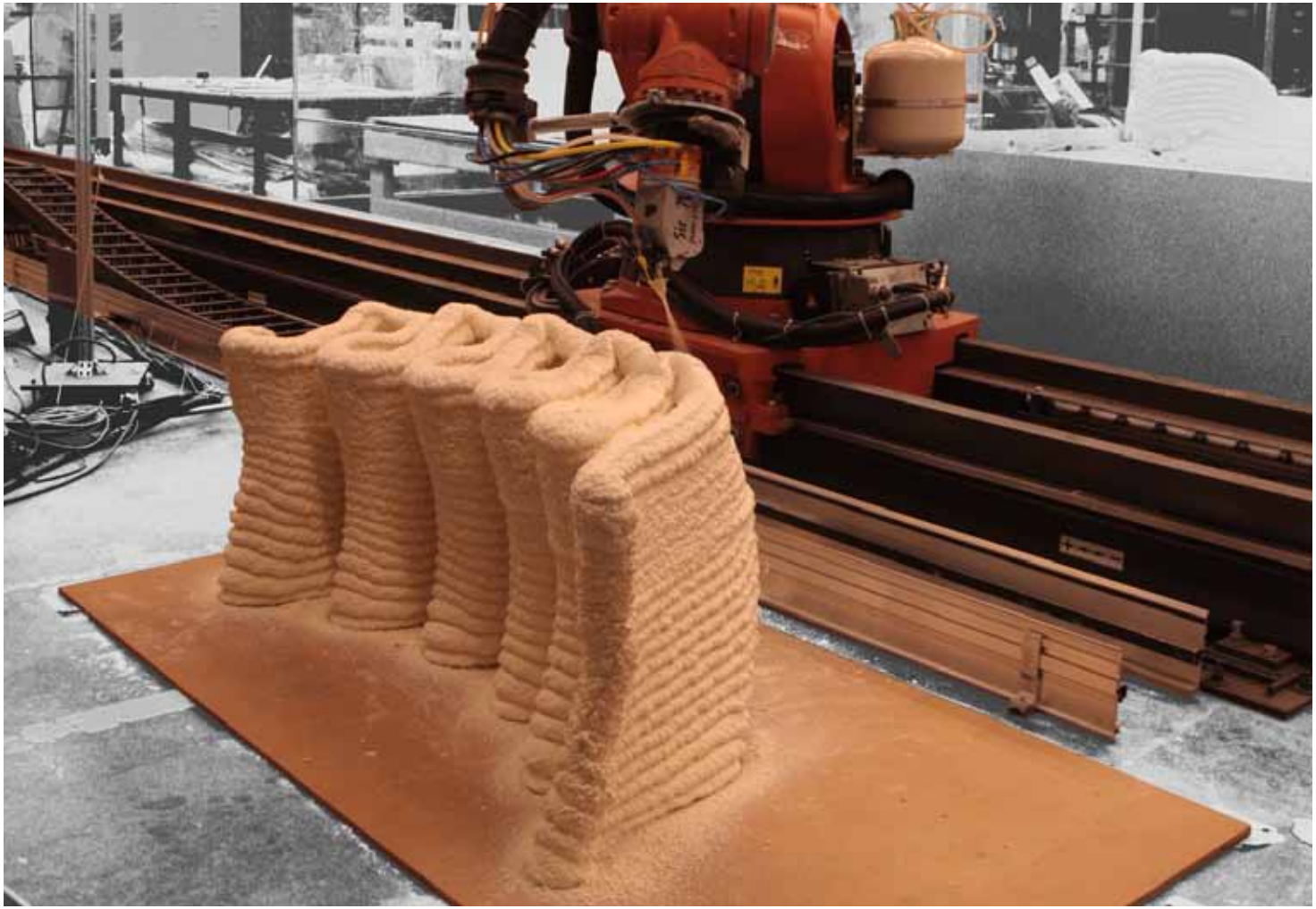


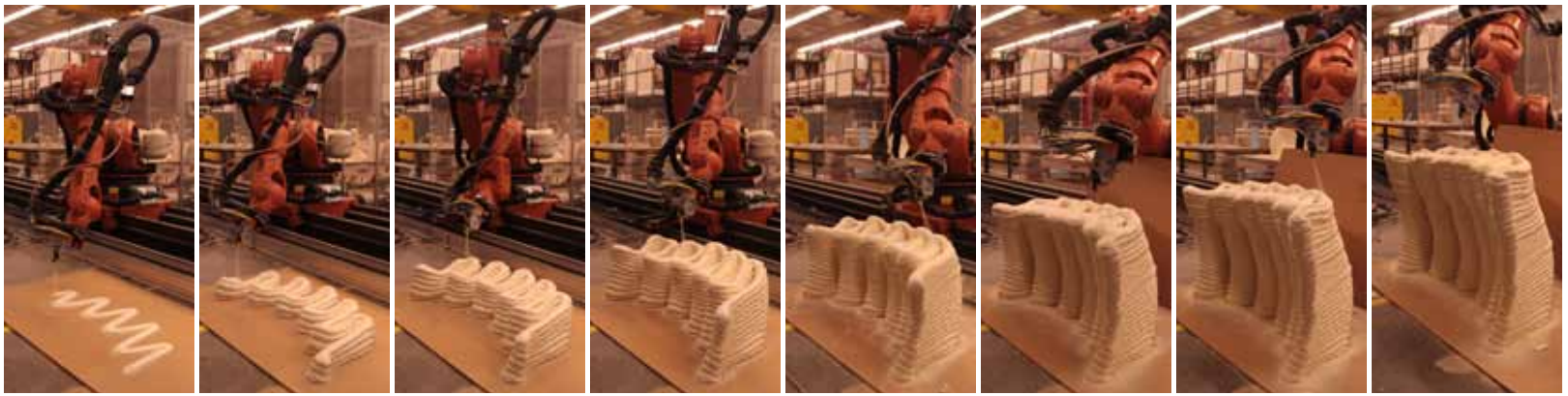
Large Format Additive Fabrication

As digital design tools available to architects and designers continue to expand, allowing them to create complex intelligent forms, the ability to fabricate such forms has lingered. The aim of this project was to close that gap by removing the scale limitation of conventional 3d printers and enter into the realm of full-scale rapid prototyping.

The system developed utilizes a 6-axis robotic arm on a 30 foot track in order to control a nozzle that extrudes a quick-curing two-part polyurethane foam. In addition to the scale advantage, the system requires no secondary support structure; capable of cantilevering over a foot with virtually no deflection.

In addition to designing and fabricating the physical system, code to operate the robotic arm also had to be developed. This was achieved through the creation of a rhinoscript capable of producing kuka robot language (krl) code from 3d geometry.

