

Studio 401_design matters

'For knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand.'

Albert Einstein

Welcome to Studio 401 where we view architecture as a form of action - as an optimistic way of speculating about a better world. At the intersection of architecture, ecology, and related disciplines, our studio looks to nature, infrastructure, culture, and fabrication as drivers that inspire the imagination. Materials (bio, smart, responsive, traditional and emergent) are also integral to our work, sometimes through application, sometimes through research and development. We look to the natural and social sciences to produce alternative architectural models and nuanced ways of thinking about our field. We challenge conventional notions of education and architecture. We embrace local wisdom in tandem with advanced technology, and we work with our hands. We focus on the prospect of architecture to build community by questioning how things came to be the way they are. The balance of these ingredients is up to you.

The point of Studio 401 is to develop skills that give you **agency** to make a **more equitable, resilient, and imaginative world**, and positively affect people's lives through design. The structure of the studio is a 'loose-fit' model to enable skill building and design exploration. Projects **bridge theory with making** and range from: environmental provocations such as cloud makers and earth remediators; new educational environments; civic infrastructure and housing models; to material experiments and urban installations that positively impact social change, to design for extreme environment. So, we have direction, without dogma, meaning we have a strong supportive scaffold without a prescribed aesthetic.

For example, this year Lewis Wightman worked with an Amish farming community, that does not use combustion as a power source. Lewis studied the ingenuity required to develop pre-industrial tools and machinery, then applied this knowledge to the traditional yet contemporary context of the Amish farm. Justin Grillo worked intensely on living/growing pods for the sustainable growth of alpine cities, while Sara Rhea resisted the mass consumption of high calorie, low nutritional value fast foods by developing a neighborhood slow food project. So, the programs are varied as is their approach to an architecture that is more responsive, innovative, and resilient than the status quo. Creativity is mentioned a lot over the course of our studio, as I believe that our creativity will positively impact the world we design. There is a lot to know, and our studio is in alignment with Einstein's belief that imagination is more important than knowledge.

Some things that have shaped my approach to the studio include my experience at the School of Architecture in Aarhus, DK – I was faculty at this school and am impressed with the ethic of learning through design experimentation, often at 1:1. New studio endeavors also include starting a database of previous students that are now out in the world, whether they are in creative practice or working in an adjacent field, this resource is meant to network current thesis students with previous students to find employment that is creative, equitable, and progressive.

Contact me if you would like to know more about the studio or if you are planning a collaborative project.

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And check out some past theses work here: <https://calpolythesis.weebly.com/>

The Fine Print: The teaching method is not prescriptive, and it is helpful if you are prone to curiosity and motivated to think for yourself - to think your way into, and out of a problem. The teaching | learning method is intended as a 'loose fit' model that is fluid and adaptable to new scenarios as they develop. In a way, we operate as a creative sandbox - like a kindergarten for big kids - as we explore the world through craft, design, play, and social engagement.

And, as a side note. Don't worry if your thesis is not fully developed – it shouldn't be. We use the time and space of the studio for theses identification and development, through reading, making, and discussion.



We often look to the natural environment as a means of better designing the built environment. We also use photography as a tool to better understand our world. So, bring your curiosity.

Pedagogy – It's about creativity

Our studio is a human-centered, maker-thinker space, built upon curiosity, diversity, wonder and play. We are experimental and do not have a predetermined style or dogma, which is why our studio work is varied. As a studio, **we balance theory and practice**, and strive to make a difference through the creative and social enterprise of design. We draw from all cultures for precedent study, and we include nonhuman species in the endeavor. To promote depth and diversity of thought, we often have working reviews - where everyone has a pencil in hand - with outside thinkers, makers, and experts. If you like developing ideas from making things through **the equitable engagement of hand and mind** – this studio is a good choice.

Networking – We learn a lot from others

We develop networks with interesting architecture, design, and engineering firms to build collaborative opportunities between studio and creative practice. These relationships often continue after graduation and many students go on to work with these firms. Most recently we have been in contact with NBBJ, BCJ, Tei Carpenter, IDEO, Jan Gehl's office, SOM, and TriPyramid to name a few. We have a network of students that enter offices and/or graduate school that stay in contact with the studio to share skills and current experiences. We bridge research, academia, and practice, and set up a network for your prospects. We also bridge fields adjacent to architecture, supporting student paths in the arts, industrial design, teaching and other creative areas that may not include work in architectural firms.

