"I try to a create a forum where everyone doesn't have to mold into the idea of what's expected in design. We obviously have a creative vision and protocols, but there's flexibility to allow for wild-card ideas."
Lindsey Adelman on how her experience at RISD influences her approach to her office.

Prospectus

Our studio is a human-centered maker-thinker space where ideas are developed and discussed. As a studio, we are interested in making a difference through the creative and social enterprise of design. The term 'Responsive' or 'Adaptive' applies to our work and signifies that architecture can better adjust to human needs and environmental change. This topic is quite open and suggests that we conceive of buildings as interconnected and resilient systems and that the built and natural environments could be more seamlessly interwoven.

This studio supports alternate modes of thinking and curiosity. It is designed to inspire the imagination. As Ken Robinson notes, 'creativity is as important as literacy,' and our class will open new conversations for idea development and create a climate of possibility. We all have artistic sensibilities, though our standardized educational system has made us fearful of making mistakes. Once fearful, the prospect to make discoveries is diminished. I think it is important to remain playfully experimental. In this course there is the opportunity to work individually or collectively. Projects range from individual work to exploration of construction through design-build projects. If you are interested in this approach to thesis, contact me and/or come visit the studio. dtcliffo@calpoly.edu

The structure of the studio is a 'loose-fit' model to enable skill building and design exploration. The studio method takes from firms such as IDEO, Snohetta, Allied Works and others that look closely at the opportunities afforded by design, materials, construction techniques and knowledge exchange. We support creative thinking and skill development by operating as a collective, continually drawing from the experiences and abilities of those in the studio. In this studio culture, an individual consults with others to advance their own work.

Often students find ways to get their ideas out into the world and many have placed or won national and international competitions.

I just started a site (this morning) with examples of student work. More to come.
https://calpolythesis.weebly.com

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

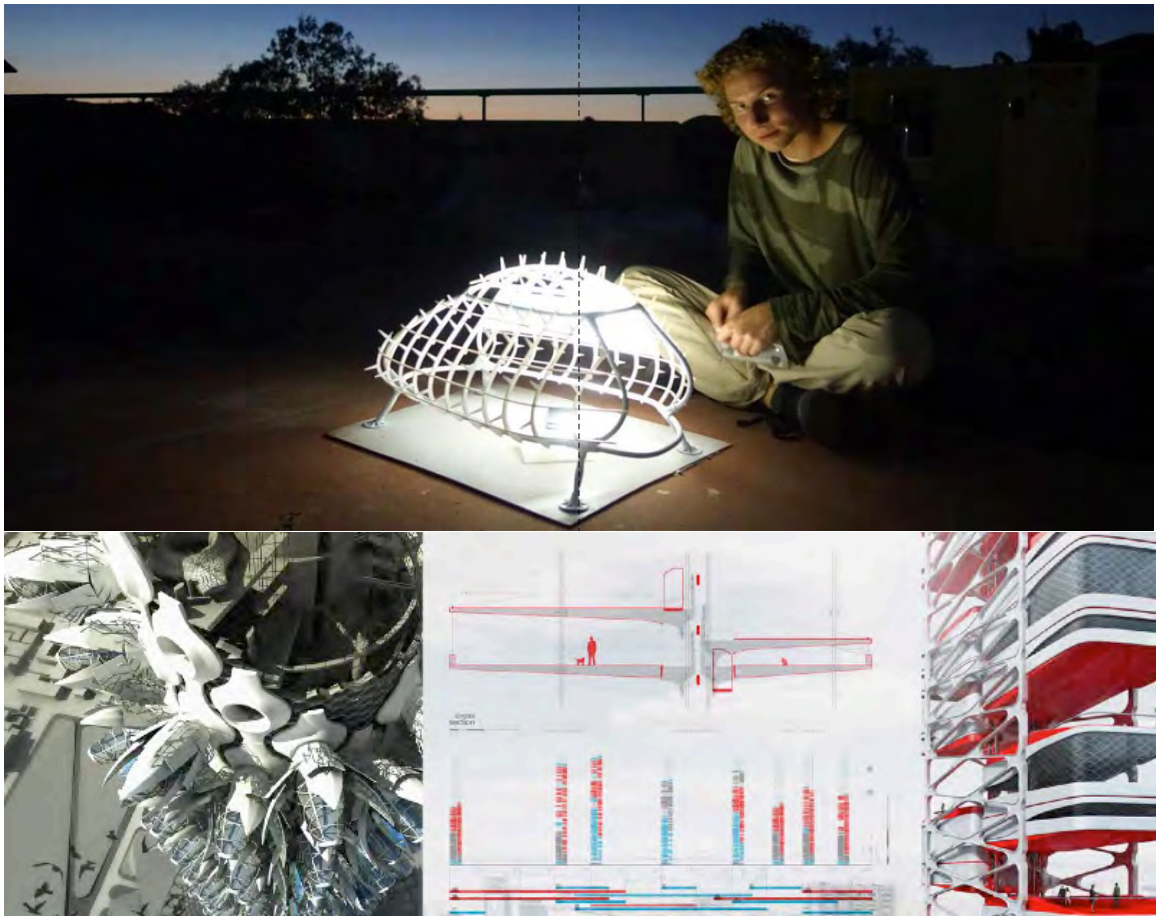
WHO AM I? I came to architecture through commercial fishing and ships carpentry (rebuilding wooden sailboats). From commercial fishing, I learned the benefits of teamwork, especially in adverse weather conditions. From ships carpentry I learned a respect for materials and craft. From sailing and study of nature, I realized there is often 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. These studies 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 interactive prospects of design and technology.

