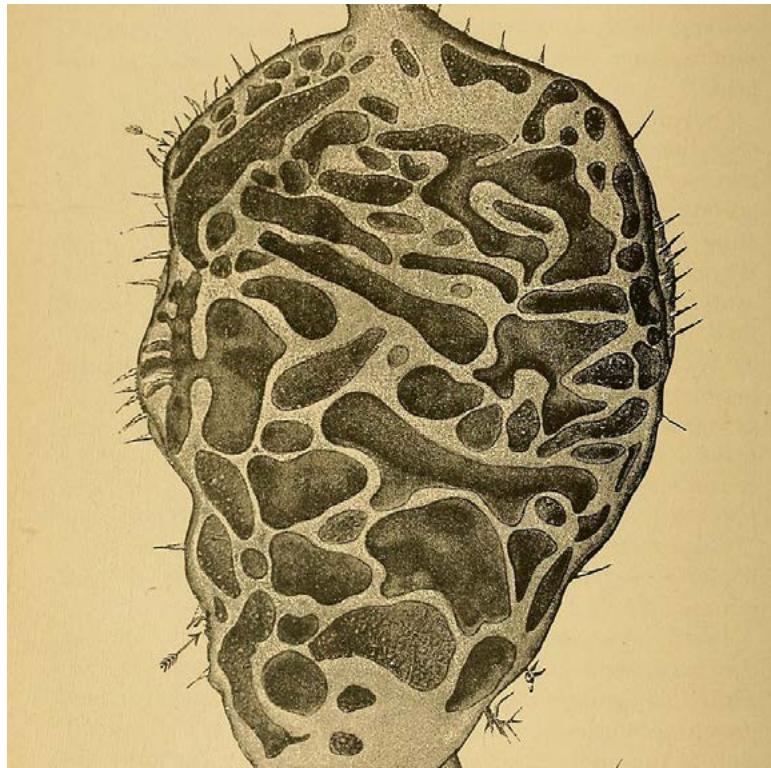
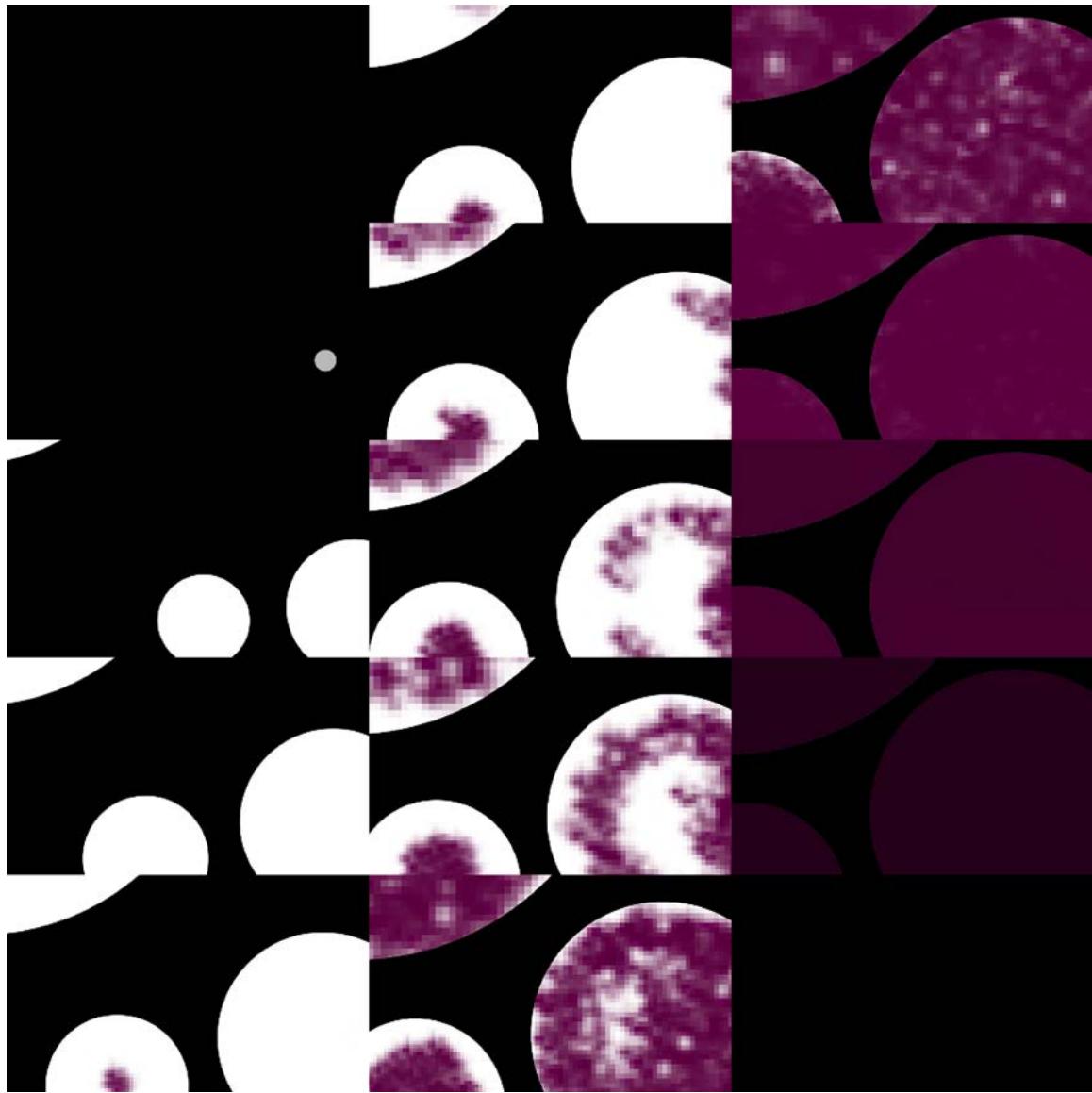


OCCUPYING CHAMBER
ADAM YUZHEN ZHANG



Cornell AAP Department of Architecture
COEVOLUTIONARY ARCHETYPES Arch 4101, 4102, 5101, 7112 Fall 2019 Option Studio
Instructor: Naomi Frangos, Visiting Associate Professor in Architecture



