Overview

How does an artist and design researcher learn to act as a provisional tech journalist, an informal graphic designer, a temporary urban planner, and an erstwhile engineer? The projects on these pages represent my use of research-driven activist and pedagogical practices to step in and out of my home disciplines with a central conviction: that to design and build inclusive worlds requires both the precision of engineering and the open conviviality of the arts and design, together. My work is collaborative and durational, often using designed artifacts as both functional and discursive objects. My projects together awaken hidden or suppressed politics about ability, health, interdependence, and bodily normativity in both art and engineering. And my practice as a whole is an extended argument for design as research: understanding, enacting, and proposing through making.
Slope : Intercept

My ongoing project, **Slope : Intercept**, is a material and digital project, a deep genealogy of the inclined plane or ramp, one of Galileo’s “simple machines.” I have designed a set of ramps that perform as a modular set of objects for use by unlikely bedfellows seeking elevations in cities: skateboarders, whose radical leisure tends to be unwelcome in urban centers, and wheelchair users in search of ramps for single-step entrances, a common access problem in cities like Boston and New York.

It’s a low profile bit of geometry that’s designed to nest and stack, to attach side-by-side, to maneuver about with wheels: a suite of objects for installation in public space, both as a mode of critical play and critical access.

I’m interested in the ramp as an extended architectural form at the urban scale, but also as a social technology, a nimble and portable tool for both scripted and unscripted uses.
The ramps are 3 ft square, over-engineered to take the weight of an adult using a heavy wheelchair, and have casters and a piano hinge for portability and ease of use. They have leveling feet, affording a height range of several inches, and an L-shaped metal angle stock across the top edge, for skaters to grind across on an axle.
In Toronto, Slope : Intercept was hosted by OCADU and Interaccess Gallery in a two-day workshop. We ran an interactive “audit” of a Toronto neighborhood, recording its topography in the company of a professional skateboarder and several wheelchair users. We created a provisional map of the neighborhood with real-time printed photos, and we gathered the skateboarder, a wheelchair-using ramp activist, a parks and recreation administrator, and an architectural theorist as a panel, asking them to speculate about the present and future builtscape of that city.
The workshop created a real-time set of new conditions for the ramps’ provocations: posing unlikely alliances between two kinds of wheeled mobile urban passage.
Slope: Intercept also lives online in an emergent archive of the inclined plane—a digital exercise in sensory estrangement from this sleeping machine that's found everywhere. Archival categories like “transversals” and “vantages” catalog ramps sublime and mundane, industrial and aesthetic.
Slope : Intercept continues as a collaboration with wheelchair dancer Alice Sheppard, who asked my physi-cist colleague, Zhenya Zastavker, and I for a ramped stage for performance. Students co-designed this large scale ramp in spring 2016. The MediaCity Seoul biennial commissioned me to install ramps for its September 2016 exhibition, and I invited Alice to perform on a “platform kit” of ramps that were inspired by our work together in her residency at Olin.

Student Researchers
Scott Mackinlay
Apurva Raman
Erica Lee
Andrew Holmes
Alexander Scott
Duncan Hall
Kimberly Winter
Katie Butler
Rachel Yang
Jingyi Xu
March Saper
Daniel Daugherty
Amanda Cachia is a curator, an active scholar, and an art historian-in-training at the University of California, San Diego. She travels constantly for lectures and gallery talks, so she’s in front of people in rooms a lot.

But the architecture of lecture halls, stages, and furniture is scaled to humans generally well over five feet tall. And Amanda is considerably shorter: she’s 4’3”, In the photo above, she’s standing on steps so she can reach the height of the lectern. Amanda’s curatorial work sometimes addresses this very discrepancy: how atypical bodies pose questions about standardized notions of “fit” for built structures. So, in a lecture she gave in 2012 during a California College of the Arts symposium, she wanted not only to rhetorically discuss this discrepancy, but to perform it. She had a podium built precisely for her stature, designed by Shawn Hibmacronan and built by Adrien Segal.

But Amanda needed a permanent solution, and for that she came to Olin in spring 2015. A team of four engineers then worked to come up with a design and material that would fold flat, stand up to frequent travel, be strong and lightweight.
The team of four students and I eventually chose carbon fiber for the final version—a high-performance material usually reserved for aerospace or automotive applications.

**Student engineer team:** Morgan Bassford, Adriana Garties, Mary Morse, and Kate Scully.
Carmen Papalia is a mixed media artist and performer whose work engages interdependence, wayfinding, the contingency of vision, and more. He was another “micro-resident” of my lab, taking us on an iteration of his work, Blind Field Shuttle and more. Students and I worked with him on **Acoustic Mobility Device**, an amped cane that “plays” the built environment via contact mic and tunable effects. Papalia is non-sighted, calls himself a “non-visual learner,” and works to undermine inherited cultural ideals about the body and its capacities.
Engineering at Home (engineeringathome.org) is a public anthropological design archive and a critical manifesto on the nature and use of engineering for disability. It centers around Cindy, one woman whose experience of a radical change in embodiment late in life created a whole collection of prosthetic technologies—formal and informal—that pose difficult questions about expertise, technical novelty, and human-centered design. I worked with an anthropologist colleague, Caitrin Lynch, who specializes in research on aging and identity; together, we collected and annotated these objects and wrote a strong argument to reconsider the subjects, means, and worth of engineering—in labs and at home.
We are a designer (Sara Hendren) and an anthropologist (Caitrin Lynch), and we teach engineering students. When we met Cindy, we were moved by a number of aspects about her story, and so were the students in our classrooms. She survived a complex, life-threatening medical event; she joined a very small percentage of people to survive such an event without neurological impairment. All of this is extraordinary in itself. But she also received the best available
Among the most enigmatic objects in the archive are things like these silicone hand caps equipped with a pen, or a fork, or a knife. Made for pennies by her prosthetist, these tools have proven infinitely more useful for Cindy than the top-of-the-line myoelectric arm and hand she qualified for. These deceptively humble objects compel us to ask where invention and use really lie, and further, they ask us where and when we might find engineering, outside of its traditional contexts?
The adaptation + ability group (aplusa.org) is a technical and social laboratory for creative research on technology + the body at Olin College.