CURIOUSITY. I bring to thesis an interest in creativity drawn from my experiences from working with various disciplines that include the arts, biology, industrial design, and computer science. I also bring a strong interest in design experimentation at 1:1 scale and developing ideas through the 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.

DESIGN MATTERS. During thesis, we will apply your thoughts and skills to positively effect people's lives through design. This search will take a variety of paths dependent on your individual | collective interests and experiences. We will explore the artistic, poetic, and pragmatic aspects of our field, and with this spirit, we will develop highly imaginative propositions that will impact current societal issues through the medium of architecture.

BUTTERFLY EFFECT. I believe that small things make big differences and that great things start from the bottom up. So, I look forward to what we will achieve together.

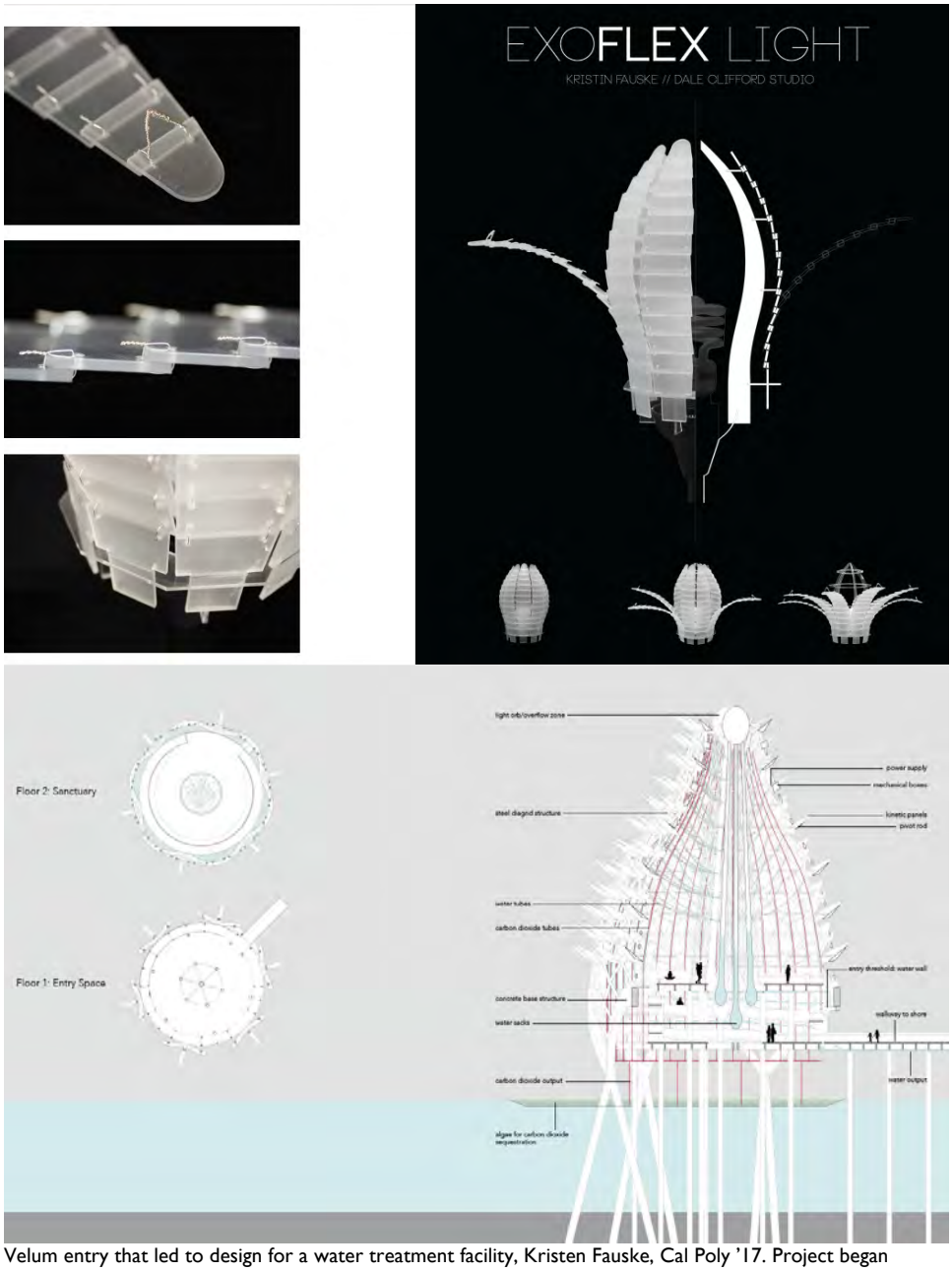


Ryan Daley (Cal Poly '17) on the deck of Bldg 5 with his model for a mobile lab to increase soil health in areas depleted by pesticides. Images from recent Evolo competitions that propose adaptive approaches to tall buildings.

Why make things interactive and responsive?

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 are now entering a more responsive age of architecture, biology, 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.



Velum entry that led to design for a water treatment facility, Kristen Fauske, Cal Poly '17. Project began with the study of the strategies succulents use to store water. Work from her thesis was the winning student entry in the Biomimicry Design Challenge. Her team is now competing for the second stage $100,000 prize.

What can nature teach us?

Systems in nature have long been inspiration to architects, designers and artists. Imagine a built environment that disrupts conventional wasteful approaches to design and construction. Imagine a better way to design, a better way to build, and a better way to live. Students in this studio often identify problems implicit in the world, then look to the resiliency of natural systems to guide their work. I am open and supportive of this approach with background experience working with bio-inspired products. Recent students have won both the student prize and the business incubator prize ($100, 000) from the Biomimicry Global Design Challenge.