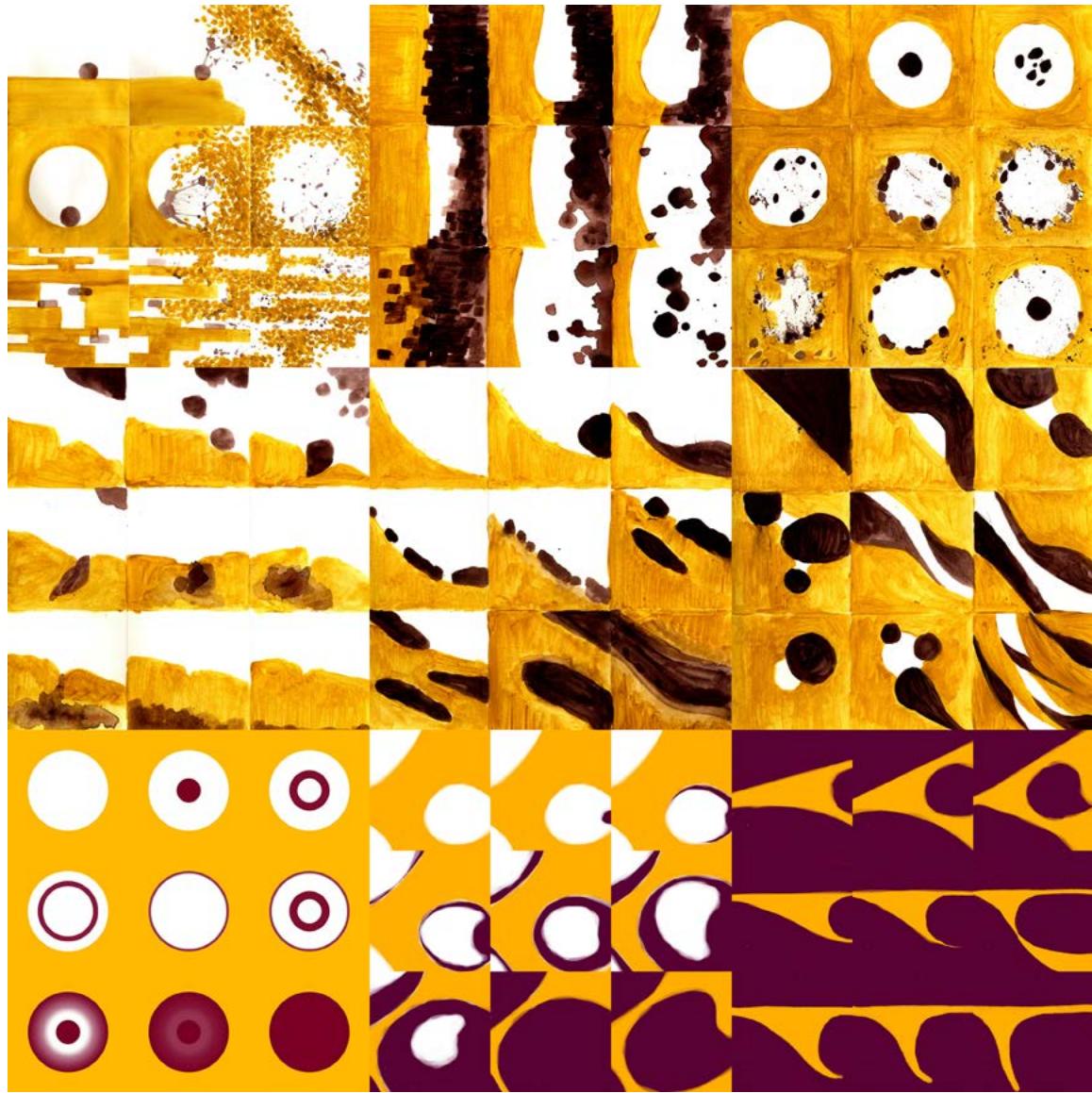
Ants and Myrmecodia Coevolution Animation

COEVOLUTION AND THE DYNAMIC ARCHETYPE

Myrmecodia is a kind of epiphytes (air plants) that live mutually with a colony of arboreal ants. The plant has modified structures such as rhizomes, stems, and leaves evolved to naturally produce systems of tunnels and cavities within the various organs, which are highly specialized. The space is divided into smooth-walled chambers for ants' nurseries, and rough-walled ones for the plant to absorb materials left inside by the ants. The ants occupy the cavities as the plant is growing. Through the process of occupation, the void of the cavities is gradually transformed into solid.

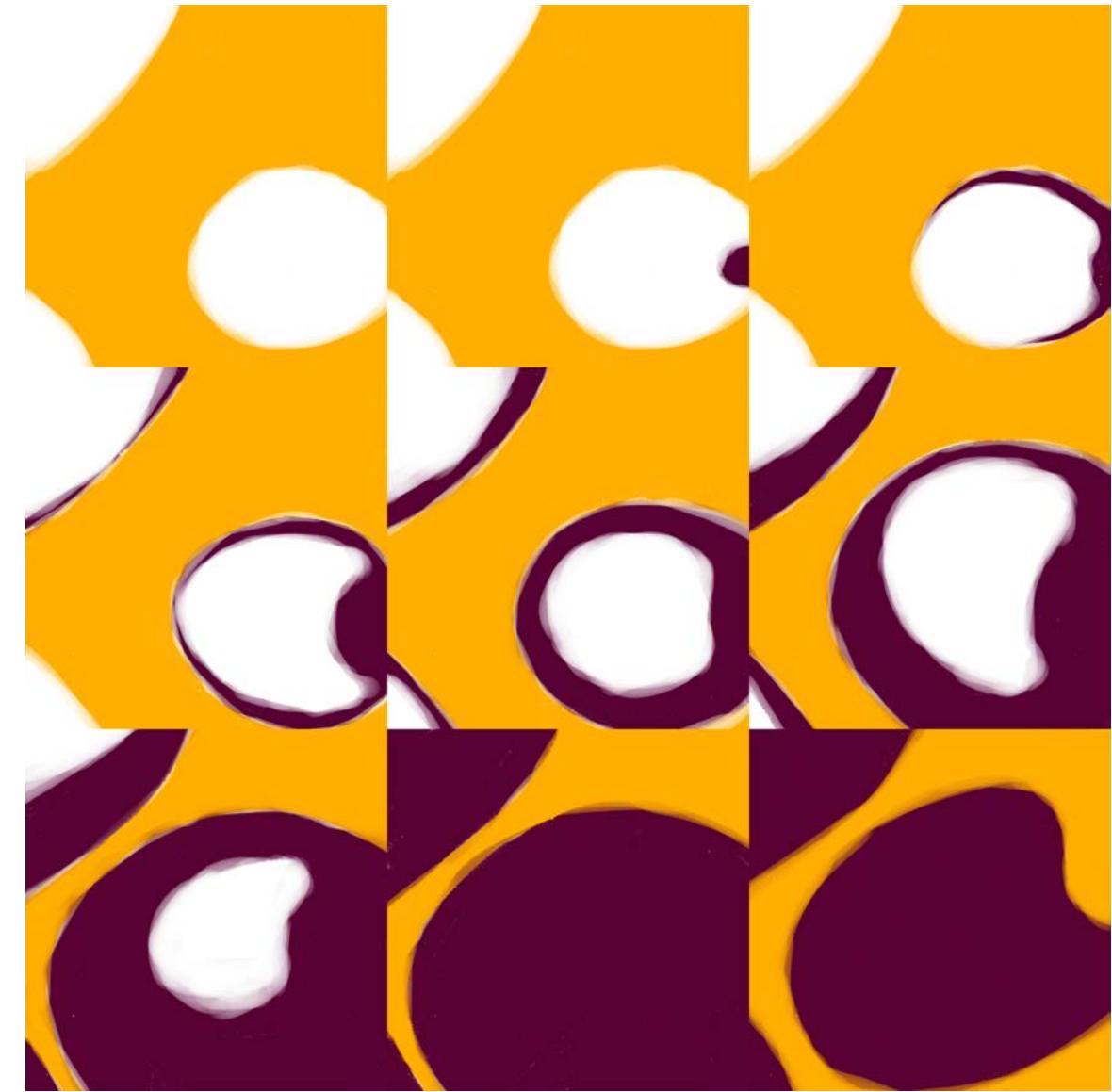
The mold depicts how the cavities squeeze the wall thickness as the plant is growing. The cavities are modeled as solid with different surface texture. As one cavity moves toward the other two, the other two are pushed away and the poche area in the middle is deformed. The glass is blown into the deformed middle area. It is squeezed to be the shape of the poche, and it documents the presence of pressure in that area.