ROBOTIC FABRI-CATION



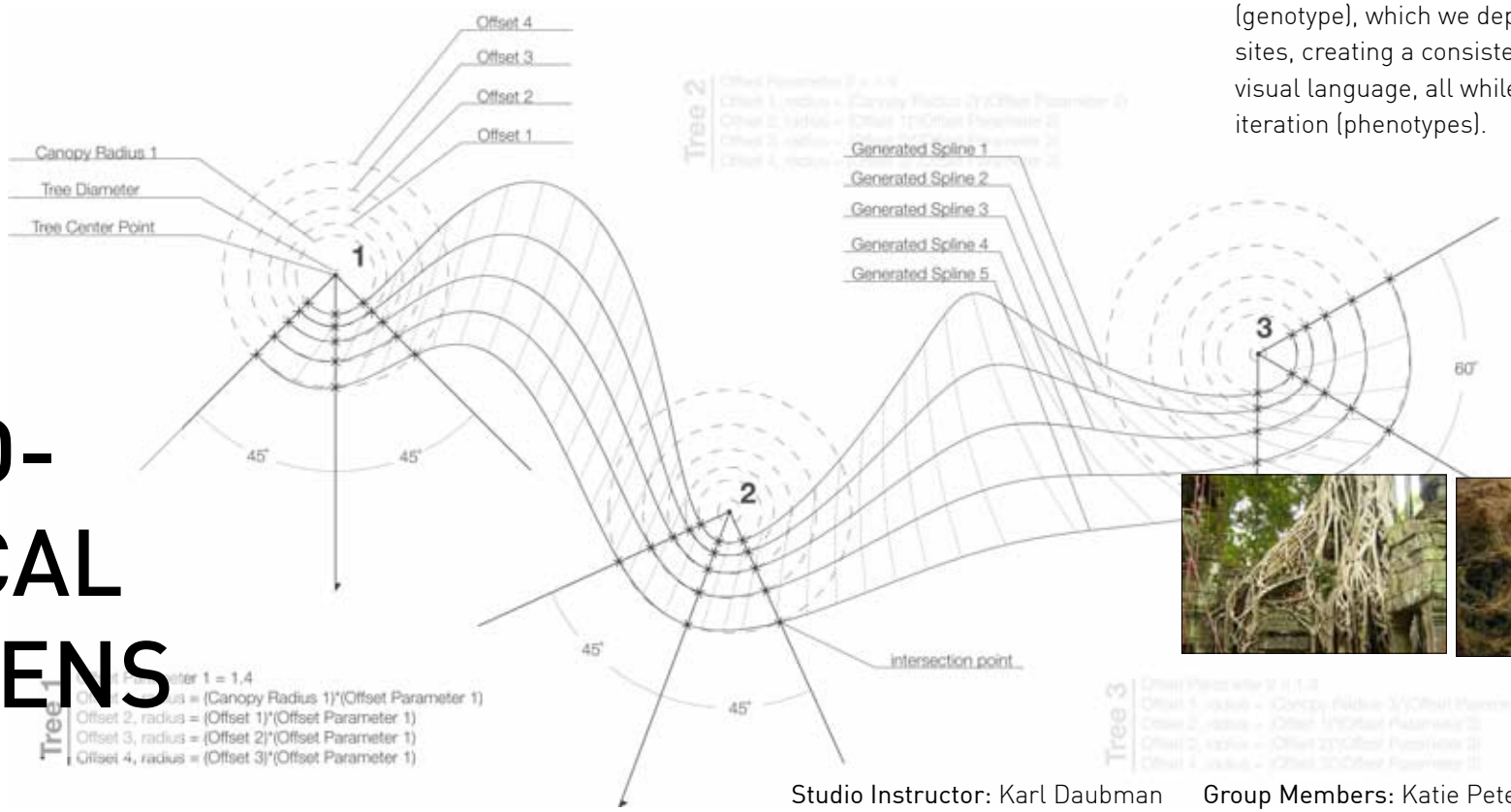
Instructors: Wes McGee + Dave Pigram **Project Leader:** Kris Walters **Additional Members:** Les Key, John Puff, Jaeryong Oh, Dan Weissman

NY Botanical Gardens Pavilion

With the open-ended program of a "pavilion" and the serenity of the New York Botanical Gardens, this studio project created an architecture that required and is informed by its environment to create beauty for the sake of beauty.