The lab expands the creative research paradigm in design for disability, developing critical or speculative artifacts alongside legibly practical engineered devices: works that are performative or practical, creating uncertainty or efficiency. The conviction to enact an expansive making culture is a political one—that understanding human ability and capacity in socio-political context requires both technically inclusive design at all scales and discursive artifacts or events.
Guidelines for an adaptive technology working group.

Sara Hendren wrote this as a “manifesto” for the lab before its inception in September 2014. It still holds as a true north for the lab’s work.

1. We use the terms “adaptive” and “assistive” technologies interchangeably when speaking casually or with newcomers to this field, but we use the terms of adaptation as often as possible. Why? Assistance usually implies linearity. A problem that needs fixing, that seeks a solution. But adaptation is flexible, rhizomatic, multi-directional. It implies a technological design that works in tandem, reciprocally, with the magnificence that is the human body in all its forms. Adaptation implies change over time. Adaptive systems might require the environment to shift, rather than the body. In short, we believe that all technology is assistive—and so we speak in terms of adaptation.

2. We presume competence. This exhortation is a central one in disability rights circles, and we proceed with it in mind as we work with our design partners. We don’t claim our end-users are “suffering from” their conditions—unless they tell us they are. We speak directly to users themselves, not to caregivers or companions—unless we’re directed to do so. We speak the way we’d speak to anyone, even if our partners don’t use verbal language in return—until they request we do otherwise. We take a capabilities approach.
4. We spend some of our time making things, and some of our time making things happen.* A lot of our effort is embodied in the design and prototyping process. But another significant portion of that effort is directed toward good narrative writing, documentation, event-wrangling, and networked practices. Design can be about a better mousetrap; it can also be—and indeed more often should be—a social practice.

* “I went from making things, to making things happen.” That’s artist Jeremy Deller on how his art practice went from objects to conditions and situations.

3. We work in public. Doing open and public research—including in the early stages—is central to our conviction that design for disability carries with it enormous political and cultural stakes. We research transparently, and we cultivate multiple and unusual publics for the work.
5. We actively seek a condition of **orchestrated adjacencies**: in topics, scales, and methods. Some of our projects attempt to influence industry: better designs, full stop. And some of our projects address issues of culture: symbolic, expressive, and playful work that investigates normalcy and functionality. We want high-tech work right up alongside low-tech work. Cardboard at one end, and circuits and Arduino at the other. Materially and symbolically, adjacencies in real time create unusual resonances between and among projects. They expand the acceptable questions and categories of what counts as research. They force big-picture ideas to cohere with granular problem-solving.

6. We presume, always, that **technology is never neutral**. And accordingly, we seek to create tools for conviviality, in the sense that Ivan Illich laid out in his book of the same name. Tools that are “accessible, flexible, noncoercive.” We won’t be perfect at it, but we won’t shy away from hard questions: What will it cost? What might be unintended consequences? What have we overlooked?
I co-founded the **Accessible Icon Project** in late 2009. The project originally began as a street art campaign: a guerilla initiative to alter the International Symbol of Access on wheelchair-accessible parking signs. This mildly transgressive act was a tactical one: a way to engage publics, especially via popular media, about the questions the old and new symbols raise—about representing ability, about the meaning of access writ large, about disability rights.

Press attention to the project brought us into partnership with like-minded self-advocates, activists, and educators all over the world, and our offering it to the public domain has resulted in its use far beyond our knowledge: for corporate, educational, governmental, non-profit, and other organizations, the work now signals a commitment to ever-new action and solidarity around disability rights. The project is now an ongoing social design effort, housed at a non-profit job-development and services center for adults with disabilities. It was acquired for the permanent collection at the Museum of Modern Art (NYC), in the Architecture & Design division, in 2013, and it has been included in multiple exhibitions and scholarly books and journal articles.
The original street art sticker eventually became a formal new icon. Graphic designer Tim Ferguson Sauder brought its features into line with standard wayfinding isotypes, and the icon is in the public domain for free use in any context.
Far more than a graphic icon, the work is an event-based social advocacy project, wherein people with disabilities and their allies provide services to use the new icon as stencils and signage when old signs need replacing. (No money changes hands!)
The icon has now been appropriated freely in hundreds of contexts around the world, by grassroots activists and official institutions, formally and informally.
http://aplusa.org/

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