According to Malcom McCullough, the medium is something about the material, the tool, and even a pervasive environment. All mediums must “surround us in possibilities” and at the same time, they must have limits and constraints. The designer and craftspeople become familiar with the possibilities of a medium and understand its affordances through practice and experience. Their skills are evolved when the tools and medium meet. And such properties of the medium shape artists’ expression. The appreciation of the result of a medium is also based on the viewer’s knowledge of the medium. This material-based concept of medium is radically changed when digital crafts come into play. The short response time and the precision, patience, and endurance when treating materials changed the way craftspeople learn and the way people appreciate. The comparison between the human blown glass pieces and the mass production of glass in a factory we are focusing on in the design of the dynamic archetype draws a connection between the traditional medium and the digital medium. The material-based craft gives the object a special aura that we want to capture and keep in the digital craft.

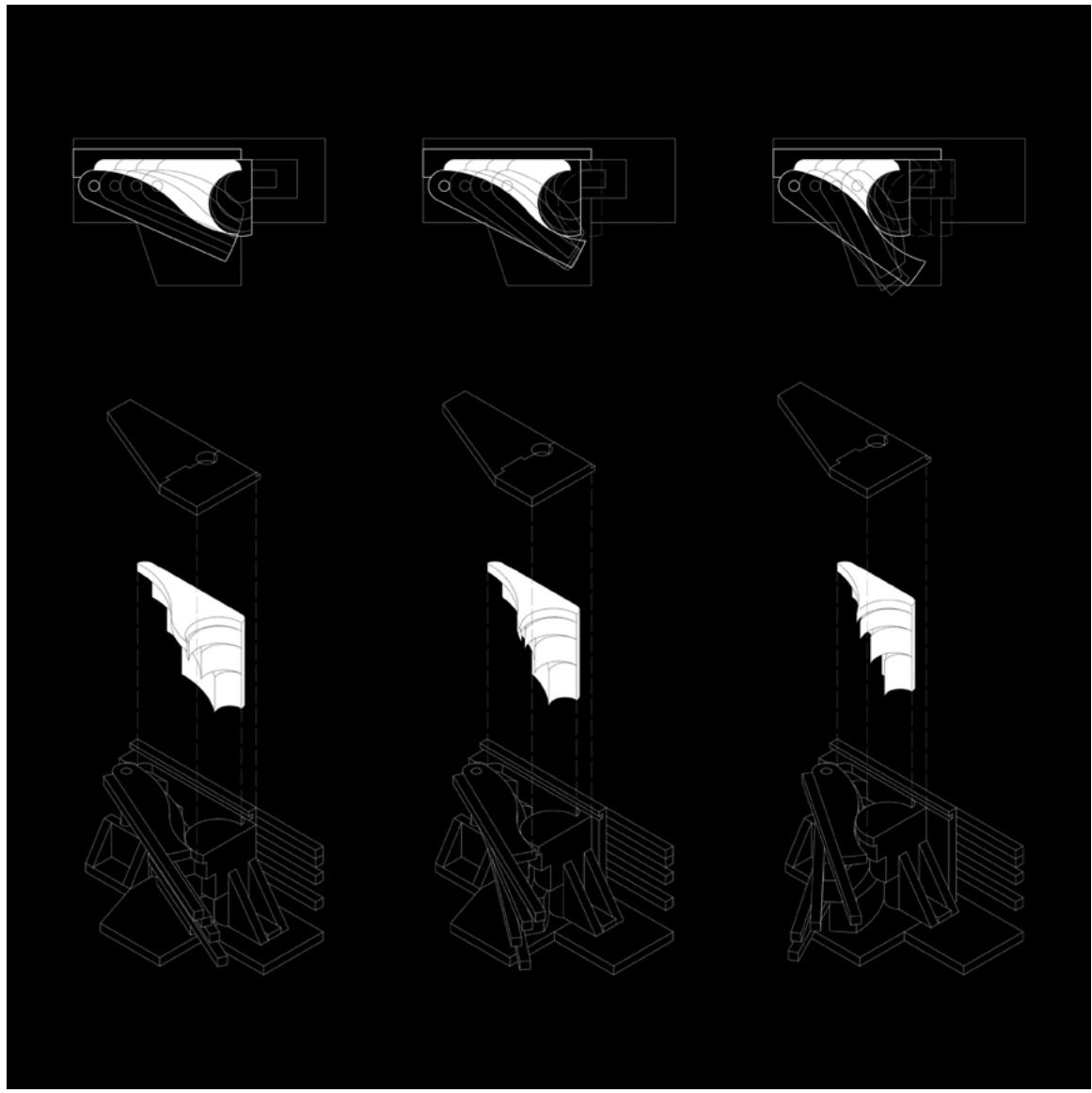


Ants and Myrmecodia Abstract Coevolution

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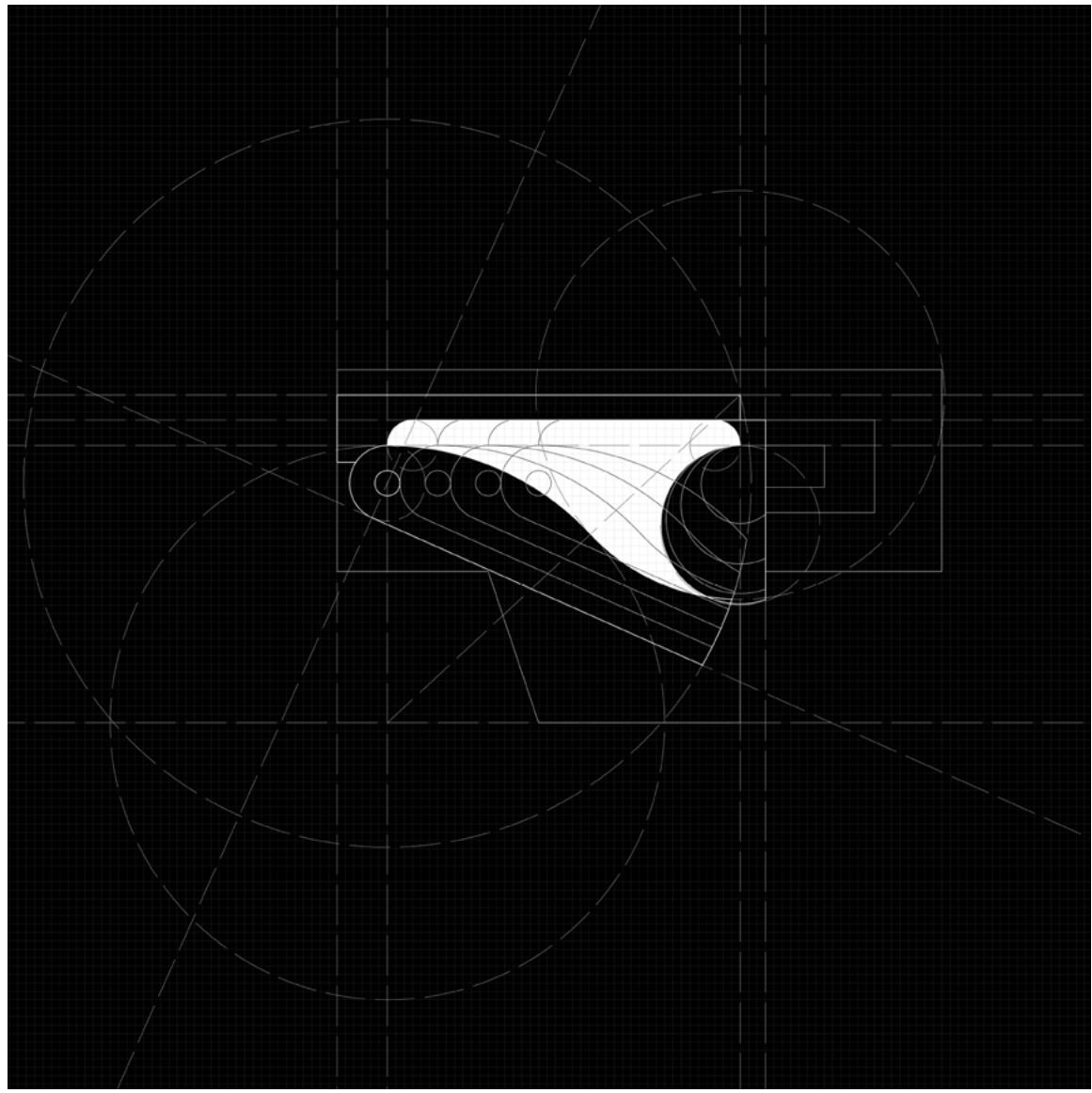


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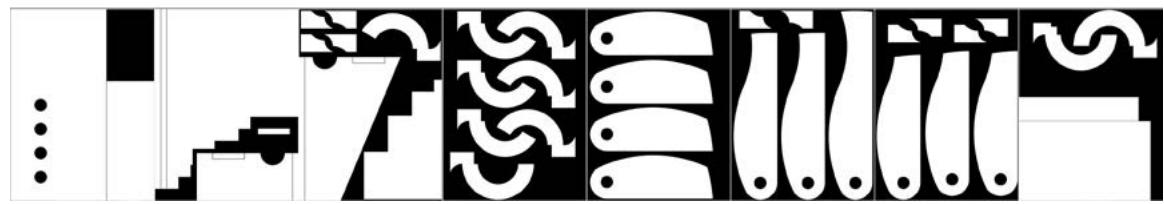


Coevolution Glass Dynamic Archetype Mold

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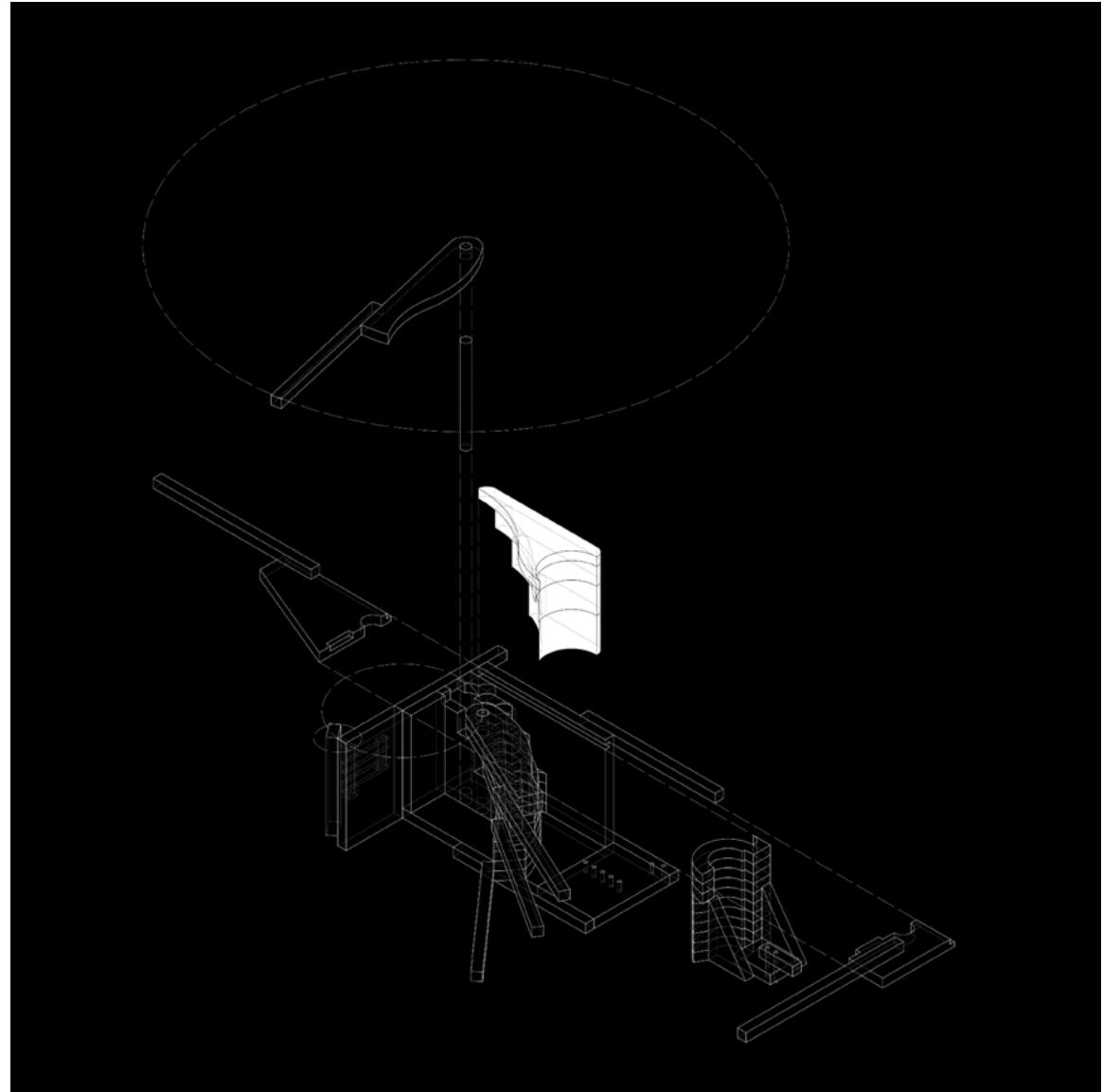


