted their physical and spiritual wellbeing. Through use of the buzzing of electrical wires, agriculture watering, and loud humming on still waters, Cynthia utilizes these combined aural and visuals to denote the impacts of colonialism on the natural environment in this region.

Subject to political changes in the United States, indigenous activists have shifted the fate of these dams, which will likely be removed in the coming decade. Deconstruction is a step towards decolonization, providing a path to bring salmon back to the region and the way of life for the Yurok, Karuk, and Klamath people. Yet, the natural environment will be forever changed and the cultural conflicts of the people on the land will remain. As engineers and designers, we are continuously creating technology with deep political implications that may be felt for generations to come. There is a responsibility to engage in such dialog and create technology that brings healing and harmony to the natural landscapes and people within.

—Julia Thompson, PhD, Assistant Professor and Faculty Director of the Innovation Hive and Engineering Partnerships, Department of Engineering

Artist Reading List/References

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Madley, Benjamin. *An American Genocide: The United States and the California Indian Catastrophe*. Yale University Press, 2016.

Demos, T.J.. *Beyond the World's End: Arts of Living at the Crossing*. Duke University Press, 2020.



Still from *Jefferson's Monuments*, 2010, digital video with sound, 7 minutes, 54 seconds

The video *Jefferson's Monuments* patiently inventories four controversial dams that are slated for removal on California's and Oregon's mighty Klamath River. After more than 20 years of activism by tribal groups, scientists, activists, and fisherfolk, dismantling these dams will finally commence in 2023. This admirable effort successfully leveraged direct action and diplomacy, traditional ecological knowledge and the biological sciences, and has masterfully destabilized the hegemonic colonial sovereignty long imposed on one particularly compelling infrastructural landscape. *Jefferson's Monuments* is a meditative moving image epitaph for these unexpectedly grand and undeniably problematic monuments in their dramatic Cascade Range environment.

Carrie Hott

I am invested in documenting and disentangling the technological systems that deeply shape our lives. Specifically, I am captivated by what provides a sense of comfort and security, or keeps us working and productive, or entertained, all while quietly mediating all of our surroundings and experiences, often in very subtle and insidious ways. Some broad examples of these systems include artificial lighting, the electrical grid, the internet, and Internet of Things devices. I am not only interested in dissecting the history and impacts of these structures, but through my projects I am aiming to make visible the inherently political nature of these systems and how they influence us both privately and collectively.

My process is iterative and driven by research, which can be drawn from a text, a dissection of a smart object, or a visit to a power plant, for example. This research process is continuous and varying and deeply informs what I make and how I make it. Most often I create multi-media installations that incorporate sound or video into sculptural settings. I also regularly make books and prints, or put together free form group classes. Frequently, all of these forms are present in one project, providing multiple layers of experience or entry points into a subject.

—Carrie Hott, 2021



Still of *A Room Of Edges (part one)*, 2021, digital video, 2 minutes



Still of *A Room Of Edges (part two)*, 2021, digital video, 2 minutes, 4 seconds



Still of *A Room Of Edges (part three)*, 2021, digital video, 2 minutes, 11 seconds

Most recently my studio practice has been focused on the use (and misuse) of smart devices, which are consumer objects that rely on internet connectivity to provide services and convenience, usually in the home. I arrived at this point after a decade of considering the history of artificial light and the electrical grid in this country, and how the development of these common systems shaped so much of our entrenched behavior and work patterns. The emergence of internet connected (or smart) lights and devices in recent years has completely captivated my thinking. This new technology builds directly on to the subjects that I have researched and made work about for years. Now that the internet is weaving into the technology that we rely on heavily, my thinking and art practice is now focused on how these structures, devices, and objects are becoming more complex, entrenched, fragile, and manipulative.



