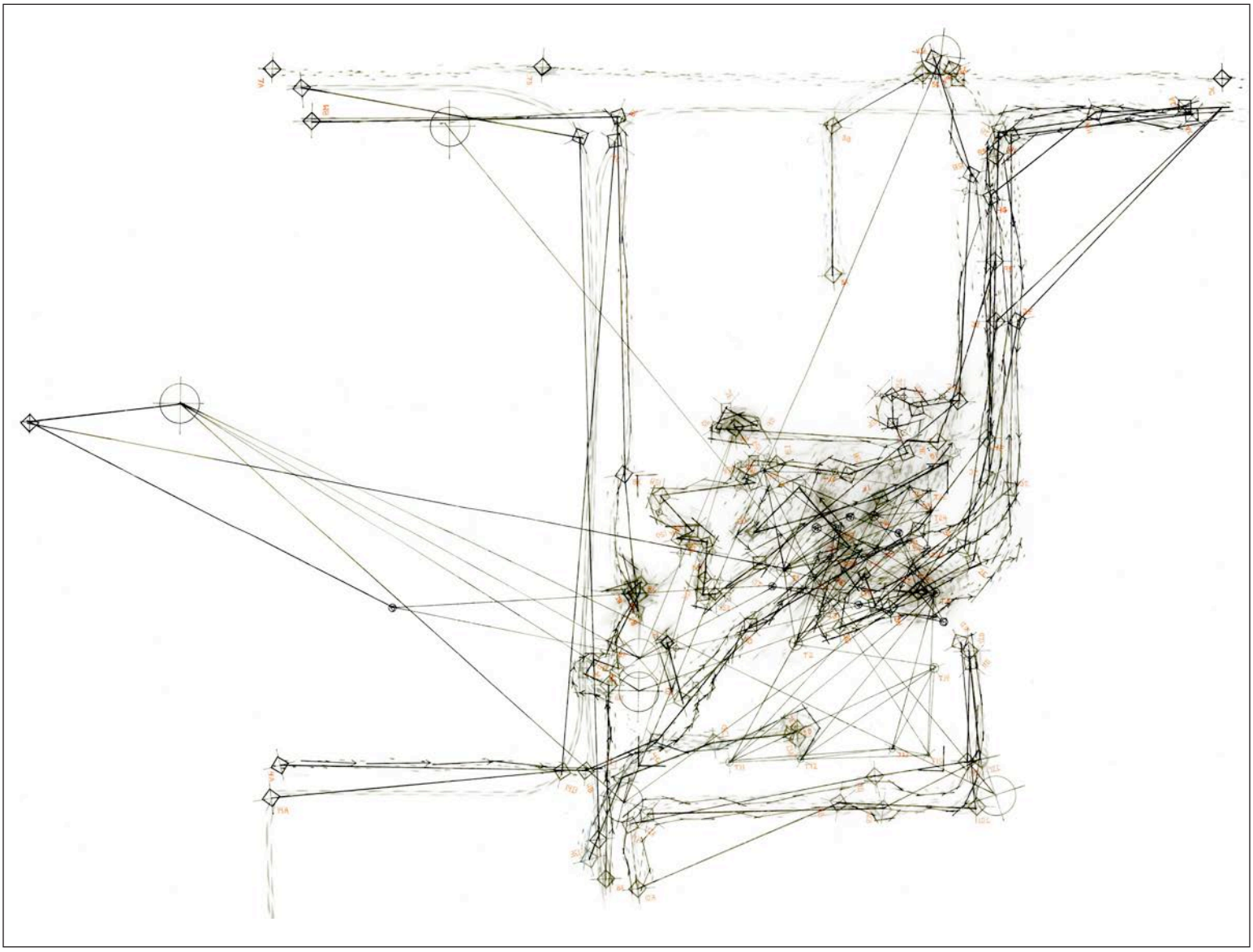


Christina Shivers

Teaching Portfolio

Teaching Portfolio—Technological Craft in the Age of Environmentalism

Research Elective
Georgia Institute of Technology
Spring 2024

This research elective was taught in the Spring of 2023 and asked how today's architectural craft can reclaim its connection to the environment through the analysis of fabrication technologies across history and into the present. To investigate this history, this course paired an historical political, economic, or social condition with an accompanying architectural construction technology; this contextualization of architectural technologies in historical conditions was used to reveal important lessons in human labor and the use of the natural environment, and historical analysis became a method to chart new pathways for architectural craft today and into the future.

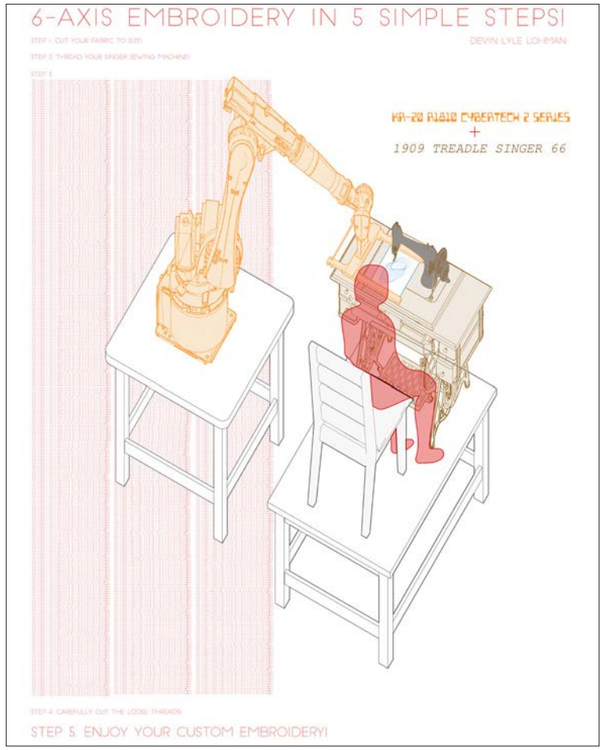
Taught in two halves, the first half of the course consisted of lectures and readings, and discussed architectural history through the critical lens of technological, environmental, and labor histories. The period of investigation began roughly at the beginning of the Industrial Revolution—and accompanying "enclosures of the commons" in Europe and in colonized territories—and looked to the architectural technology of the balloon frame; and ended in the present with discussions surrounding sustainability, AI, and robotic manufacturing.

Following the first half of the course, students then worked individually to develop a 1':1' scale architectural detail or object that explored a true-to-scale joint, connection, or tectonic assembly. These models were required to exhibit an effort to integrate a component of human labor and "natural labor" as discussed in class, alongside advanced fabrication technologies. Students investigated the novel use of materials, methods of tooling and assembly that empowered the laborer(s), and innovative uses of "natural aesthetics". This assignment challenged students to begin hybridizing in their design process, and many investigated how fabrication technologies can be "hacked" to integrate human and natural laborers in their use.

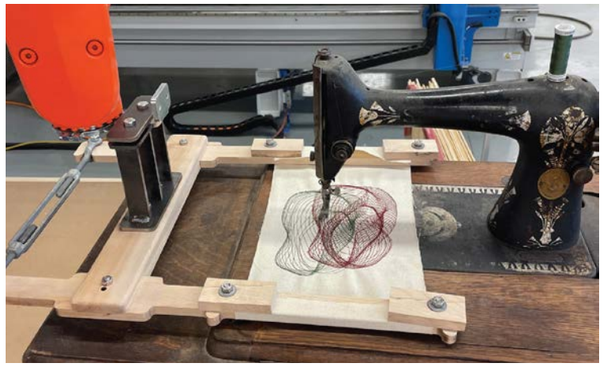
Braden McKnight

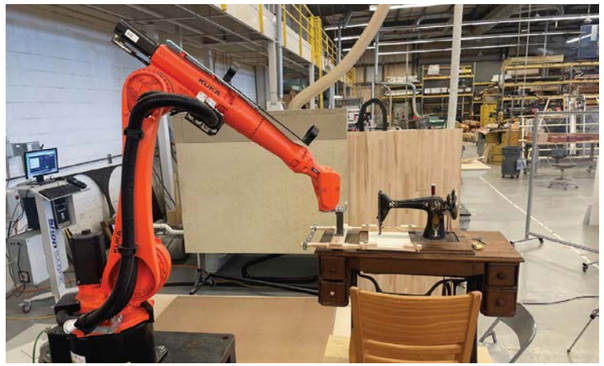
Braden McKnight

Gloopy Chair, Braden McKnight
The project to the left investigated the plastic "t-shirt" shopping bag as both an historical artifact of postwar capitalism, and a ubiquitous environmentally destructive object found across all ecological conditions. Rather than focusing on how the bag is a destructive force, however, this student investigated how its ubiquity makes it a new natural resource or easily found material. Through a process of pressing bags into a standardized sheet, the student then sought to re-create the Eames chair but with this new material. The chair's frame was created using a CNC wirebender, and the plastic bag sheets were melted over the frame to bond it together.