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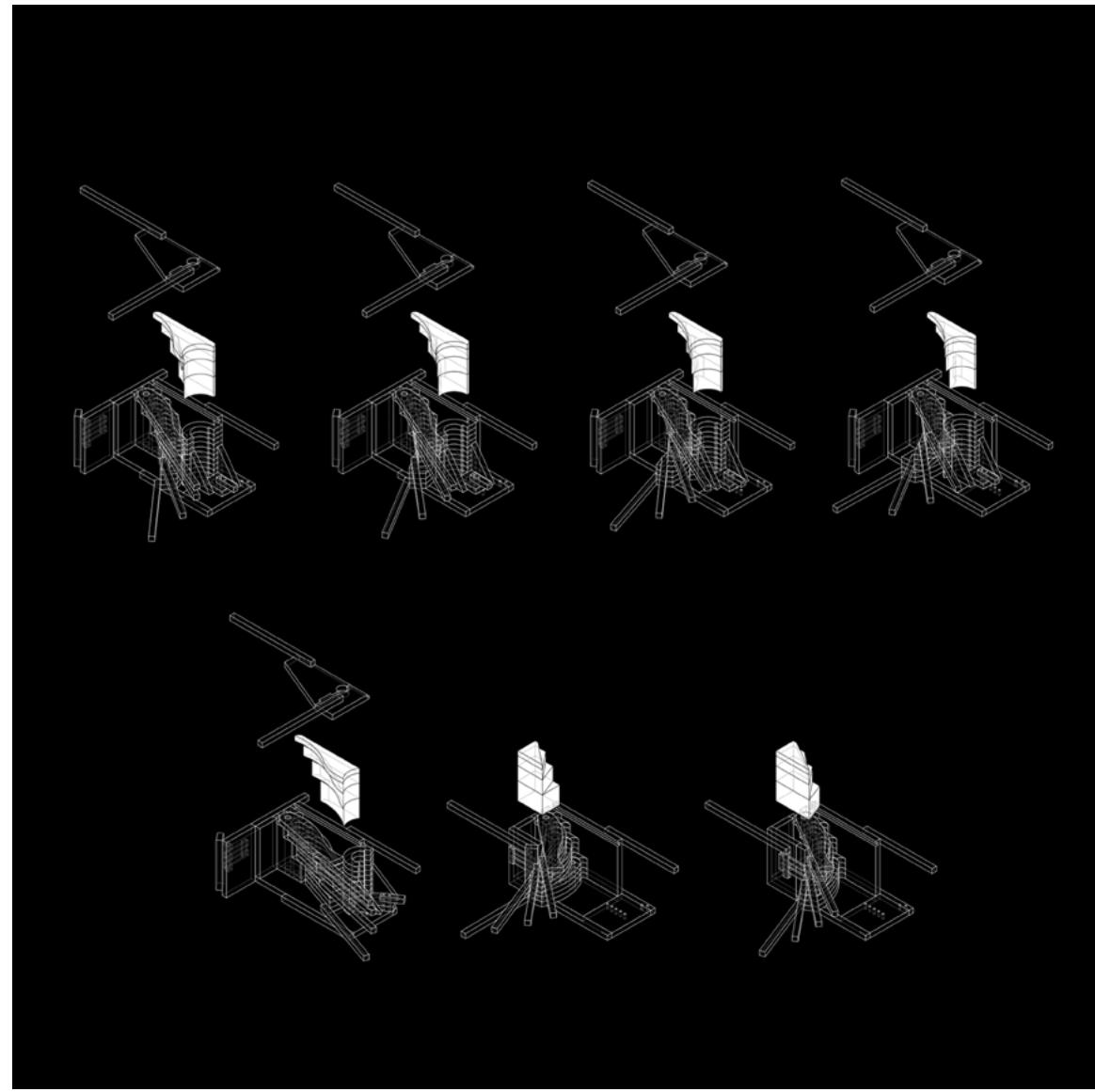
Cherry Wood Glass Mold Construction

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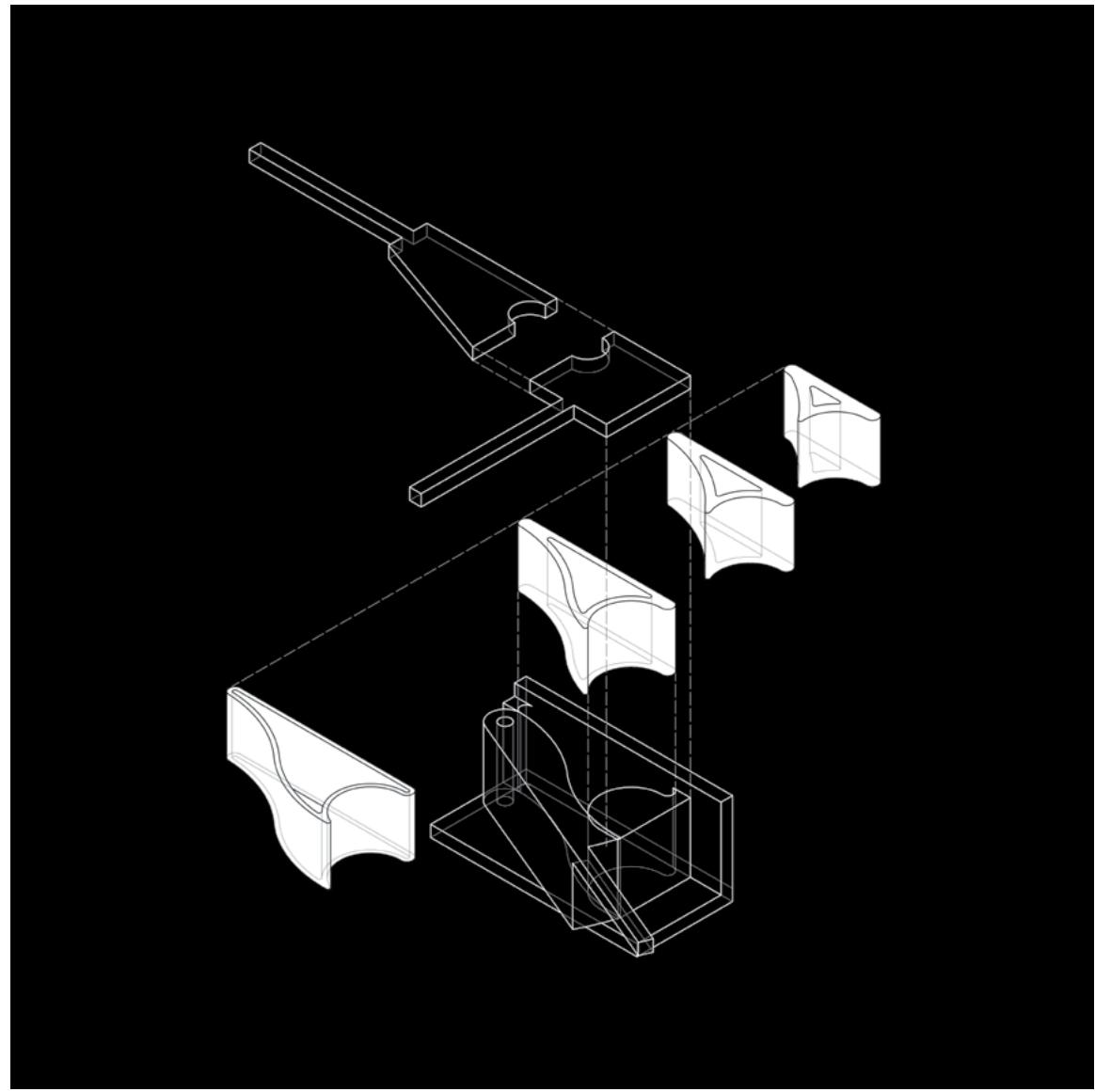
Kinetic Cherry Wood Glass Mold Construction