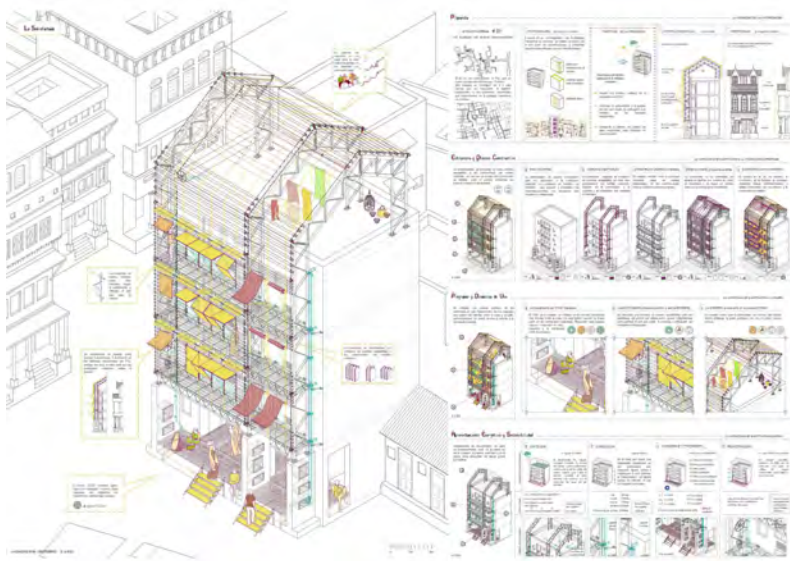
Course Structure – Thinking and making

As creativity is driven by constraints, I set up a scaffold of introductory mapping assignments that are relatively specific. Over the course of the year assignments become increasingly open-ended. Term 1 is an experimental research space, coupling theory with making, in the Vellum project. We combine onsite field studies/expeditions, data collection and mapping, and 1:1 scale prototypes. Previously, we have constructed site instruments in our shops and then installed them on site (see some on our calpolythesis site). The term is 'radically relational' and the mapping techniques we employ produce hybrid drawings that tie data to experience. We get to know a place through storytelling and narrative; this situates our knowledge, and we look to the influence of non-human 'actors' on this developing story.

Terms 2 + 3 are dedicated to the design of the thesis project, which may be individual or collaborative - your choice. The plan is to increase design and representation skills and set you on a path to work in exceptional offices (good work and good culture), graduate school, or alternative creative paths.

On the creative practice of our studio

building community



This project by Almudena Cano Piñeiro is often referenced in our studio as a rigorous, light and playful approach to urban attachments.

Thoughts that reflect the values of our studio

"The conditions in which we learn become the conditions we practice and reproduce."

Womxn in Design on shifts in design pedagogy.

"Art cannot change the world, but it can contribute to changing the consciousness ... of the men and women who could change the world." Herbert Marcuse

"I try to create a forum where everyone doesn't have to mold into the idea of what's expected ..."

Lindsey Adelman on how her experience at RISD influenced her approach to her office.

Some things I've learned from my experience in practice and at IDEO:

As in the most creative practices, our studio supports a culture of experimentation, knowledge exchange, confidence, and trust. The studio is considered open-source, where ideas are freely exchanged and the momentum of the group benefits the individual. I believe creativity is learned and thrives in a non-hierarchical environment of risk-taking combined with a playful and experimental attitude. These thoughts are structured on professional models I have experienced in multidisciplinary practice, specifically in architecture, biotech, and industrial design. As in the quotes above, the learning environment that we shape, shapes our future practice. In this studio, students have a voice in shaping our learning environment.

This studio supports alternate modes of thinking and is designed to inspire the imagination. As Ken Robinson notes, 'creativity is as important as literacy,' and our studio opens new conversations for idea development and creates a climate of possibility. We all have creative sensibilities, though our standardized educational system has made us fearful of making mistakes. Once fearful, the prospect to make discoveries is diminished. So, we draw, we make, we discuss, and we make a lot of mistakes as fast and as often as possible.

Some things common to great teachers that I have had:

- They elevate our expectations of ourselves, teach through demonstration, and encourage you to find alternate paths, disruptive technologies, and ideas that are not bound by the status quo.
- They leave us with our own ideas and the provocation to experiment, and the desire to learn more.

- We are not confined by our discipline but empowered to exchange knowledge across disciplinary boundaries.

Studio culture

It's a loose fit

"There are no passengers on spaceship earth. We are all crew."

Marshall McLuhan

The structure of the studio is a 'loose-fit' model to enable skill building and design exploration. We work within a non-hierarchical model, taking all voices and ideas into account. We support creative thinking and skill development by working as a collective as we draw from the experiences and abilities of other disciplines and practice. The studio method draws from my experience in professional practice, and other creative firms like Snohetta, Allied Works, Kengo Kuma, and DnA (Xu Tiantian) that look closely at the opportunities afforded by design, materials, construction techniques and knowledge exchange.

As a collective, we focus on the creative development of each individual. Projects range widely in scale and content, may be static or mobile, may be material studies, guerilla installations, full-scale builds, or public interventions, though all have the common thread of addressing environmental/social/political issues through design. The studio is a tinker lab/ maker space where ideas are discovered, not preconceived. A possibility this year is to set up research groups based on common thesis interests.

In the beginning of the year, I float possibilities. One possibility is to set up a research group to study the impact of architecture on environments that are becoming more extreme. Another possibility is to construct a large-scale structure with the Student Experimental Farm at Cal Poly.

It is a place where skills are developed and unorthodox ideas are nurtured. It's a bit nerdy. . . but with purpose. In this studio there is the opportunity to work individually or collectively on thesis coursework.

Feel like you don't fit into a precise mold?