Devin Lohman

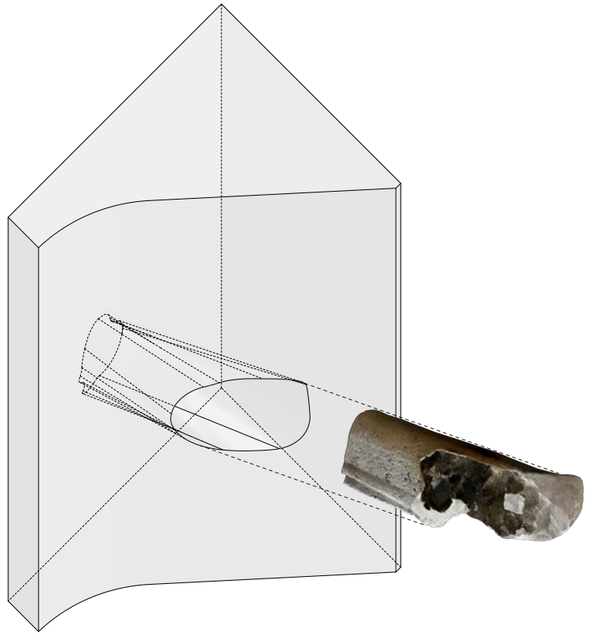




Devin Lohman

6-Axis Embroidery, Devin Lohman
This project sought to create a dialog between advanced manufacturing and human craft, and utilized textiles as the site of investigation. Advanced manufacturing methods and computation have taken significant inspiration from weaving—examples include Ada Lovelace's research on Jacquard looms and early computation, as well as the research pavilions produced by Achim Menges—and modern labor and technological history began in the textile workshops in North England and New England. In exploring this relationship, this student acquired a Singer sewing machine from 1910 and installed it in close proximity to a Kuka robot. The student then used the robot to guide the Singer's sewing patterns while a human bystander used the pedal to run the machine. This process created a truly hybridized form of technological craft.

Ryan Stoddard



Ryan Stoddard

Cyborg Inlays, Ryan Stoddard
This project repackaged styrofoam packaging waste and aluminum cans through developing a process of “inlaying”. This student utilized the CNC wire foamcutter housed at Georgia Tech; the foam cutter is notoriously difficult to use and the student allowed the tool to create emergent artifacts cut from the foam waste. The foam object was then used in a process of casting called “lost-foam casting” in which molten metal—in this case melted down aluminum cans—is cast on and destroys foam. The resulting artifact was then combined with the original foam as a hybridized inlayed craft object

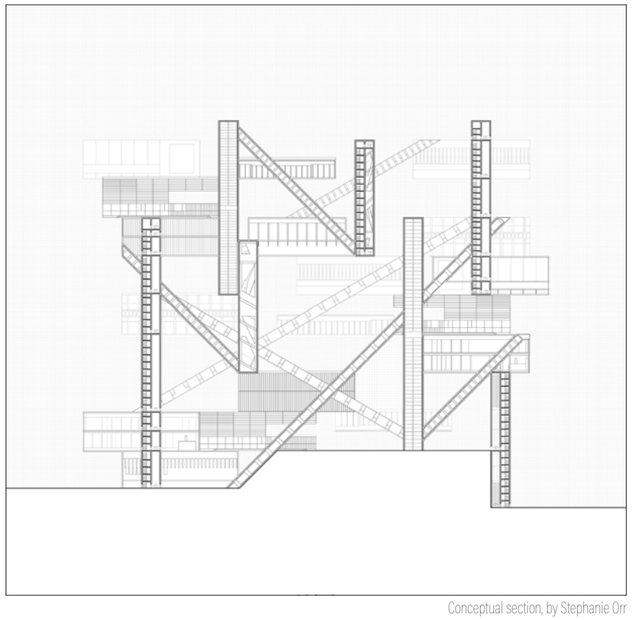
Labor and Clay, Kamili Chambers
This project utilized the clay 3D-printer housed at Georgia Tech in order to explore a process in which human intervention within a technological process can enhance and alter that process. In this instance, the student created a tea set—inspired by the original teapot utilized in early rendering software—using the printer, and developed a series of movements and insertions into the printing process to alter the machine’s registration. In this manner, the tea set created was only wholly unique and only able to be reproduced through approximation of the human interventions.

Kamili Chambers

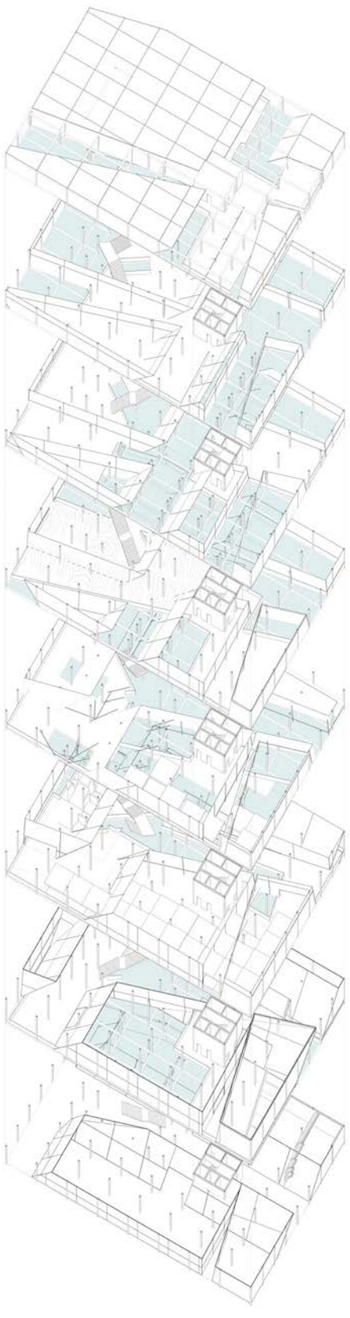
Teaching Portfolio—Sophomore Studio

Georgia Institute of Technology
Spring 2024

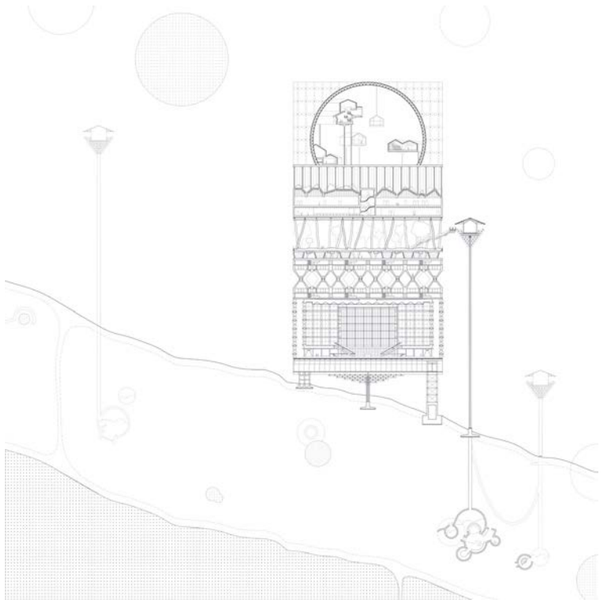
This studio explored a series of experimental drawing and modeling techniques in the larger design of a “Culture Factory” located off the Beltline in Atlanta. The “Culture Factory” program and exercises were heavily inspired by Cedric Price’s “Fun Palace”, and students explored techniques for developing programs, drawings, and tectonic systems based on the experimental architectures of the 1960s. The following drawings and models represent a variety of the work produced in the studio over the semester.