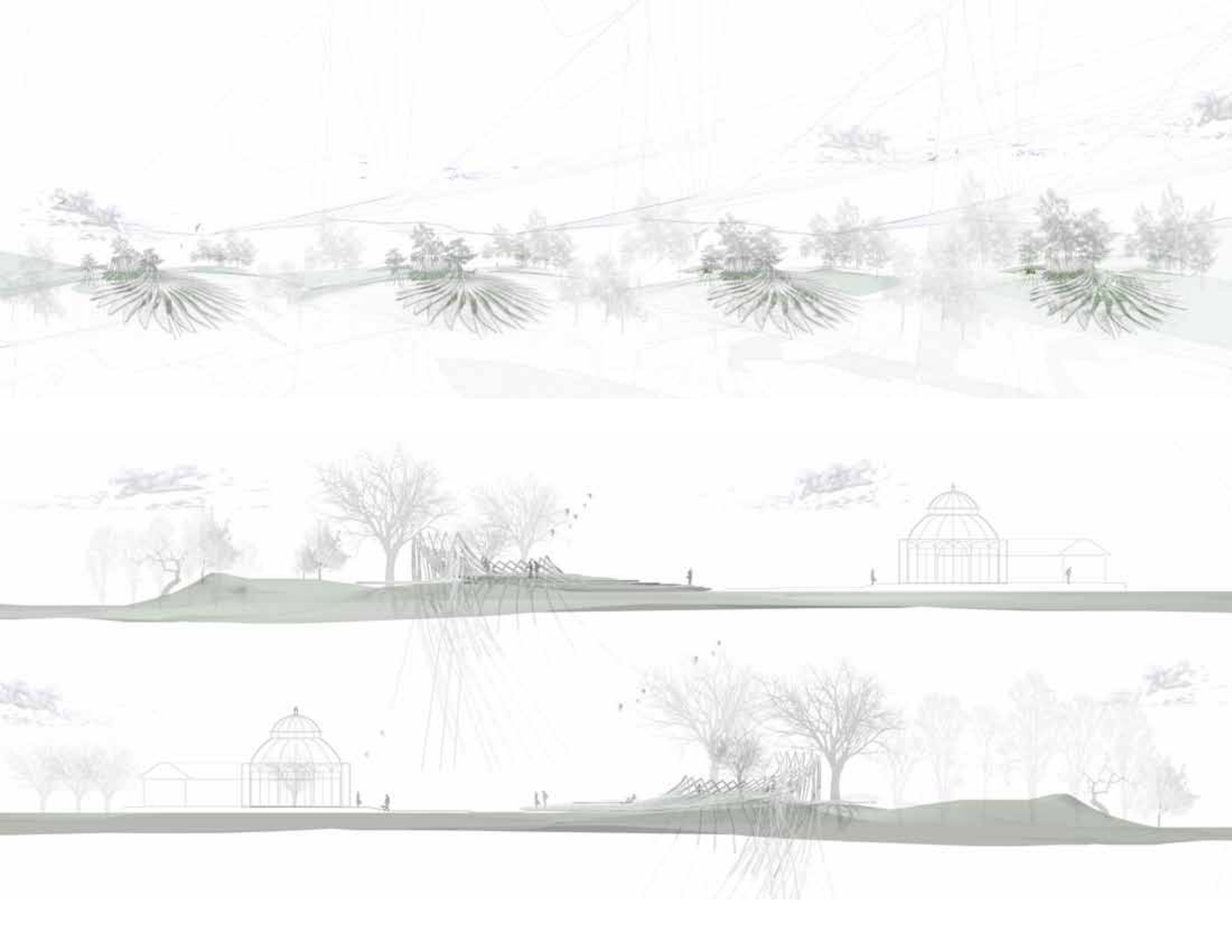
Inspired by parasitic plants, such as the dodder and the strangler fig, we looked to create a repetitious form that would envelope a series of trees. However, in our case, we aimed to leave the trees unharmed by preserving the ground defined by the tree's canopy.

Utilizing Digital Project, we developed a system incorporating such logic (genotype), which we deployed on several sites, creating a consistent spatial and visual language, all while being a unique iteration (phenotypes).



NY BO-TANICAL GARDENS

Studio Instructor: Karl Daubman Group Members: Katie Peterson, Kris Walters



Contextually Responsive Complex Systems for the Post_Human Era

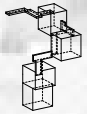
In search for an architecture that is capable of anticipating, responding to and informing its environment, which inheritantly necessitates time, growth and decay, this project explored the use of l-systems as a means to catalog and develop morphological architecture.