Welcome to the studio.

More thoughts that reflect the values of our studio

"Art cannot change the world, but it can contribute to changing the consciousness ... of the men and women who could change the world." (Herbert Marcuse)

"I try to create a forum where everyone doesn't have to mold into the idea of what's expected . . ."

Lindsey Adelman on how her experience at RISD influenced her approach to her office.



We often begin with tools and materials as a means to develop project ideas. Photos from our shop.

Want to make a difference?

Our projects are linked by the idea that we can positively impact the world through good design and that small changes can lead to big effects. The studio is a platform where ideas are discussed and developed - it is a place to incubate good ideas and launch them into the world. Some examples of past work follow.

Larissa Muller's project City Streets looks at the approaches of tactical urbanism and giving people agency to make positive change in their environment. We studied what Atelier Bow Wow calls **Architectural Ethnography** - an in-depth study of the people of a place, to design proposals where **the built environment supports culture and builds community**. Larissa received a master's degree at UDelft in the Netherlands and now works with Gehl San Francisco, a leader in people centered urban design. I encourage students that are interested in graduate study to consider schools abroad as they are excellent in terms of academics and cost (some are free).

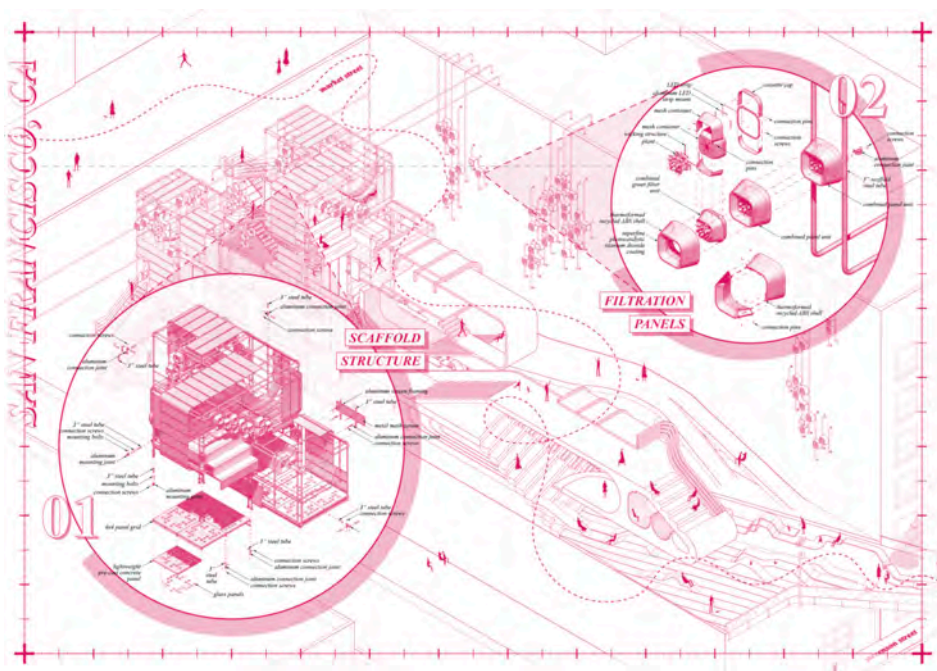
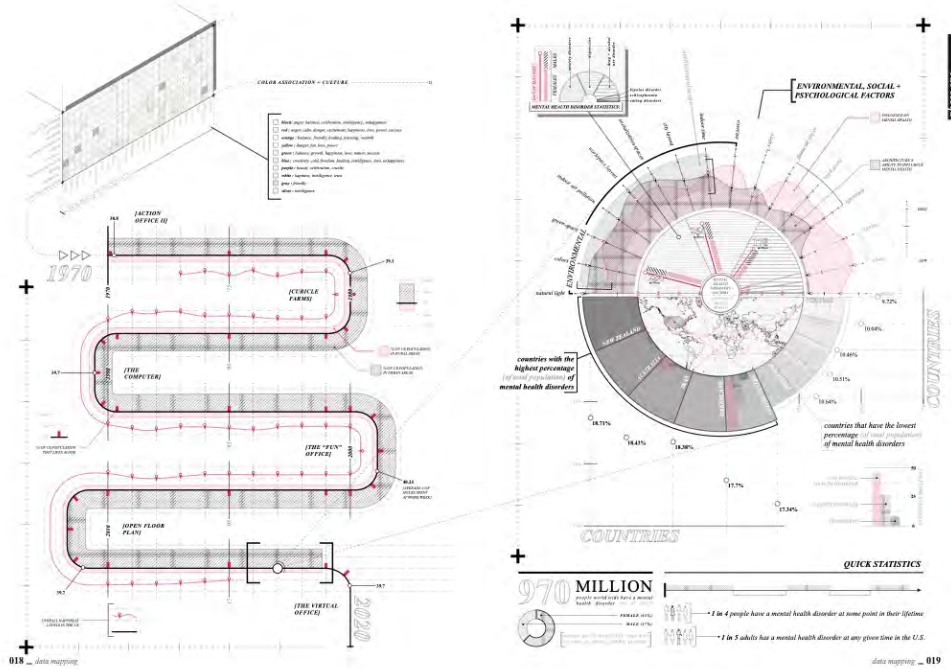


About our design methods

The following is walk through our (partial) project sequence. All projects started simply, then gained in resolution, complexity, and relevance. In our studio, drawing and modeling are viewed as a means of research and as an extension of thinking.