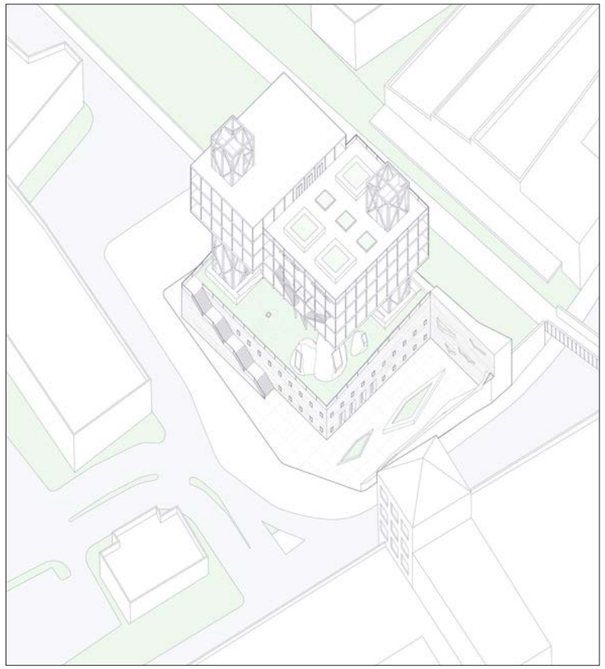
Conceptual section, by Stephanie Orr



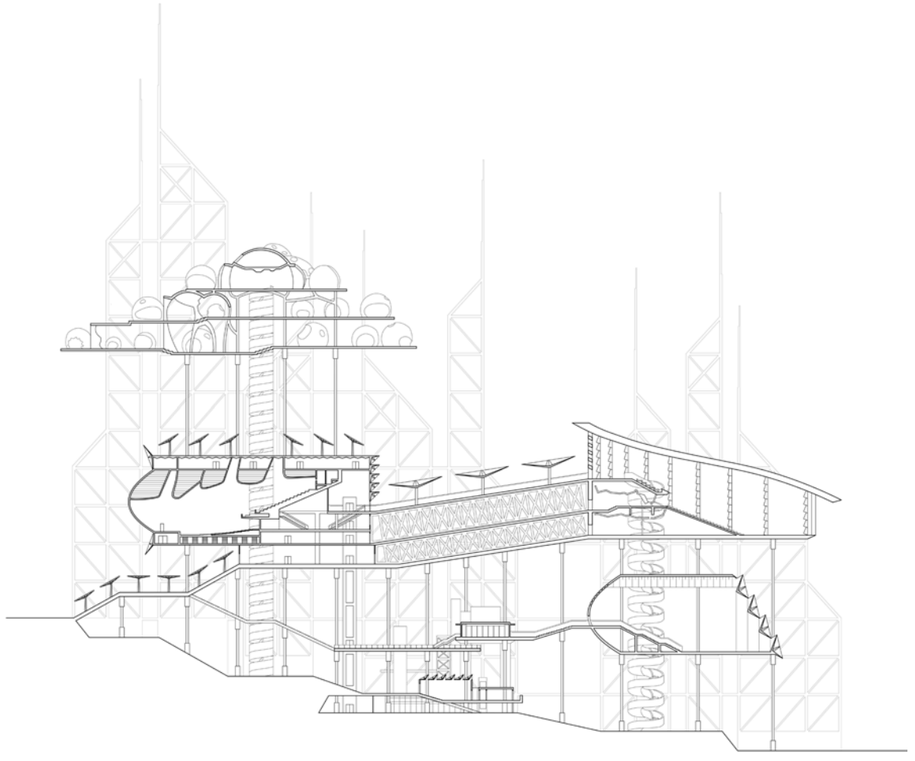
Final Exploded Axon, by Stephanie Orr



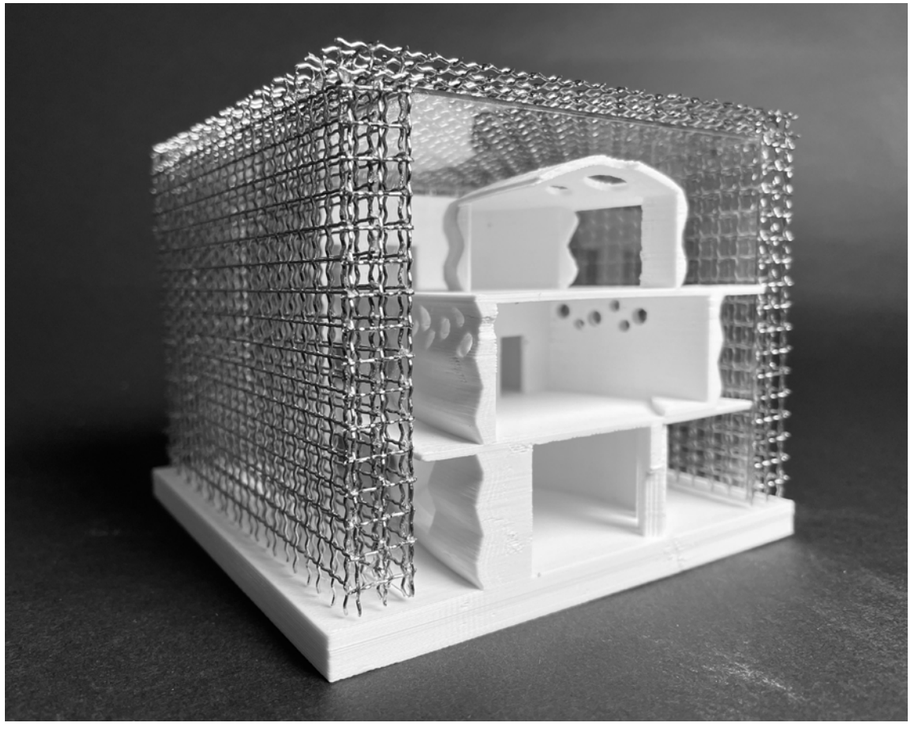
Conceptual section, by Ella Newvill



Final Axon, by Ella Newvill



Conceptual section, by Riquelme Pineda-Ibarra



Final model,
by Riquelme Pineda-Ibarra

Conceptual model,
by Emilio Lachica

Conceptual model,
by Paula Moyano

Conceptual model,
by Paula Moyano

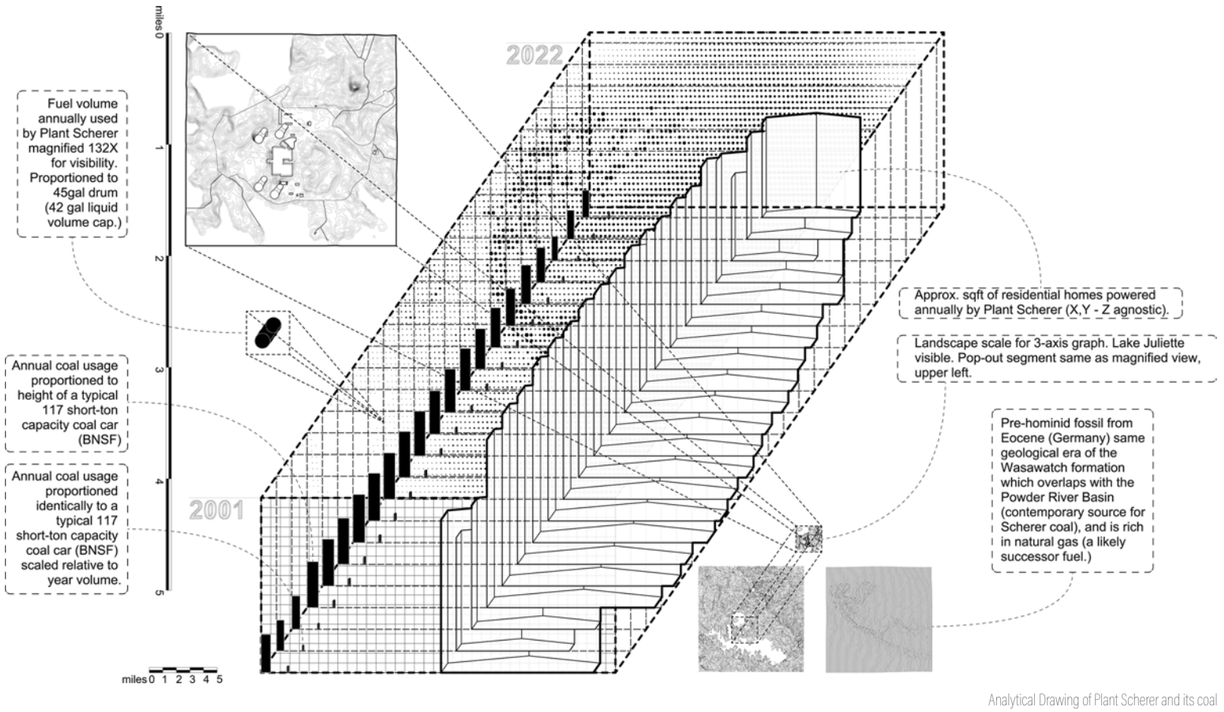
Teaching Portfolio—Forecasting | Energy, Climate, and Speculative Architectural Futures

Design and Research Graduate Studio
Georgia Institute of Technology
Fall 2023

This studio for graduate students in their final year of study explored energy and architecture through the lens of "forecasting". Forecasting—i.e. predicting the future—is fundamental to continued economic growth via energy use. Numerous agencies, corporations, and academics make their living based on their ability to predict both demand for future energy use as an indicator of perpetual economic growth. While this is lucrative, it is also fundamental to continued carbon emissions and environmental exploitation. In critique, this studio will subvert this form of prediction in favor of a process of forecasting as method. How can forecasting be used to fundamentally alter the connection between energy use and economic processes, particularly in relation to the built environment?