An L-System is a grammatical means to represent recursive biological growth patterns. Utilizing the logic of L-Systems, I developed a rhinoscript capable of producing a recursive complex 3D spatial forms based on a grammatical string. This string represents the genotype. Its deployment upon a site would be its phenotype as it is responding and adapting to its environment.

The drawings presented here are of genotypes at a specific stage of growth.

COMPLEX 3D L_ SYSTEMS

n1



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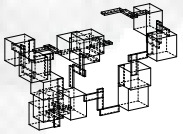
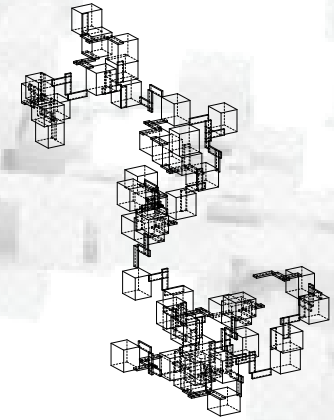
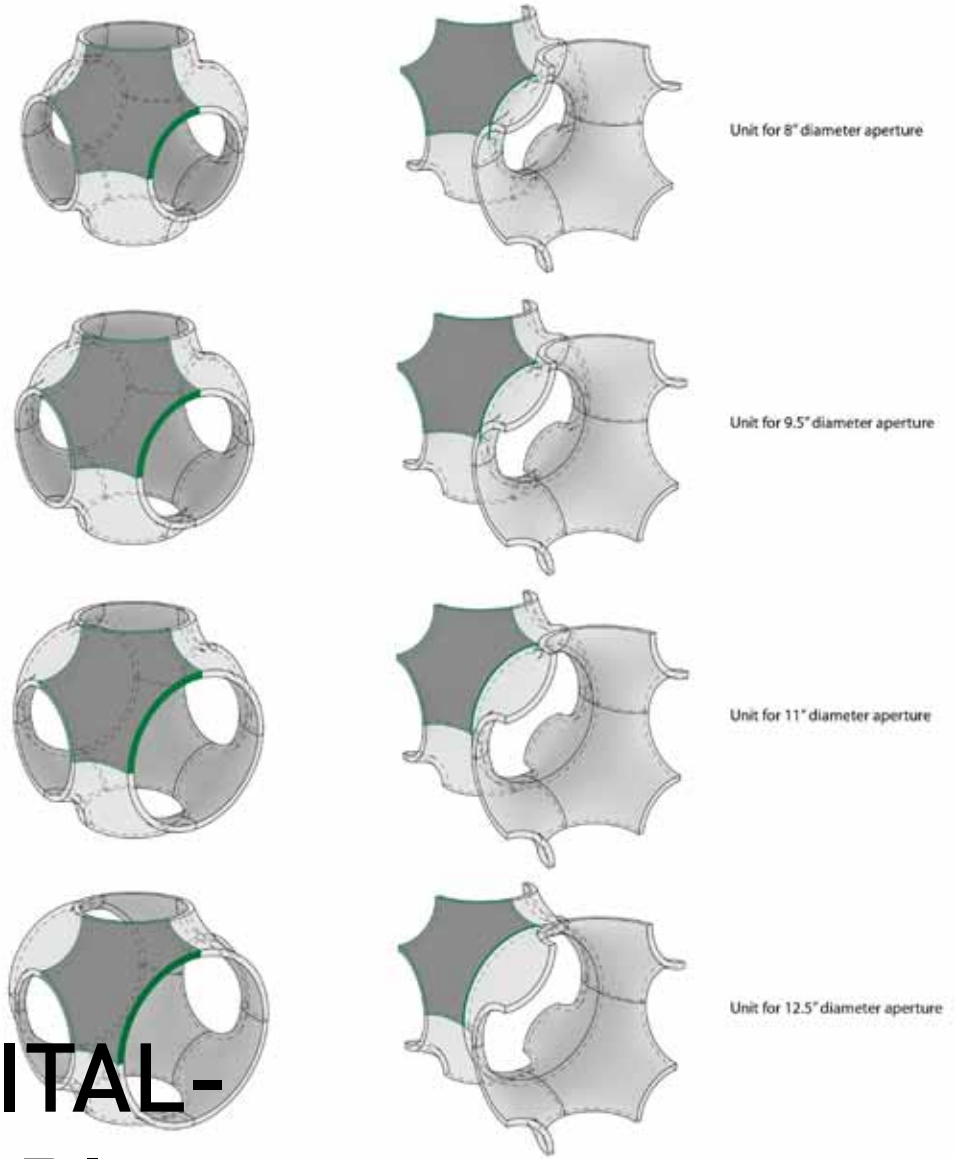