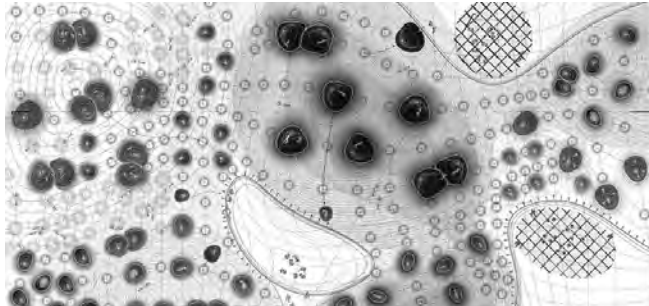
[Data mapping] Getting to know a place

We study a diverse range of information and search for new relationships. Claire Mitchell studied the relationship of income levels, mental health, happiness levels, average hours worked, and country of origin. She uncovered fundamental social and economic issues that impacted her architectural questions. The images below are outcomes of her mapping/design process.



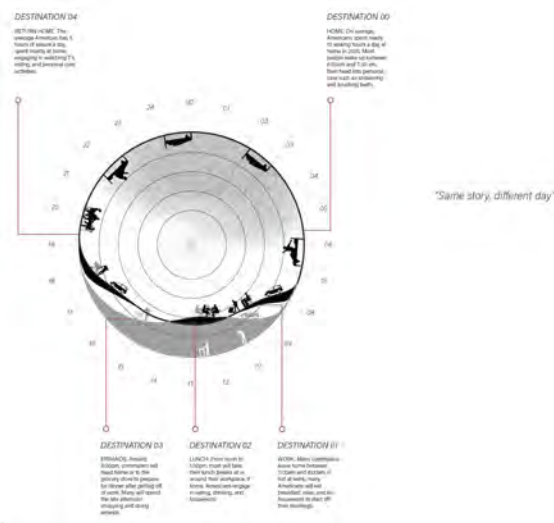
[Site Mapping] Getting to know a place

We look at site as a series of dynamic conditions, rather than a static entity. The project below by Sean Lally is an example of **visualizing normally unseen relationships** (heat and behavior). We also support alternative methods of getting to know a place, through storytelling, interviews, and other creative means. For instance, have a look at this article: http://fieldjournal.org/wp-content/uploads/2016/07/Site-Seeing_Butterworth-Vardy.pdf



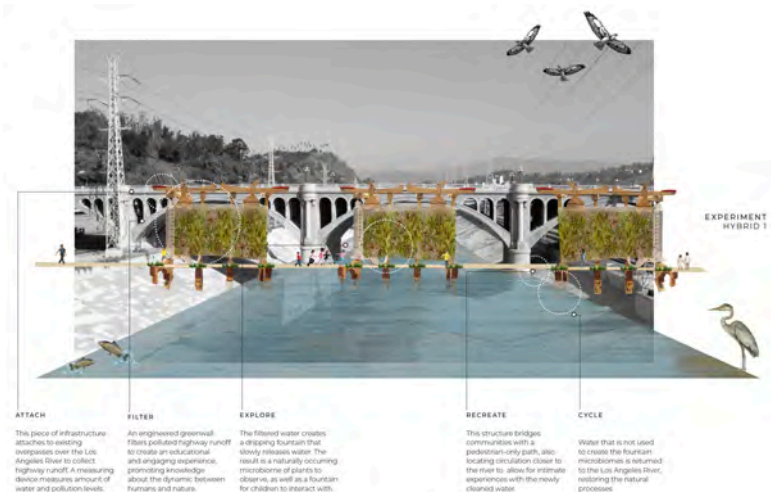
[Behavior Mapping] Getting to know how place effects people

We look how humans use space through observation and research, then communicate findings graphically. The image below is a 24-hour activity estimation of the average America worker.