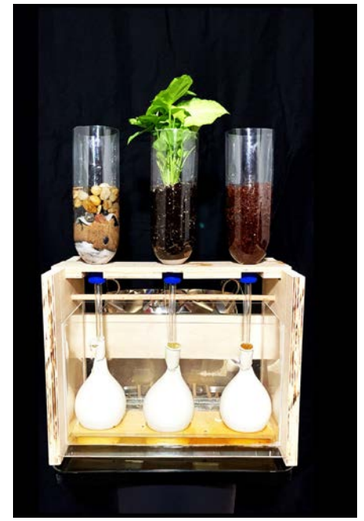
This studio was sited at Juliette, GA, a town in the shadow of one of the largest coal-fired power plants in the world, Plant Scherer. The plant is scheduled to close in 2028, leaving the town in economic jeopardy. Additionally, the plant has created a health catastrophe for the town's residents through the improper disposal of coal ash in the local water supply. This site posed significant challenges, and required students to forecast how their designs would exist in the future, and ask how they could alleviate some of the environmental and social harm done to Juliette's residents and its surrounding landscape.

The students were required to develop a "forecasting machine" composed of an analog artifact and a digital interface, the "forecasting machine" exercise began with the creation of a physical model designed to respond to an environmental process located at the students' selected site around Plant Scherer or Juliette. The "forecasting machine" assignment structure sought to displace commonly held notions of technological solutions to climate and social crises, and these machines took on a playful component, while also prioritizing the emergent possibilities inherent within exploration. These machines subsequently were used to develop the students' final projects.