Adaptive system (Evolo competition) and Strandbeast by Theo Jenson. Jenson's project illustrated a low-tech approach to a project that interacts with wind. The system serves as a responsive capacitor, harvesting and storing wind energy, and then moving when the energy is released.

On creativity and the culture of open source exchange

Creativity (as outlined by the MacArthur Foundation) is regarded the human endeavor where individuals and teams gain new insight by connecting the seemingly unconnected in significant ways. Creativity is built upon risk-taking and a playful and experimental attitude - which requires confidence and trust. As in the most creative and effectual design practices, our studio will construct a culture of experimentation and knowledge exchange. The studio is considered open-source, where ideas are freely exchanged and the momentum of the group benefits the individual.

These thoughts are structured on professional models I have experienced in multidisciplinary practice, specifically Molecular Geodesics (biotech) and IDEO (industrial design). These companies that supported design-thinking skills in open-source, non-hierarchical working environments, effectively giving voice to young designers while positioning them next to experts. Key to creative development in these companies was working with motivated and knowledgeable people and the free exchange of ideas.

The Fine Print: The teaching method is not prescriptive. This means you are curious and motivated to think for yourselves, to think your way into, and out of, a problem, and to invest time and energy to creatively address your thesis to the best of your ability. This may cause discomfort, as you will be supported but not be told precisely what to do. The teaching | learning method is intended as a 'loose fit' model that is fluid and adaptable to new scenarios as they develop.

FAQ

The questions below are intended to help you make decisions regarding choice of studio and reflect questions I have received from students.

Why do you teach?

- I believe I can use my inclinations and experience to help others develop their creative voice. Accordingly, I have high standards and expectations such that I can help students to realize their potential.