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Cherry Wood Glass Mold: Blowing Regions and Glass Forms Yielded

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Cherry Wood Glass Mold: Revised after Blowing

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Cherry Wood Glass Mold Construction

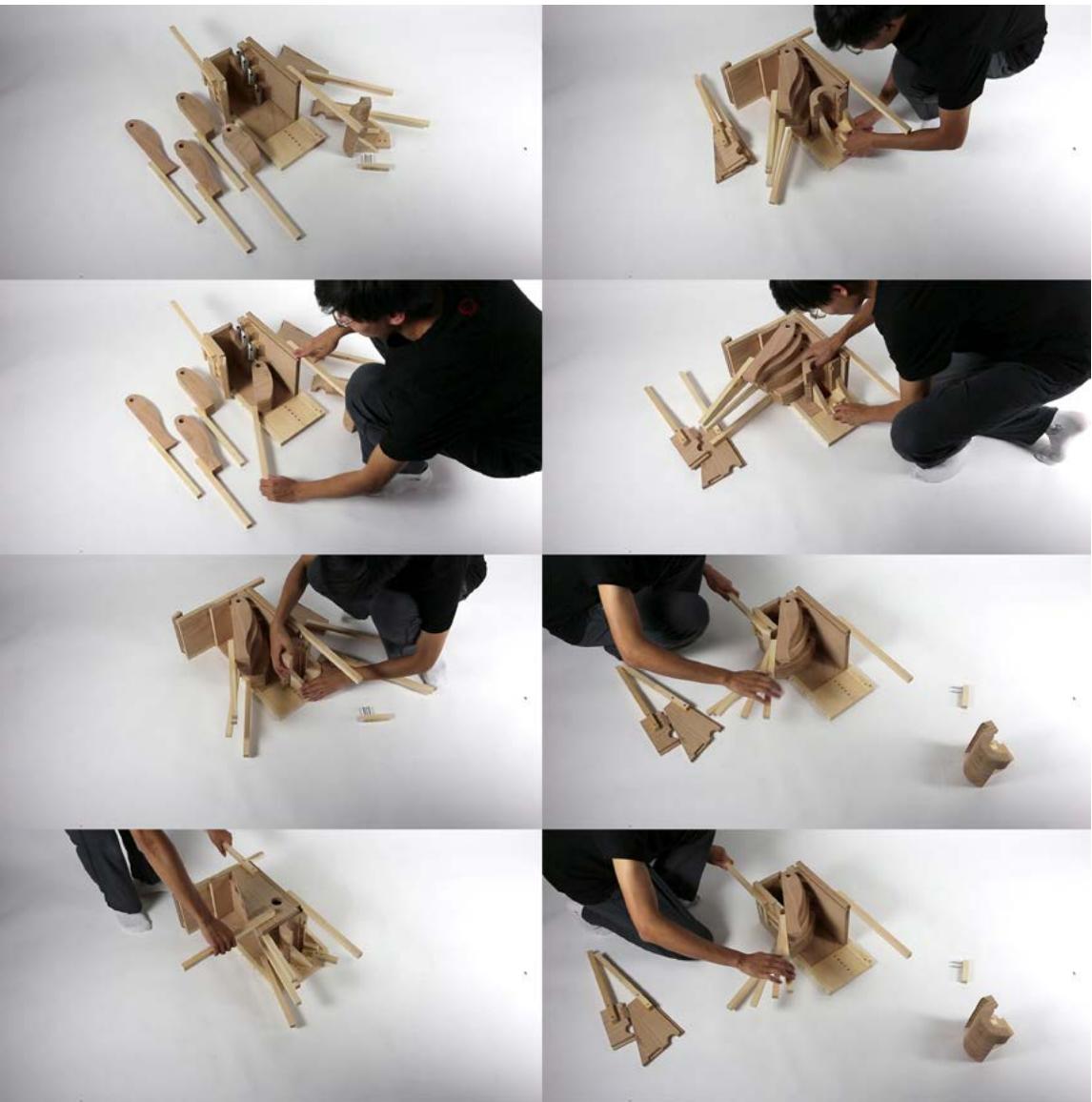
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Cherry Wood Glass Mold