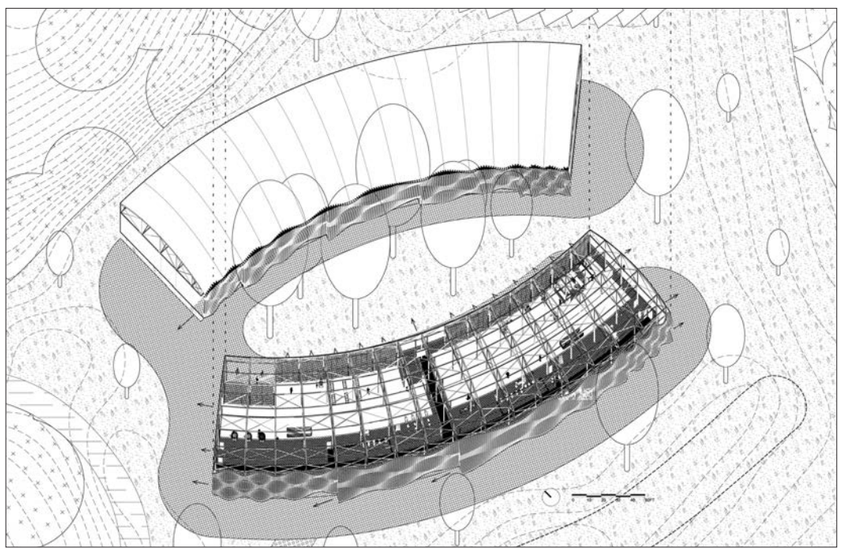


Analytical Drawing of Plant Scherer and its coal network, by Chris McCarthy

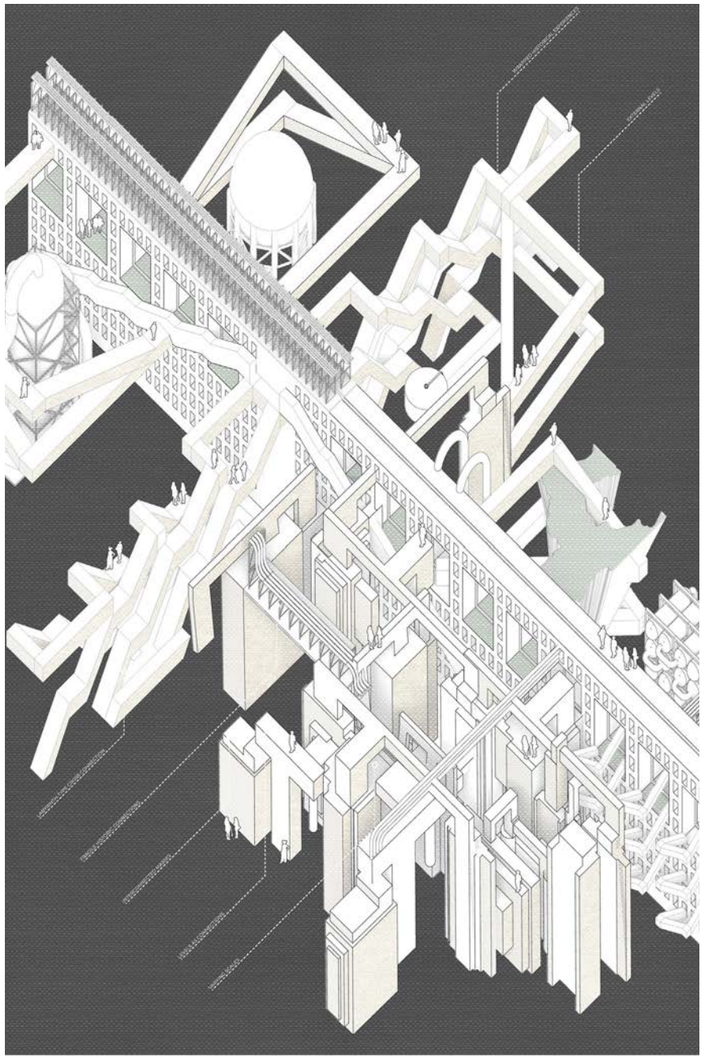
Forecasting Machine, by Howard Lan



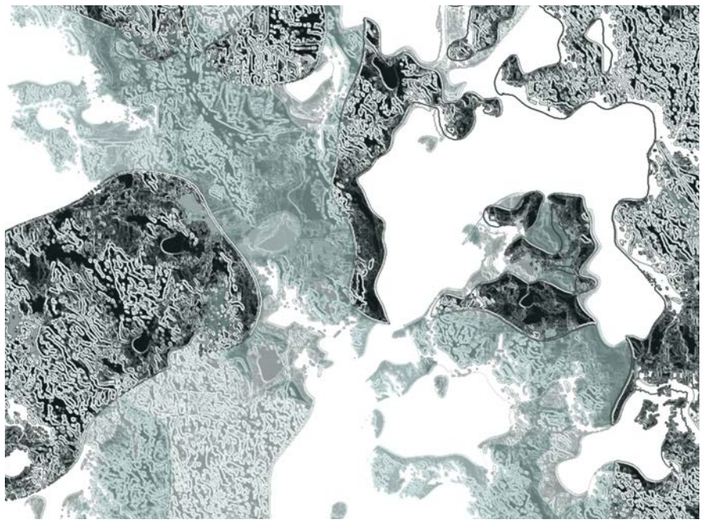
Axon drawing of a multigenerational village focused on healing, by Juyoung Cho



Site Plan and axon of a makerspace built for rehoused Juliette residents, by Chris McCarthy



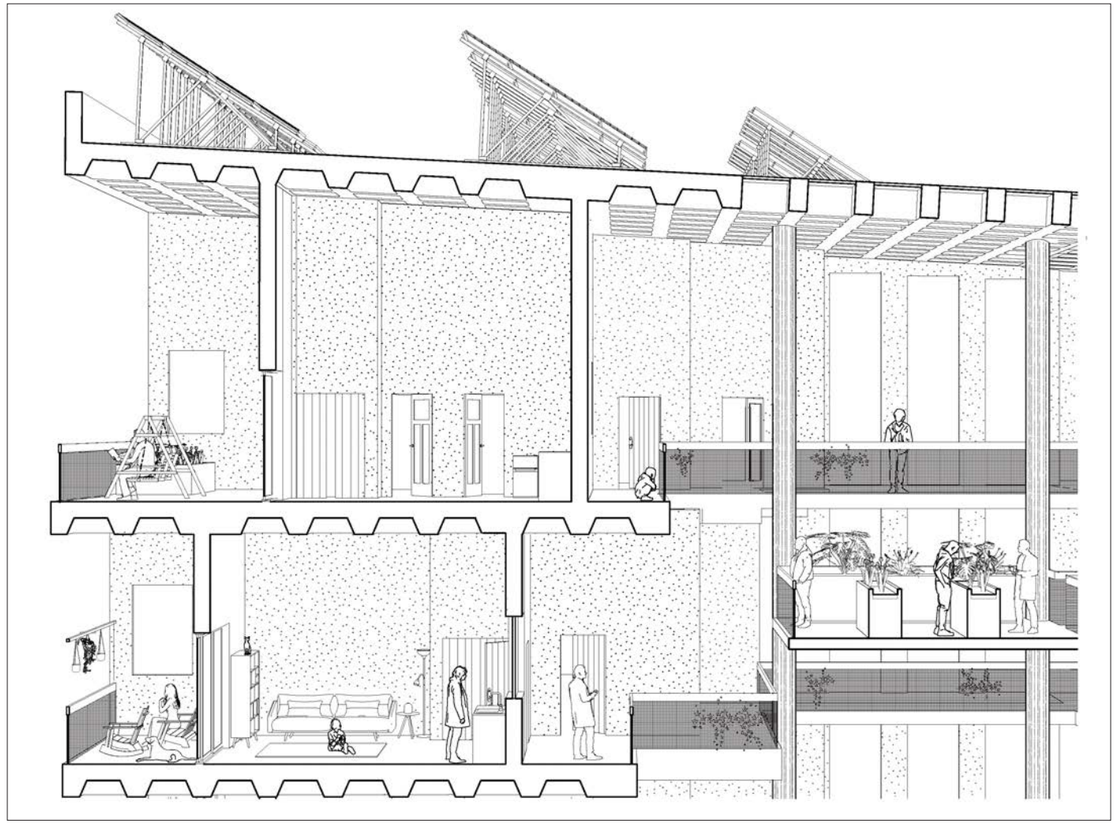
Conceptual Axon for an infrastrucutral architecture designed for water and recreation, by Shantanu Parikh



Conceptual map created using the student's "forecasting machine" and Touchdesigner, by Ruthu Chandrashekar

Teaching Portfolio—Housing and Ecological Reciprocity

Advanced I Graduate Studio
Georgia Institute of Technology
Fall 2024

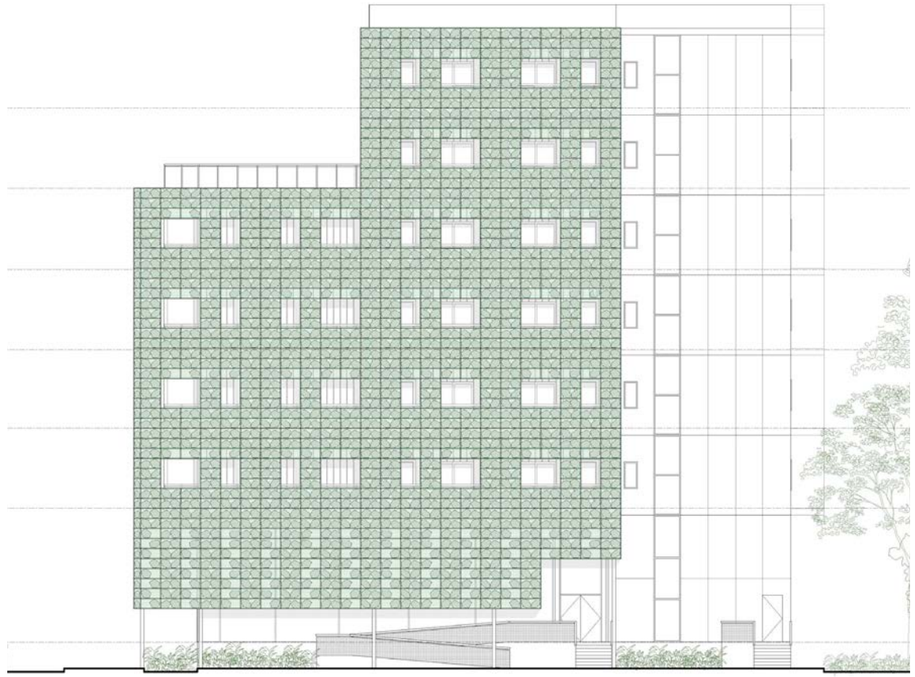


Fragment Section Perspective of communal spaces in an indepdent housing project and greenhouse, by Jack Demarest