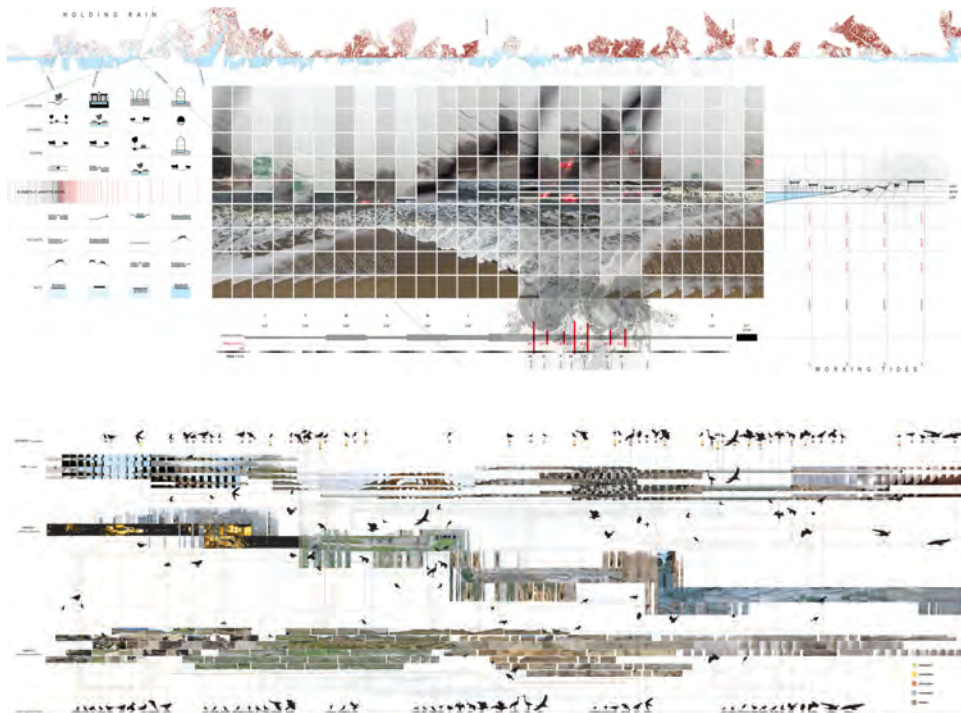
[Process] sketch and collage

We use a wide range of hybrid drawing methods to create dialogue, uncover creative possibilities, and spur the imagination.



[Media] applying photography, hybrid drawing and collage to develop ideas

We often take field trips to interesting sites. The one below is the Moss Landing Power Plant. Photography became a way into **Robin Johnston's** thesis on industrial materials, ephemerality, and space. Hybrid drawing techniques are an important synthesize data and observations, and a previous skill-building workshop with **Dilip da Cunha** on mapping and collage techniques (images at bottom of page).

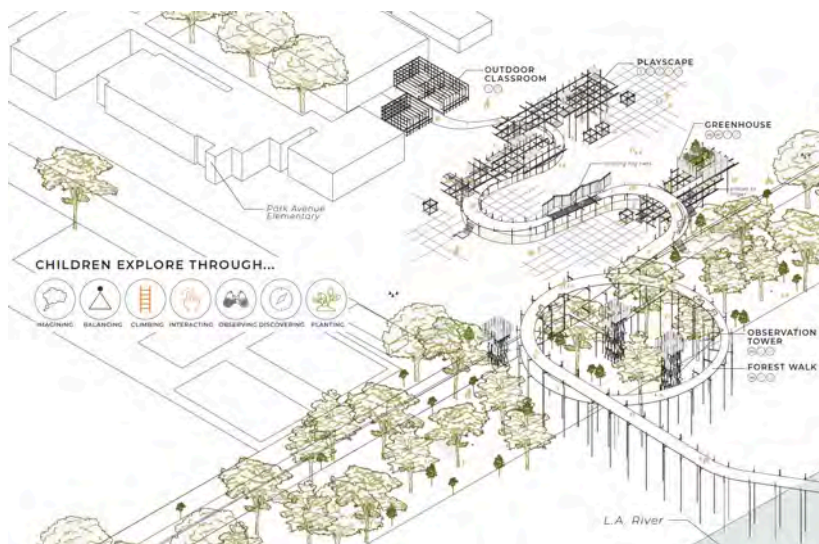


A NEW SHARED GROUND // THE ELEMENTS OF THE KIDRON

The overlay of movements of resident and visiting birds on our photoworks become a new ground for two drawings that explore the generative potentials of intersection between nature and culture, as well as elements.