Some things common to great teachers that I have had:

- They elevate your expectations of yourself, 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 – to make a difference.
- They profess that we are not confined by our discipline, but empowered to exchange knowledge across disciplinary boundaries.

How is responsive architecture defined in this course?

- Responsive architecture is adaptive to humans, animals, environmental stimuli, or other triggers. This definition is inclusive of both high and low tech studies, it is inclusive of both static and dynamic solutions, and it is inclusive of ephemeral and more durable speculations.

Can I construct my project at full-scale?

- Yes
- I am also trying to start a Design|Build course that may be taken in parallel to Thesis.

Do I have to construct my project at full-scale?

- No, though I do ask that you learn from your models and that they 'work' in some way, meaning that you gain some sort of feedback from them.

What's construction got to do with it?

- I am a strong proponent of developing ideas though making 1:1 scale design experiments. I believe that creativity often stems from immersion in a problem and from the equitable engagement of hand and mind.
- Thinking through the fingertips. I believe that ideas are often generated from physical engagement – in our field, that is the act of making, of constructing, of bringing into existence. Often during this process, possibilities are uncovered and ideas formed.

I want to make a difference. Can I apply my interests to the real world?

- Yes. You may apply your work to current socially relevant issues. I only ask that your process is creative and rigorous. For instance, I just met someone studying water policy in rural Indonesia. One might partner with a graduate student in the field of rural water policy and develop an innovative strategy | architectural solution that engages the problem of water harvesting, storage, and distribution – all while consider the local technological and social context.

OK, what about project ideas. What kinds of projects are ok?

- Most any project, as long as it is undertaken with rigor, proceeds experimentally, is compelling, and is responsive in some way.
- So there are lots of possibilities!

I'd rather work with straight lines as opposed to curves. OK?

- Sure is. Some of our best buildings are derived from orthogonal relationships.

Who else is involved in this studio?

- That's up to us. In previous thesis courses, students have assembled committees that include experts from architecture and other fields. For instance, you may form a committee that includes a team from architecture, the arts and\or the sciences. If interested, I will help form committees that increase the depth and quality of your current work and potentially lead to future collaborations.

I'm into soft robotics. Can I use an arduino? How about grasshopper and maybe some genetic algorithms?

- Yes, but not required. I ask that students explore their ideas rigorously. This may include analogue or digital means, high-tech and/or low-tech explorations. We consider technology broadly, creatively, and intelligently.

Can I design more temporary, ephemeral systems, or does my project need to be more permanent?

- Design contributes to society in many ways. Some projects may last a mere instant while others may be highly durable. I ask that you consider the nature of materials and construction, regardless of permanence. *In an initial project in the last lab I directed, a student installed air pollution sensors on kites (sensors reflected air quality with colored lights on the kite) and traveled to Beijing and flew them with a crowd of people. Her activist interests put power in the hands of an urban population by demonstrating air quality with a traditional activity (kite flying). This type of project could imaginatively lead directly to architectural application.*

Will this course set me up to enter practice?

- Yes. Exceptional design firms have been impressed with the high quality, thoughtful and socially relevant work that we produce. They also are interested in the ethic of teamwork and skill swapping found in this studio. The coursework will also support those that plan to start their own critical practice.

Will this course set me up for graduate work?

- Yes. The coursework supports an ethic of discovery through design research, qualities that will support a strong graduate school portfolio.

Is this class 'tech-heavy?'

- No. Architecture is highly intertwined with technology and we will explore its creative side - and how it can lead to new ways of thinking, building, or connecting us with nature. We also put emphasis on skill-swapping so students learn from each other and develop interests and expertise. In this way, we get help when we need it and are more likely to playfully experiment and make discoveries.

Will this class require a lot of work?

- Yes

Will this class be a lot of fun?

- Yes. The course is built on playful design experimentation, taking risks, and intellectual, emotive, and design growth.

Contact me if you would like to discuss the course. You are also encouraged to visit the studio (5-401).
dtcliffo@calpoly.edu

IAAC *MacKay Lyons Ghost 6*

"In an increasingly globalized world it's nice to reaffirm a way of making architecture about place – its landscape, climate and material culture." MacKay Lyons, Ghost Studio, Experiments in Wood Framing. I find these projects inspiring for their nuanced approach to the tradition of wood framing. The projects challenge one to reconceive the way we use 'off-the-shelf' building products. So, with a given amount of relatively low-cost material, how might you challenge the way we build? Could be a thesis question that is explored at large scale.