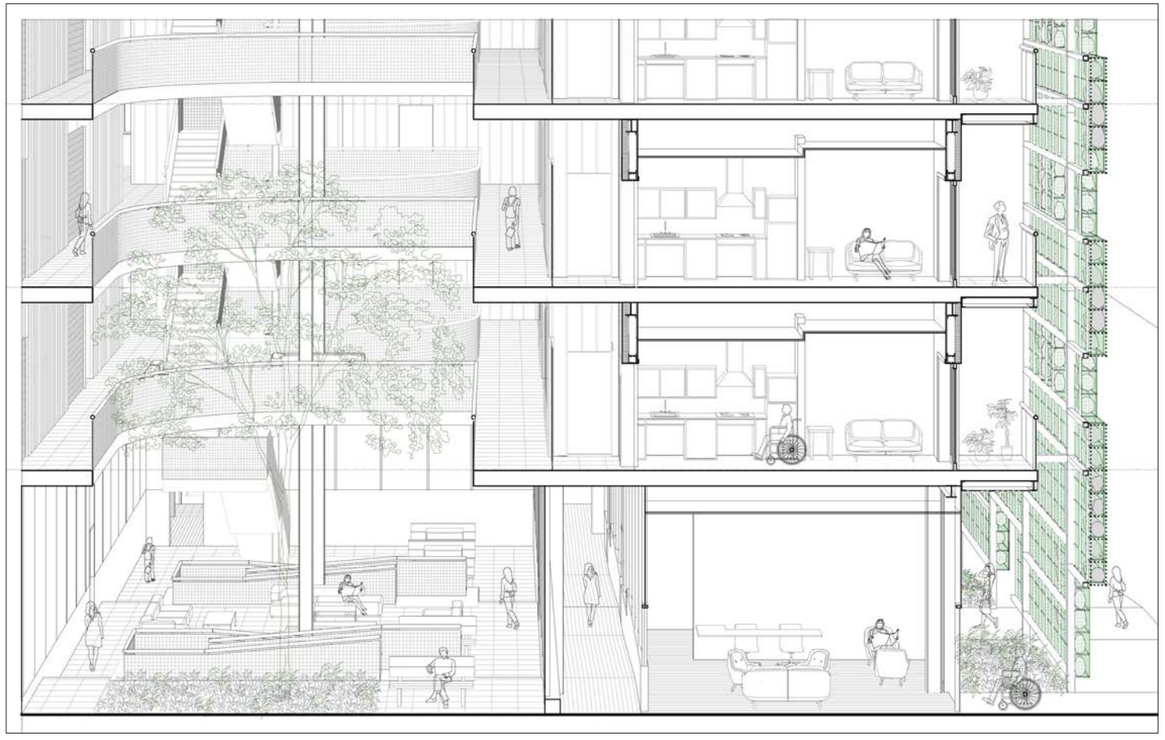
This studio investigated multi-family housing as a program of interrelated ecological, economic, and social issues. Over the semester, students in the studio were asked to develop an architecture that privileges the well-being of humans and non-humans/the natural environment, and to consider a larger concept of reciprocity between the human and non-human. Reciprocity can mean many things, but this studio emphasized that the well-being of humans depends on the well-being of their communities and the surrounding environment. Over the course of the semester, students built on this goal through readings, precedent research, and design exercises focused on community building, environmental stewardship, and sustainable construction and material reuse.

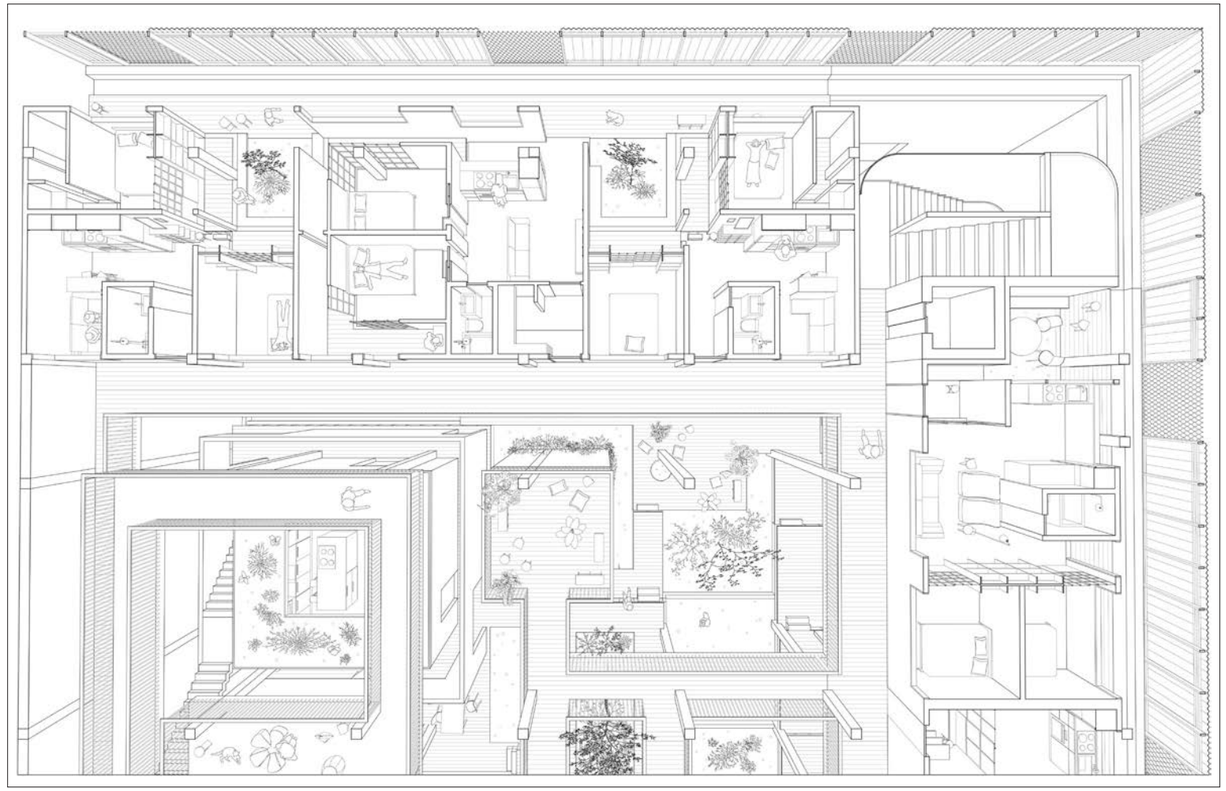
Foregrounding this investigation, each student was required to develop their housing proposal as a limited-equity cooperative (LEC) (a model of ownership in which each resident owns a share of the building and participates on a collective governing board) that sits on a larger community land trust (a CLT is a board of individuals or a nonprofit corporation that holds and stewards land with an emphasis on affordability, racial inclusion, and sustainable land uses). The LEC model prioritizes both affordability and collective governance, and students were required to develop their architecture in response to these priorities. Additionally, all students were assigned to the CLT "board", and they worked together throughout the semester to develop a larger set of land use guidelines that guided their individual housing projects.

The focus on ecological and social well-being in this section extended beyond the land use and formal goals of the projects, and students considered material reuse and sustainable construction techniques within their projects. The following projects utilized a number of alternative materialities and social formations including the inclusion of greenhouses within a communal housing project; the reuse of concrete from vacant parking lots on site into a gabion wall used as a facade and cloistering device to protect residents in a trauma-informed housing program; recycled paper formed into wood panels for use as the facade on a multi-generational housing project with communal kitchens and bathhouses; and the reuse of bricks in CNC pottery used in the construction of a facade for an entrepreneurial maker-space.