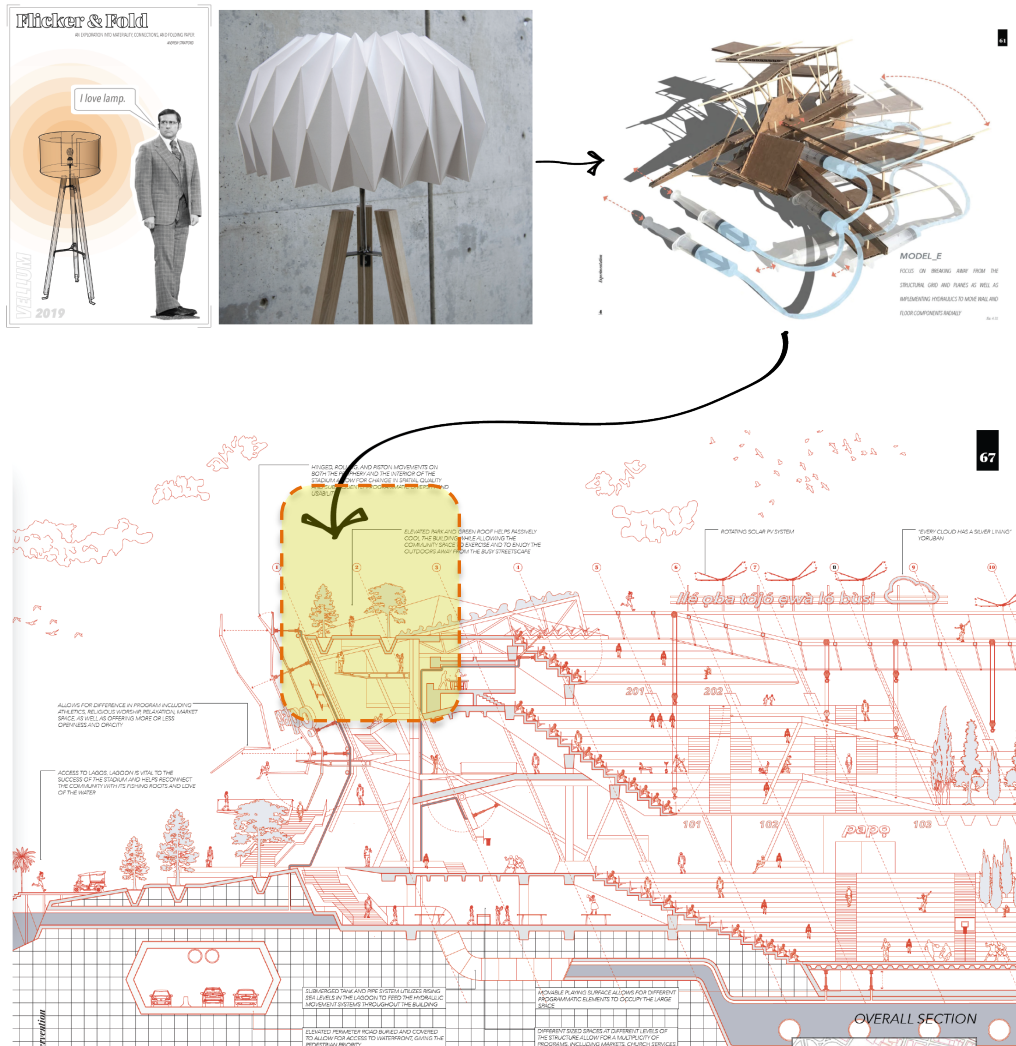
[Drawing] we make great drawings!

We spend a lot of time conveying ideas through drawing. Guaranteed, you will make amazing drawings in the course. Don't worry if drawing is not your strong point at the moment - **we will learn together**. The plan is to use **drawing as a means of discovery**, and as a means of developing ideas. Eloise Hides' thesis, Explorer's by Nature (below), combines aspects of structure, environmental design, and community building for a prototypical outdoor learning environment. Her project began with her reversible Vellum entry (desk/seating) and continued to be concerned with the impact of materials, craft, and tectonics on learning. Full project here: <https://calpolythesis.weebly.com/>

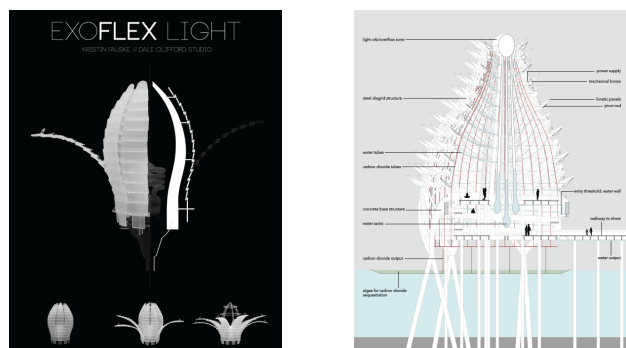


[Vellum]

Vellum is a good excuse to go to the shop. Our studio does well in Vellum, as many have a deep interest in craft and materials. This year, students won the **Milan Prize** and other top awards. The work below shows **Andrew Stratford's** progress through Vellum (study of light/space/folding patterns) to a study model made of flexible components, to a kinetic façade design that responds to changes in venue.