Still of *A Room Of Edges* (part four), 2021, digital video, 2 minutes, 2 seconds



Still of *A Room Of Edges* (part five), 2021, digital video, 4 minutes, 35 seconds

In order to research and understand the implications of smart devices further, I am experimenting with them in my studio. The objects that I am currently working with include artificially intelligent home assistant devices (Alexa and Google), smart light bulbs of varying kinds, a smart vacuum cleaner, and a home surveillance camera system. This research and process is ongoing, but so far I am focused on the very opaque nature of these devices, not only in how they work, but how they look and feel. They are designed to act, look, and feel like closed, autonomous helpers. Through my projects, I am working to underscore their opacity while also emphasizing their algorithmic programming and how these dual facets are shaping our behavior and sense of agency.

Engineer's Insight

We live in a world that is at once increasingly complex and also increasingly abstract. With a phrase, or the push of a button, we can have the answer to any question, or listen to any recorded music, or watch whatever we want. We don't need to care how it gets to us or how decisions are made. Until we do. Until things break down and the system reaches its limitations, its points of failure and brittleness. Then the illusion fades and we see the underlying technologies, messy and incomplete, no longer able to fool us. Carrie Hott's work pushes us to consider that view—a view in which the illusion of intelligence in our devices erodes, and the edges: physical edges, functional edges, and emotional edges, become visible. As the functionality breaks down, the illusion of the room itself degrades, and what initially seemed well-ordered and helpful becomes chaotic and alienating, leading us to wonder whether these technologies were really intended to improve our lives in the first place.

—Christopher Brooks, PhD, Professor, Departments of Computer Science and Engineering

Artist Influences

McGuirk, Justin. *Honeywell, I'm Home! The Internet of Things and the New Domestic Landscape*. e-flux Journal #64, April 2015.

Crawford, Kate and Vladan Joler. *Anatomy of an AI System: The Amazon Echo as an anatomical map of human labor, data and planetary resources*. <https://anatomyof.ai/>, 2018.

Easterling, Keller. *An Internet of Things*. e-flux Journal #31, January 2012.

Gail Wight

In our seemingly boundless capacity for species self-love, we tend to simplify the living world around us, or fathom its depths solely for what it might teach us about ourselves. In *Anatomies*, I took a handful of classic metal children's toys and disassembled them, arranging their mechanical parts into anatomical charts, the quintessential tool of Cartesian understanding. A few robots round out the menagerie, weary reminders of our automata fantasies. The individual names come from their packaging.

I continue to struggle between parts and wholes, between the intimate and breathtaking details of life and the staggeringly complex world they embody. I'm learning to make peace with the knowledge that I'll never truly experience or even comprehend other ways of being in the world.

—Gail Wight, 2021

Engineer's Insight

When I saw Gail Wight's artistic presentation of children's mechanical toys pulled apart to render their anatomies to observation, I was immediately intrigued. Her work brings to mind a child's natural inclination to break toys apart to understand how they work and what's inside. Indeed, it is through this sense of curiosity and wonder that children exhibit their natural engineering talents. It is through the process of breaking things apart and attempting to put them back together that the engineering mind is formed. What's more, the toys that Gail selected to represent are incredible toys from a by-gone era when everything was made to last a lifetime. The colors are vibrant and each mechanical piece is an engineering work of art in and of itself. These toys were more than likely handcrafted by mechanical artisans and Gail's genius has brought to light the incredible "anatomies" of these mechanical toys.

Artist Resources

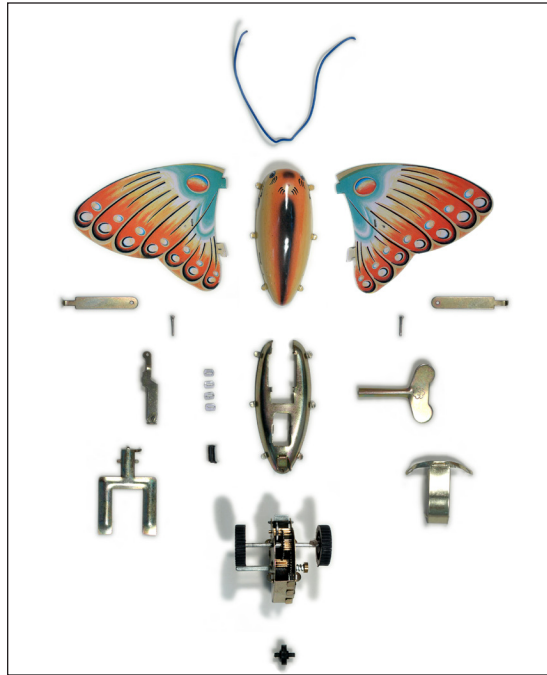
Kolbert, Elizabeth. *The Sixth Extinction: An Unnatural History*. Picador, 2015.