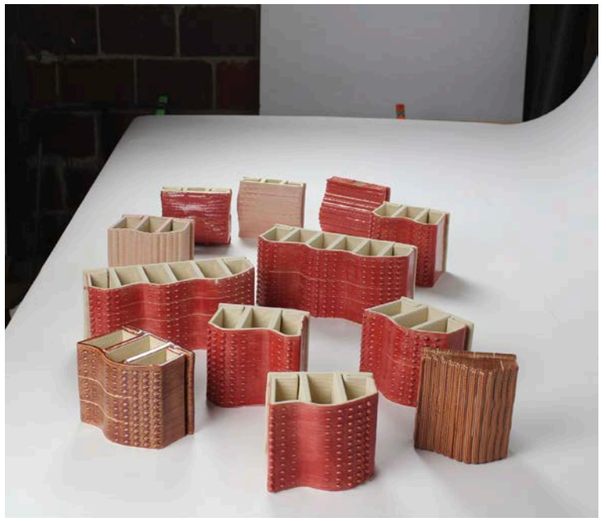


Elevation and Fragment Section Perspective of gabion wall for a Trauma Informed Community design, by Olivia Smith

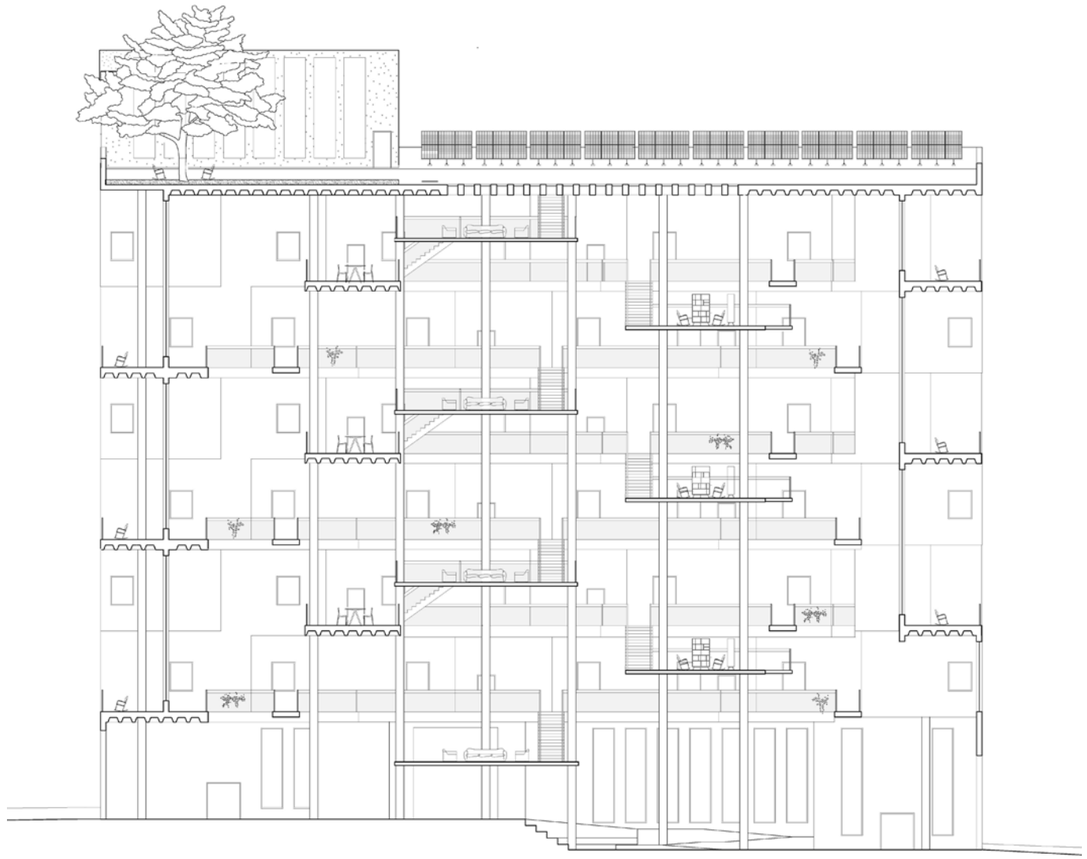




Fragment Plan Perspective and Models for Communal Housing with Kitchens and Bathhouse, by Jacob Yu



Facade Model and Building Model of an entrepreneurial maker-space and artists housing project, by Jared Abrahamian

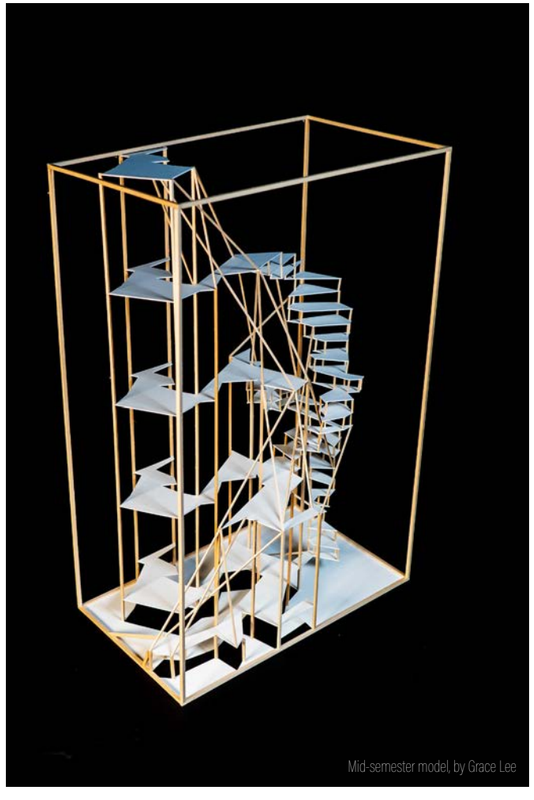


Longitudinal Section of communal spaces in an indepdent housing project and greenhouse, by Jack Demarest

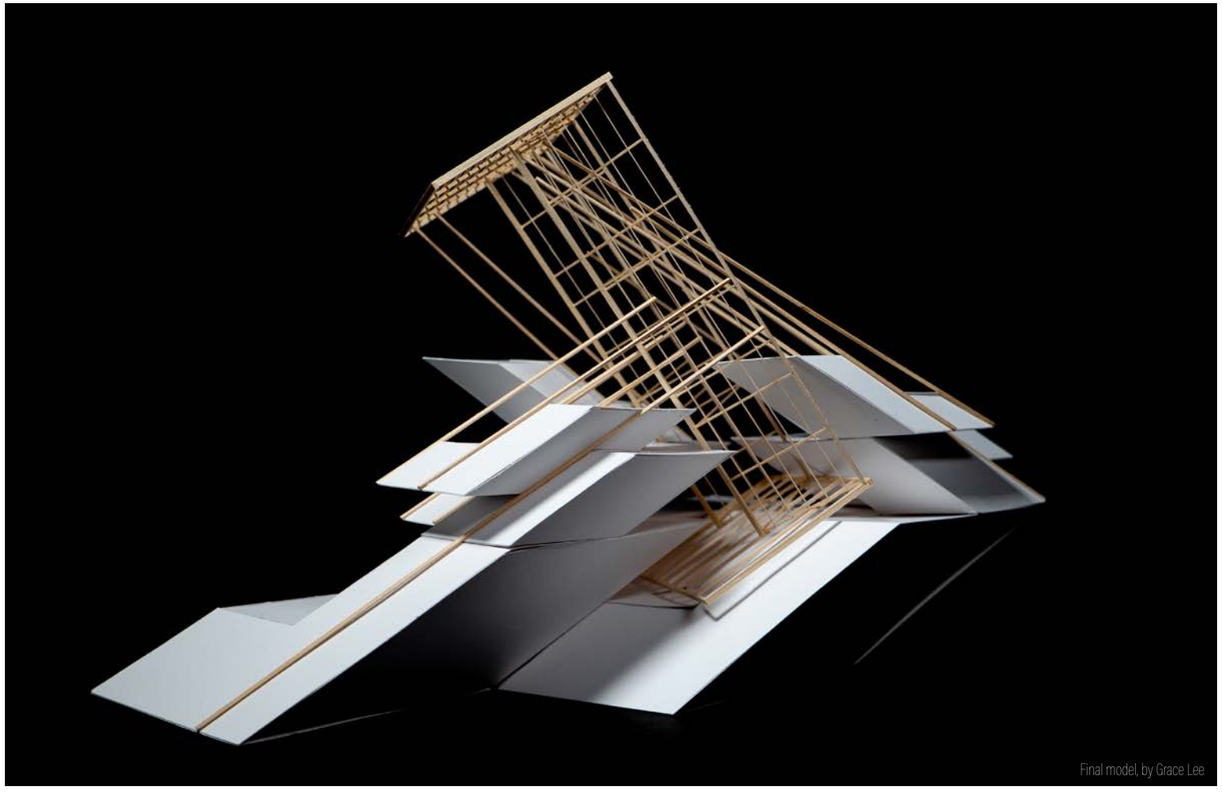
Teaching Portfolio—Design Discovery

Six-week summer studio for non-Architecture students
Harvard University
Summer 2018