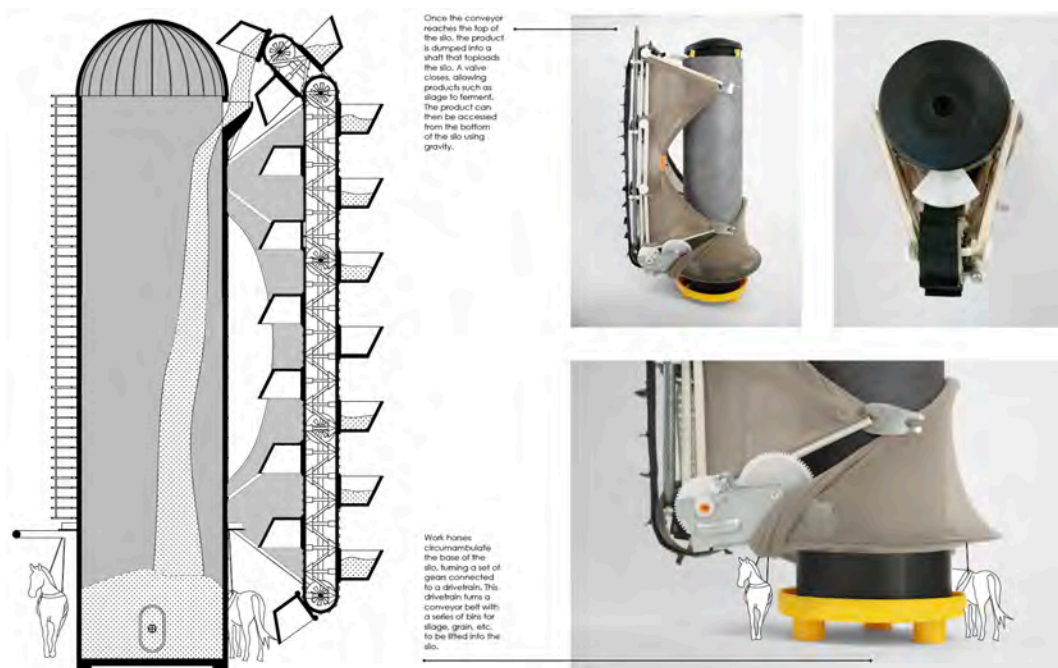
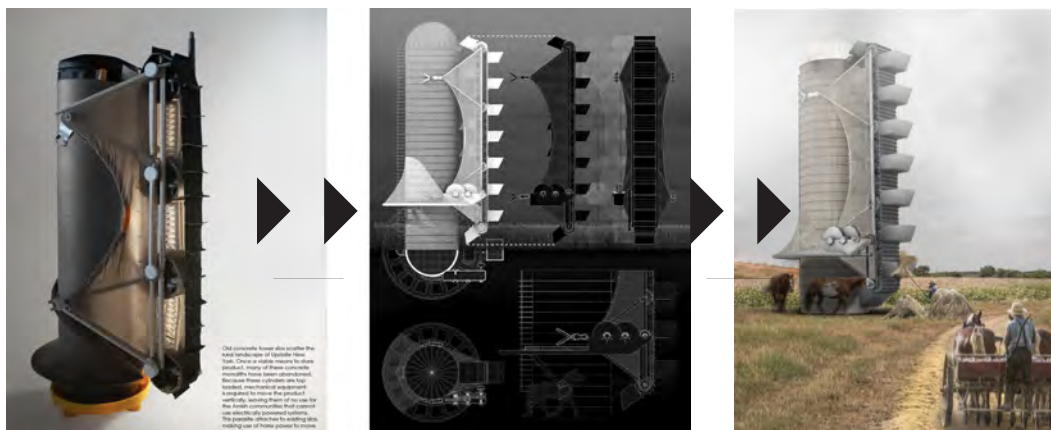


Velum entry that led to the design for a water treatment facility, by **Kristen Fauske**. The project studied the strategies succulents use to store water. Work from her thesis became the winning student entry in the **Biomimicry Design Challenge** and her team is competing for the final \$100,000 prize. A recent team won the \$100,000 Ray of Light Prize and formed a start-up business making water collection devices (modular fog catchers).



[More process]

We often begin experimentally, using available media to develop ideas. When modeling, our ideas are only partially formed, and we gain feedback through the process of modeling (this is very different from having a preconceived idea and then making a representational model). The images below show part of Lewis Wightman's initial idea development process for an Amish grain silo. Starting with a found material modeling assignment - shifting to drawing - then to situating the project onsite. Collage models and/or composite drawings are media that engage us in the fertile fringe of ideas - where not all things are known - and we move non-linearly into worlds of possibility. Then, at the end of the day, we evaluate, edit, and shape the project to the constraints of program, social dimensions, and construction. Then we oscillate back to the world of ideas, and repeat . . .



[Modeling]



Photo from our 2025 exhibit showing a variety of modeling techniques. (Thanks to Jared Miao, Sarah Rhea and Lewis Wightman). These models were built over three weeks in term 3 and demonstrate craft and care for the topic studied. Even the final models are viewed as design experiments, with decisions being continually being made.



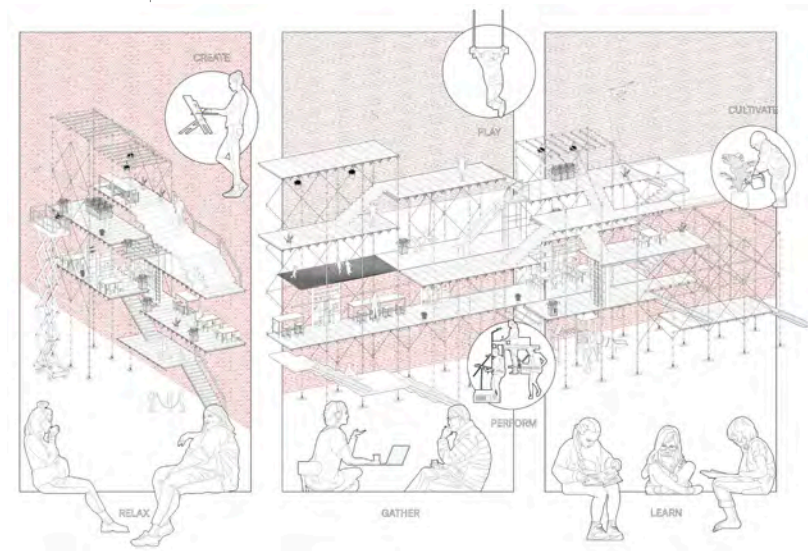
Desiree liked to put things in jars. Who doesn't? Her project engaged time, looking at moisture and degradation - challenging the notion that architecture should be permanent and maintenance free. Her thoughts were that architecture, made from wood, can embrace degradation and become a source of food (and habitat) for other species.