Glass Mold Video

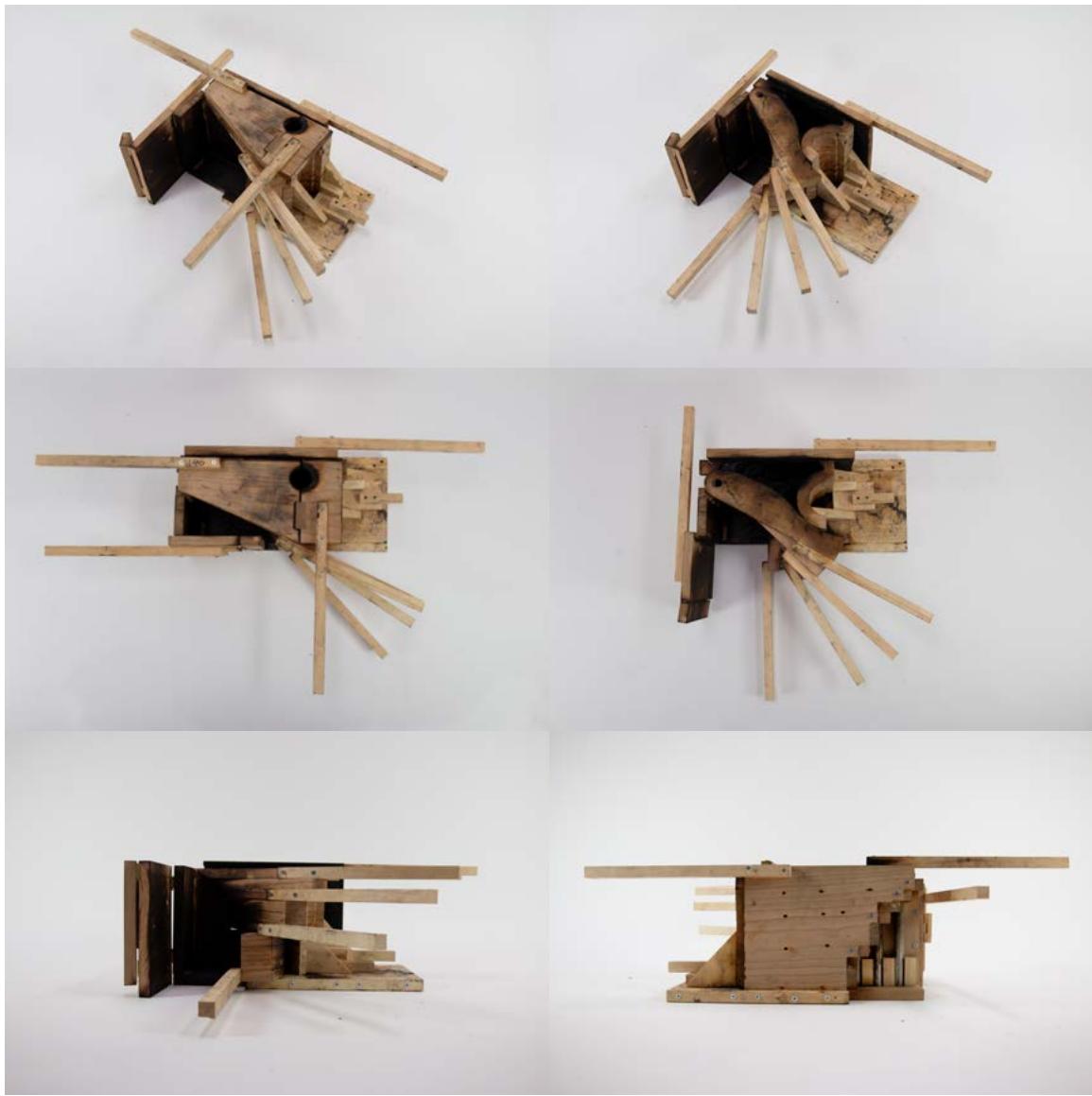


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Glass Blowing

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Post Glass Blowing

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Glass Cold Working

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COLOR THEORY: RED

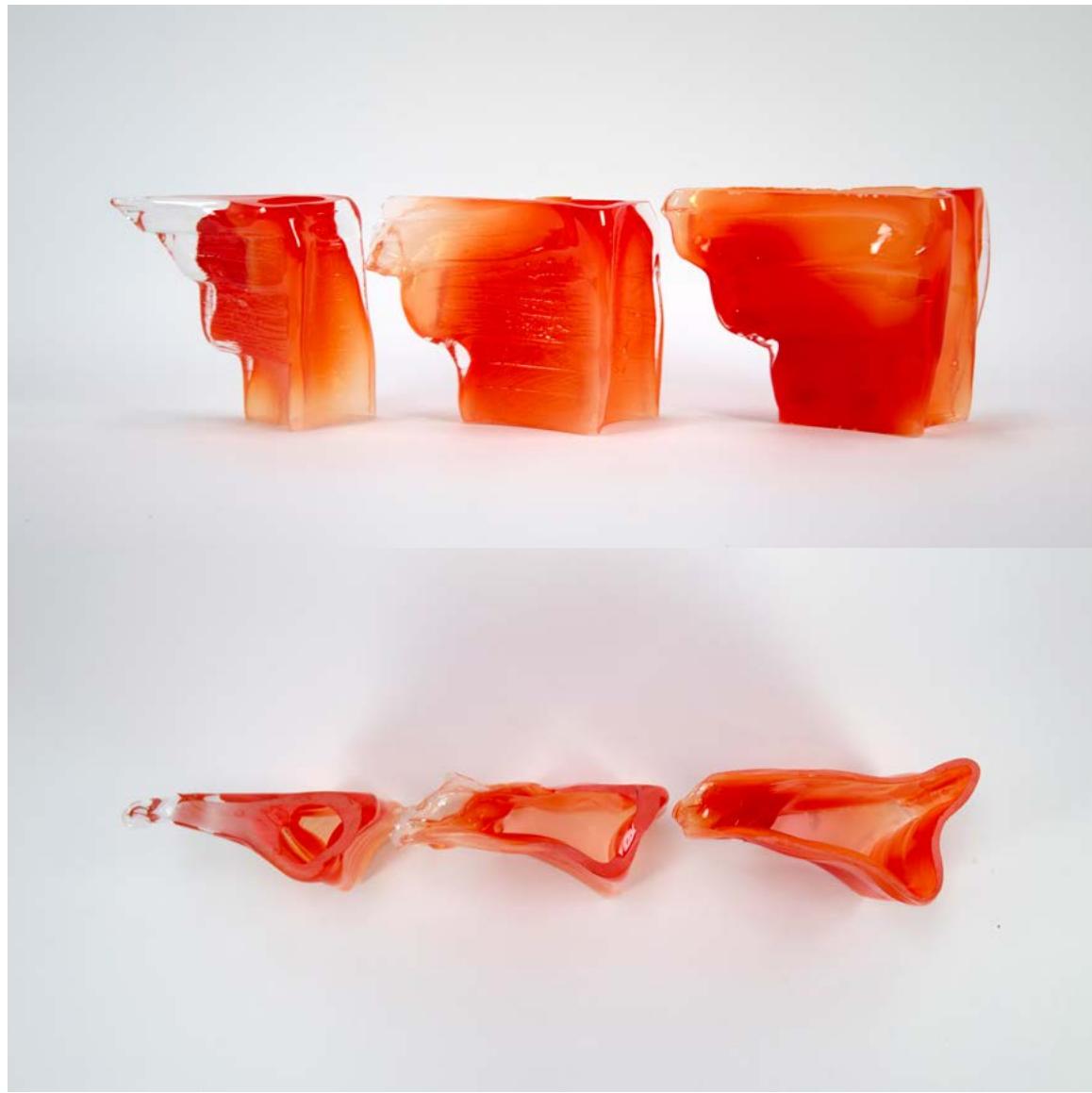
“Each colour, in its lightest state, is a dark; if condensed it must become darker, but this effect no sooner takes place than the hue assumes an appearance which we designate by the word reddish. This appearance still increases, so that when the highest degree of intensity is attained it predominates over the original hue. A powerful impression of light leaves the sensation of red on the retina.” – Goethe’s Color Theory

The concept of the compression of the poche space in my mold corresponds to the idea of color intensity in Goethe’s theory. As the quantity of color starts to increase, the color would become darker as the light is reflected or absorbed by the color. When the space in my glass mold is squeezed, a more saturated and intense color would be applied to help convey the force applied by the mold. My choice of color to show the change of intensity would be red.