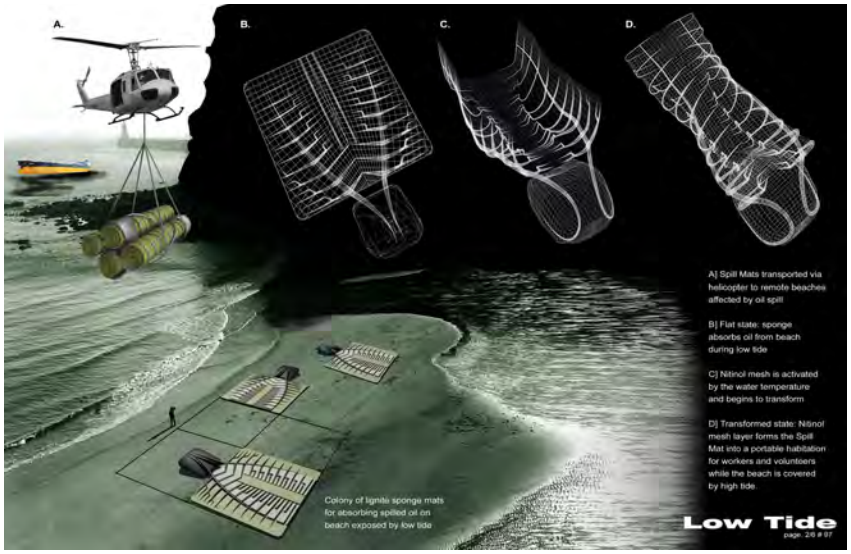
481 Studio Description_ F|W|S

The studio "engages the development and employment of a design project (most often - but not limited to - a building proposal) that demonstrates the findings, proposals, and challenges resulting from the thesis inquiry. In essence, the studio consists of a hypothetical, built demonstration of the thesis inquiry." The above is a concise description from Prof. Jonathon Foote.

481 supports open-ended architectural research and is structured as a collaborative design laboratory. Projects may be developed individually or collectively, in ether case, the studio will act as a design collaborative that supports the free exchange of ideas. As a studio we focus on developing creative thought processes with application to current societal needs. The umbrella topic is 'Responsive Architecture' and posits that a more resilient approach to design will better serve humanity. Under this umbrella, we develop thoughtful and radical interventions in environmental contexts, be they densely urban conditions, post industrial cities, or other areas that could benefit from exploratory design thinking.

At the intersection of architecture, ecology and related disciplines, the coursework draws from the creative application of vernacular and emergent building approaches. Site, environment, infrastructure, culture, morphology, materials and fabrication process are key drivers for project development.

The images above are examples of common materials used in uncommon ways. To me, these are both creative research projects based in an interest in materials research construction technology.



Self-deploying sponge mats for oil collection after a spill. Exploration of geometry, computational form-finding, and temperature reactive materials. Student project

The spectrum in thesis studio is broad and may include traditional means of adaptation (operable components such as doors, windows, roofs and walls) or more radical and speculative means of adaptation (emergent materials and technology transfer from other fields). It is likely that your project will engage design at a range of scales: component, building systems, urban systems, and ecological systems – and at some point in the design process, we will resolve projects to a high level of detail. The studio will draw from the arts and the sciences, and from the topical areas below.

Materials research

- Rethinking traditional materials of the study of emergent materials that give architecture the prospect to exist in varied conditions. For instance, previous projects have studied methane capture for construction on disrupted biotopes such as landfills.

Construction technology

- In-depth study of methods of assembly. These may include study of traditional framing systems (Ghost Studio) or the craft of wooden boat building. Study may also include more advanced and speculative methods of construction including technology transfer from the automotive industry, aeronautics, or composite Americas Cup sailing technology. The field is open.

Systems thinking | Learning from nature

- This area is of interest to better understand the porous boundaries between living and non-living systems and to view nature as a model network of interactive systems, and to observe that animals and plants have evolved a large variety of reliable and relatively simple mechanisms to adapt to environmental fluctuation.

Technology transfer

- Study of a field that may bring new prospects to architecture. The field is up to you and could vary from bicycle mechanics to biology.

Projects may be individual or collaborative.*

Interested? Contact me or stop by the studio.

*Collaborative projects must be accompanied by an approved work plan. I support individual and collaborative efforts and help determine if collaboration is the best path.