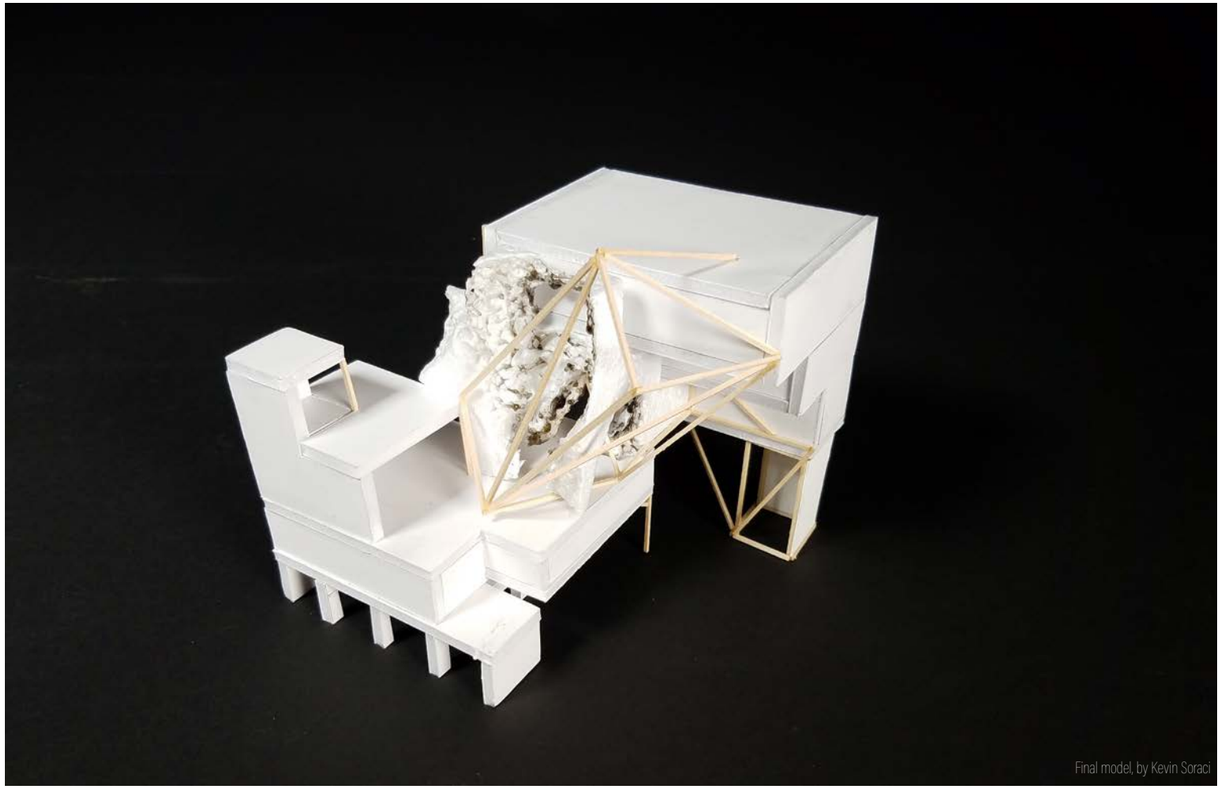
Design Discover is a six-week summer program held at Harvard University every year. The goal of the program is to expose students from a variety of backgrounds and age groups to an architecture studio. Most of the participants in the program have no prior background in architecture or design. The program is modeled after an intensive graduate-level studio seminar. Three design projects are conducted throughout the summer. The following projects are selections of student work from the second and final module. The program for the final project consisted of a community center located in the Kendall Square area of Cambridge, Massachusetts. In order to begin the design of the project, students were tasked with photographing and physically modeling a “ready-made” architectural element located at the site. These “ready-mades” consisted of portions of curtain walls, building fragments, street elements, or architectural effects. After selecting and modeling these pieces, the students were then tasked with “suspending” these artifacts in an architectural language of their creation. This language consisted of a series of modules students designed in order to engage with and interact spatially with the existing architectural fragment.



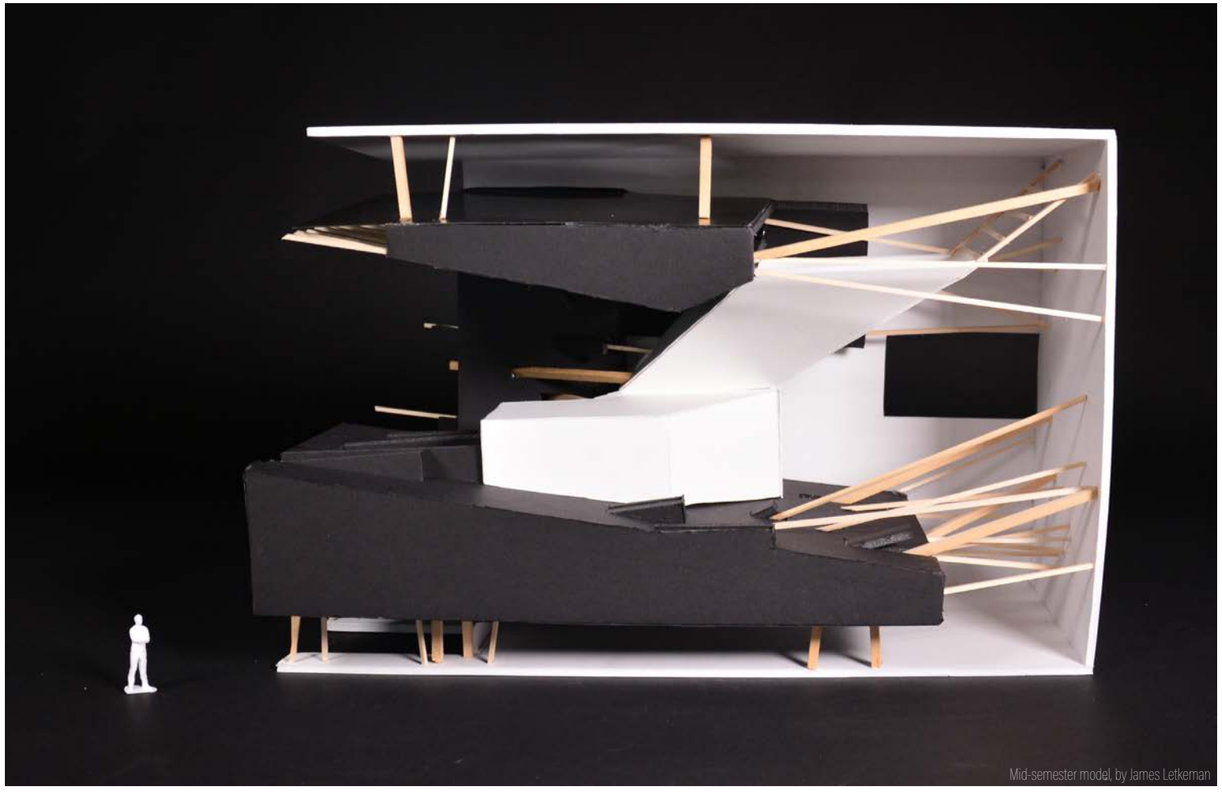
Mid-semester model, by Grace Lee



Final model, by Grace Lee



Final model, by Kevin Soraci



Mid-semester model, by James Letkeman