Safina, Carl. *Beyond Words: What Animals Think and Feel*. Henry Holt, 2015.

Lopez, Barry. *Arctic Dreams: Imagination and Desire in a Northern Landscape*. Charles Scribner's Sons, 1986.

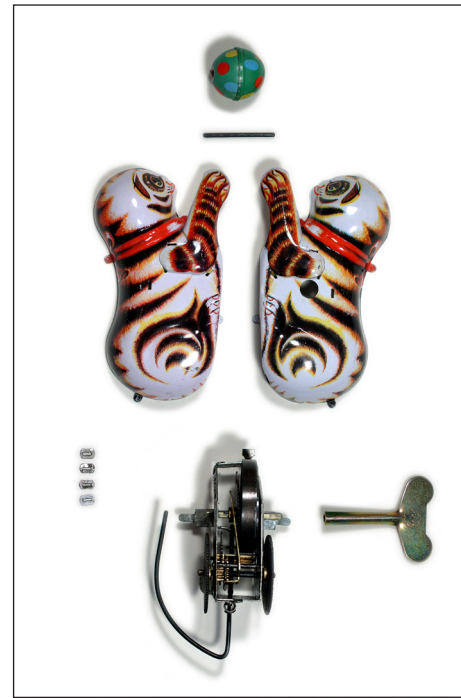
What's more, the animals that are represented are veritable engineering feats of nature. The motion by which a butterfly or a bird flies through the air with grace and ease brings the fluid mechanical concepts of lift and drag into focus. Or the way a duck frantically moves its small webbed feet under water while giving the impression of calmly gliding across the water is yet another marvel of creation. Gail's selection of toys goes from those that represent the genius of nature to those that represent the intellect of humans, from animals to little robots. The robots that are pulled apart exhibit even more mechanical intricacy with additional pieces and further complexity, for such is the world of engineering—a world of creativity and ingenuity waiting to be explored.

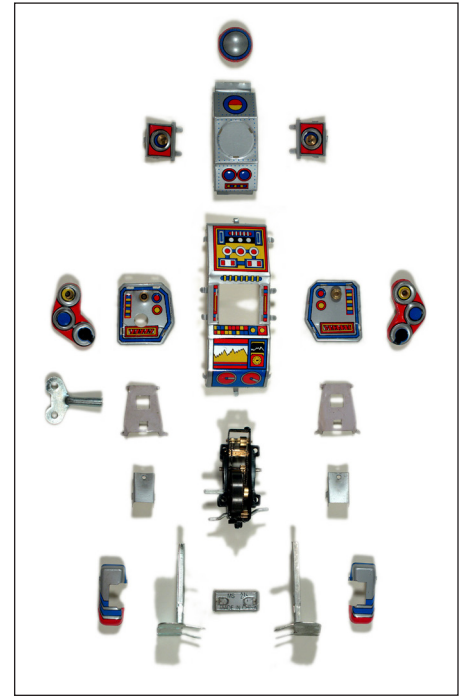
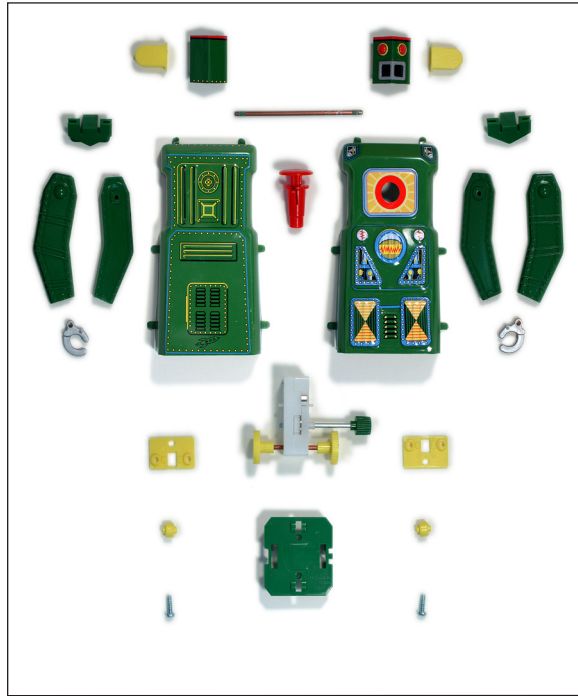
—Elizabeth Mickaily-Huber, PhD, Adjunct Professor, Engineering