[Detail Show]

Details can be worked out in a variety of ways, from model, to drawing, to 1:1 scale components. **Ryan Daley** on the deck of Bldg 5 with his model for a mobile lab to increase soil health in agricultural areas depleted by pesticides. Ryan's ambition for thesis was to get better at digital modeling. He did, and then went on to study at the Institute for Computational Design at the University of Stuttgart (which is free!).



Project on the community impact of pop-up installations in urban areas by **Annabelle Dovich**. Her research target lightweight structures that could be easily deployed in accordance with community interest, challenging the notion that architecture should be static and permanent.



[One to One_ There's always the possibility we might build it!]



This project is not from our studio, but it is inspirational. I would consider this an experimental test, starting with small scale models, evaluating them, then comparing the spatial effects at large scale.

Well, this is another class, but you can check out some of the design build bits going on at Cal Poly here (<https://calpolydesignbuild.weebly.com>). I put these images here to demonstrate that our thesis studio can engage a wide range of exploration. If we can develop the know-how, the wherewithal, and the chutzpah, we can do most anything. The photo below was a side project when I taught 3rd year. So, most anything is possible in thesis. I think we should leave the door open to building something collective at large scale.



We make things better!

Sometimes, we sit down and figure things out. Morgan (below) communing with his Vellum experiment, a lightweight and packable shelter made from plywood and zip ties.



Why make things interactive and responsive?

Because we need to.

American author, marine biologist and conservationist, Rachel Carson stated "the control of nature is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man." Carson went further and identified the complex, interactive and interdependent network of life and made clear that human action disproportionately impacts the network. The control of nature has been a fundamental underpinning for architecture and engineering and they might well be added to the disciplines in Carson's list. We have entered a more responsive age of architecture, biology, politics, environmental engineering, and computation where the boundaries of our discipline are being redefined.

Advances in computation, technology, and philosophy (among other disciplines) have enabled designers to conceive of a built environment that is in continuous exchange with the local environment. Currently, there is a shift in building design toward systems that adapt to environmental variations such as in humidity, temperature, light, and pollution. Adaptive architectural design varies in its underlying strategies, from the computational and electronic to more passive material-based systems that are reactive to environmental stimuli. An equally important aspect of adaptive architecture is to engage the senses and appeal to the imagination.

More Fine Print: Our plan is to engage with practicing designers and experts from other fields to make more creative and relevant contributions to our own field. This studio is less about naval gazing and more about setting up the prospects to make creative contributions to society.

Here's a short story to help you decide if this studio is a good, loose fit.

a bit about me

I came to architecture through commercial fishing, ships carpentry and sailing. From commercial fishing, I learned the benefits of teamwork, especially when you encounter adverse weather conditions. From ships carpentry I learned a respect for materials and craft. From sailing and study of nature, I realized there is a correlation of form and performance that we intuitively recognize. This observation has led me to value the intuitive and emotive processes of design in tandem with more rational methods of thinking.

On the academic side I studied installation art, industrial design and architecture at Pratt Institute in Brooklyn. At Pratt, I learned to value the visual arts and diversity of thought (as I came from a small town and was immersed in NYC). These experiences led me to graduate work at MIT where I studied design thinking and learned to value the humanity of technology. Most recently, I have directed the CoDe Lab at Carnegie Mellon University where I worked with architects, artists, and computer scientists to explore the poetic, tangible, and social implications of design and technology. This 'creative sandbox' experience influences the studio 401 environment. On the research side, I have worked on bio/emergent materials projects funded by NASA, the Department of Energy, and the National Science Foundation. On the professional side, I have my own practice and I work with larger architectural firms to add potential to their projects through emergent materials applications.

CURIOSITY. I bring to thesis an interest in creativity drawn from my experiences from working with various disciplines that include the arts, biology, and industrial design. I also bring a strong interest in design experimentation at 1:1 scale and developing ideas through playful making and testing. As a teacher, I am interested in encouraging curiosity, learning, and innovation. As an architect, I am interested in bringing thoughtful and socially relevant architectural experiments into the world.

I believe that small things make big differences and that great things start from the bottom up. In this spirit, our studio shares skills, and to some degree, there is a collective investment in each thesis project. So, I look forward to what we will achieve **together**. And, to make a loop, (from the intro) the point of thesis is to develop skills that give you **agency**, to make a more equitable, resilient, and imaginative world, and positively affect people's lives through design.

Contact me if you would like to know more about the studio. drcliffo@calpoly.edu