n3



n4

n5



DIGITAL-FABRI-CATION

Minimal Surface Building Unit

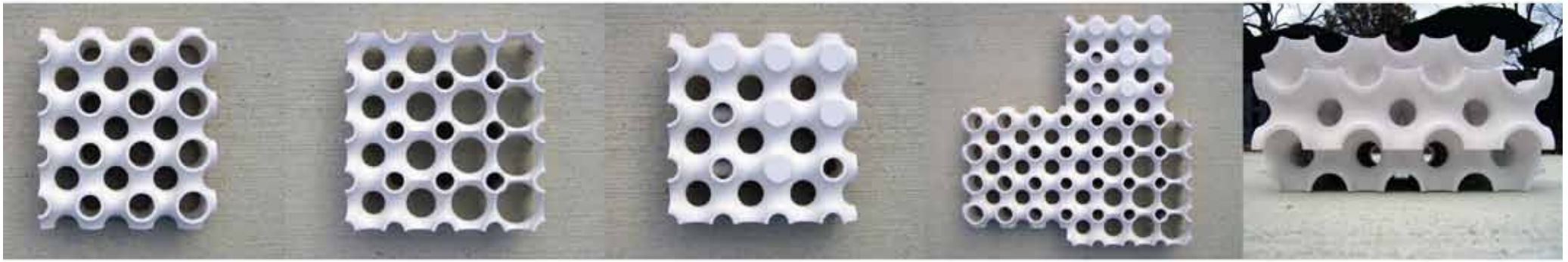
The project examines the potential variation and conservation that can be embedded within four masonry units.

Formally, we begin with the P-Schwarz Infinite Period Minimal Surface, which makes up the base module. Three variations are derived formally from this in which the aperature increases in diameter. (These variations are technically not minimal surfaces.)

With four molds, eight different modules can be assembled, which are then able to interact with eachother establishing a building system capable of a range of variability. Such variability could be in response to structure, optical qualities, solar orientation, or program.

The material volume to spatial volume is quite low resulting in less material usage. Additionally, by reducing the module to a simplified part, shipping of the parts becomes more efficient as the parts can be nested and pack more densely. Upon arriving on the site, it would then be assembled into their respective module.

Instructors: Glenn Wilcox Team Members: Gavet Douangvichit, John Puff, Kris Walters jr.



STUDIO TECHNE

Wade Park Flats

During my short time at Studio Techne in Cleveland, OH, I joined a small design team consisting of Tim Roos and Marc Cicarelli, one of two principal architects at the firm. The project, the Wade Park Flats, consisted of four units just North of Little Italy in Cleveland. The design process which had been underway for a year and a half, had plans, elevations, and a few quick physical models.

From the very first day, I was entrusted to make design decisions and interpret rough sketches of concepts put forth by Tim and Marc. My role also consisted of modelmaking, both digitally and physically. Early on, it was decided that the Flats simply had not accomplished what was set out and the massing along with many other aspects of the building were reconsidered. A series of iterations followed as we critiqued our work and met with the client.

(The image in the upper left is an early mostly inherited iteration. The lower render is of the final design.)