Anatomies, 2003, 9 pigment prints, aluminum bar, and silk cord, 68" x 42–54" each

Exploded photographs of disassembled toys, these robots and mechanical animals are reminiscent of human anatomy charts. The pedagogical nature of the familiar tin characters is amplified in their disarticulated display. Printed on high gloss paper at very high resolution, the final charts are hung with braided cord, teetering between contemporary and century-old anatomical diagrams.





Engineer Biographies

Christopher Brooks is a professor in the Department of Computer Science at USF, with a joint appointment in the Department of Engineering. He joined USF in 2002 after completing a PhD in computer science at the University of Michigan. He also holds an MS in computer science from San Francisco State University, and a BA and JBA in English and journalism, respectively, from the University of Wisconsin. Professor Brooks's research examines the ways in which human and computational agents learn in shared environments, particularly when learning is difficult or costly. He also develops new techniques for effective teaching of computer science and AI, and is deeply invested in addressing issues at the nexus of social justice and computing.

Although Professor **Elizabeth Mickaily-Huber**'s degrees are in chemical engineering, her specialty is in computational fluid dynamics (CFD). Over the years, besides using CFD to solve real-world problems, she has taught engineering and mathematics at the University of San Francisco, San Francisco State University, the Swiss Federal Institute of Technology at Lausanne (Switzerland), and CSU Los Angeles.

Gennifer (Genna) Smith received her BS in electrical engineering with a double major in biology from the University of New Mexico. While pursuing her BS, Professor Smith conducted research at Sandia National Laboratories where she worked on a point-of-care device for tuberculosis detection. She then continued to research low-cost medical devices as part of her PhD in electrical engineering at Stanford University. In particular, she developed a portable urinalysis device capable of analyzing the chemical and cellular makeup of a sample, which can be done by untrained personnel. Her postdoctoral research, also at Stanford University, focuses on assay development for cell-free DNA testing. In particular, she is designing a blood-based test for early detection of atherosclerosis.

Julia Thompson has a passion for integrating the soul's work into the engineering design process and technology. She is driven to help students, and people in general, look at technology as a pathway toward healing of earth and unjust social structure. Julia did her undergrad in chemical engineering at UC Berkeley and her PhD in engineering education at Purdue. Her research interests focus on how engineering design practices impact the relationships that engineering programs create with the community. Dr. Thompson's curriculum utilizes project-based service learning to engage passionate students.

Acknowledgements

Artists: Terry Berlier, Adam Chin, Cynthia Hooper, Carrie Hott, and Gail Wight

Curatorial Team: Liat Berdugo, Nell Herbert, Sean Olson, and Glori Simmons

Engineering Collaborators: Hana Böttger and N. Jeremy Kasdin with Christopher Brooks, Elizabeth Mickaily-Huber, William Riggs, Lauren Sassoubre, Gennifer Smith, and Julia Thompson

Design: Ashley Boney (website) and Andrea Gonzales ('21, USF) (catalog)

Programs and Preparation: Victoria Farlow, Delaney Gibbons ('20, USF), and Somer Taylor ('22, USF)