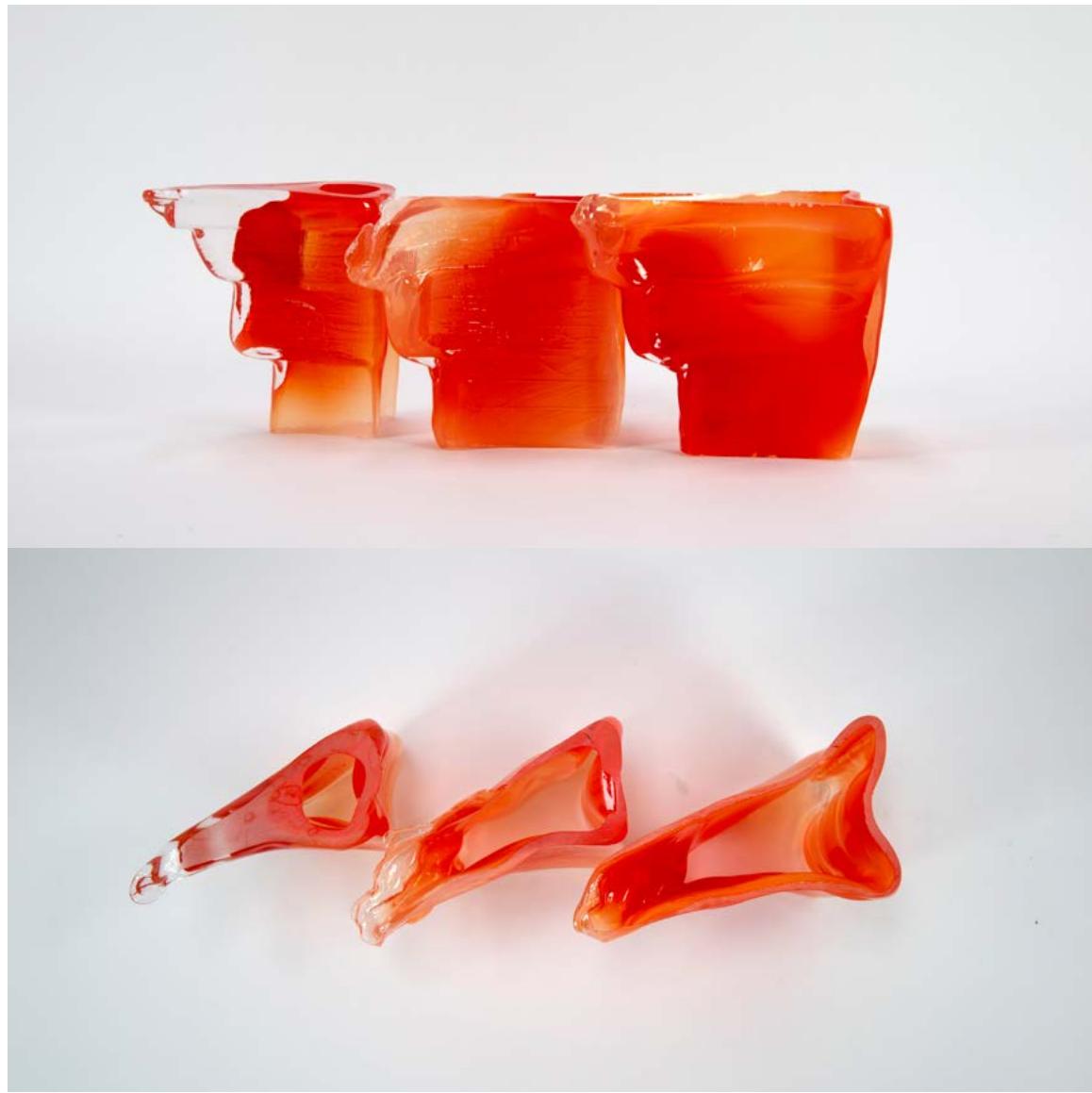
As a primary color, red can provide the strong intensity to stimulate people’s cells in the retina. According to the color theory, people’s retina is most sensitive to the bright and dark of the light and among all the colors, it tends to be more sensitive to red. In fact, in almost all languages, the color red is the first color word that appears after black and white. To Goethe, the highest degree of intensity of any color could leave the sensation of red on people’s retina. The red color itself could help the design show the idea of the compressed intensity. Besides, red is also a major component in the sunlight. As the sunlight hits the transparent reddish building façade, warm colors could be reflected and deflected to fill up the space behind the wall. Goethe would call them colors on the “plus side” that is lively and aspiring.



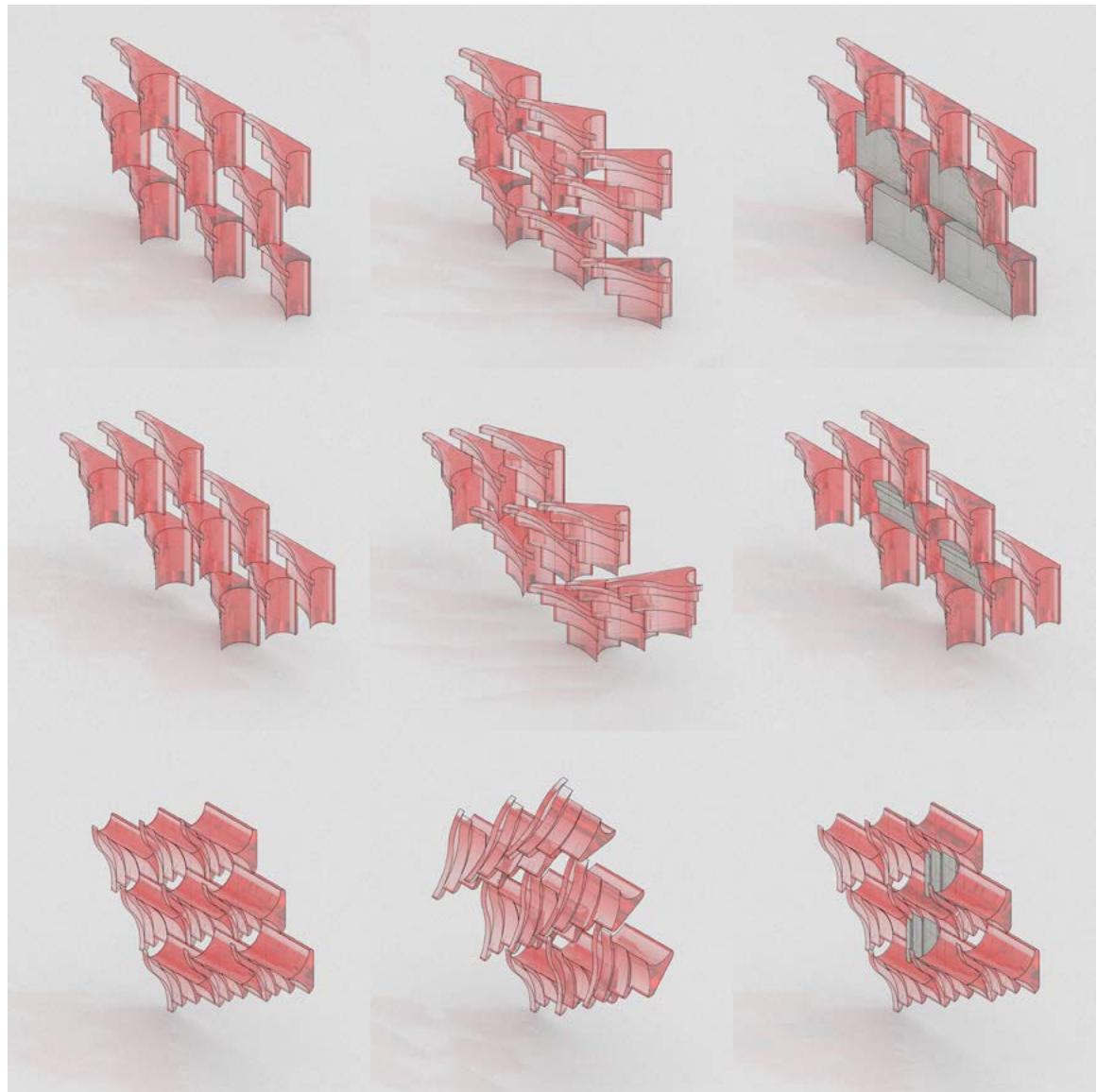
Blown Glass vs. 3D Scan



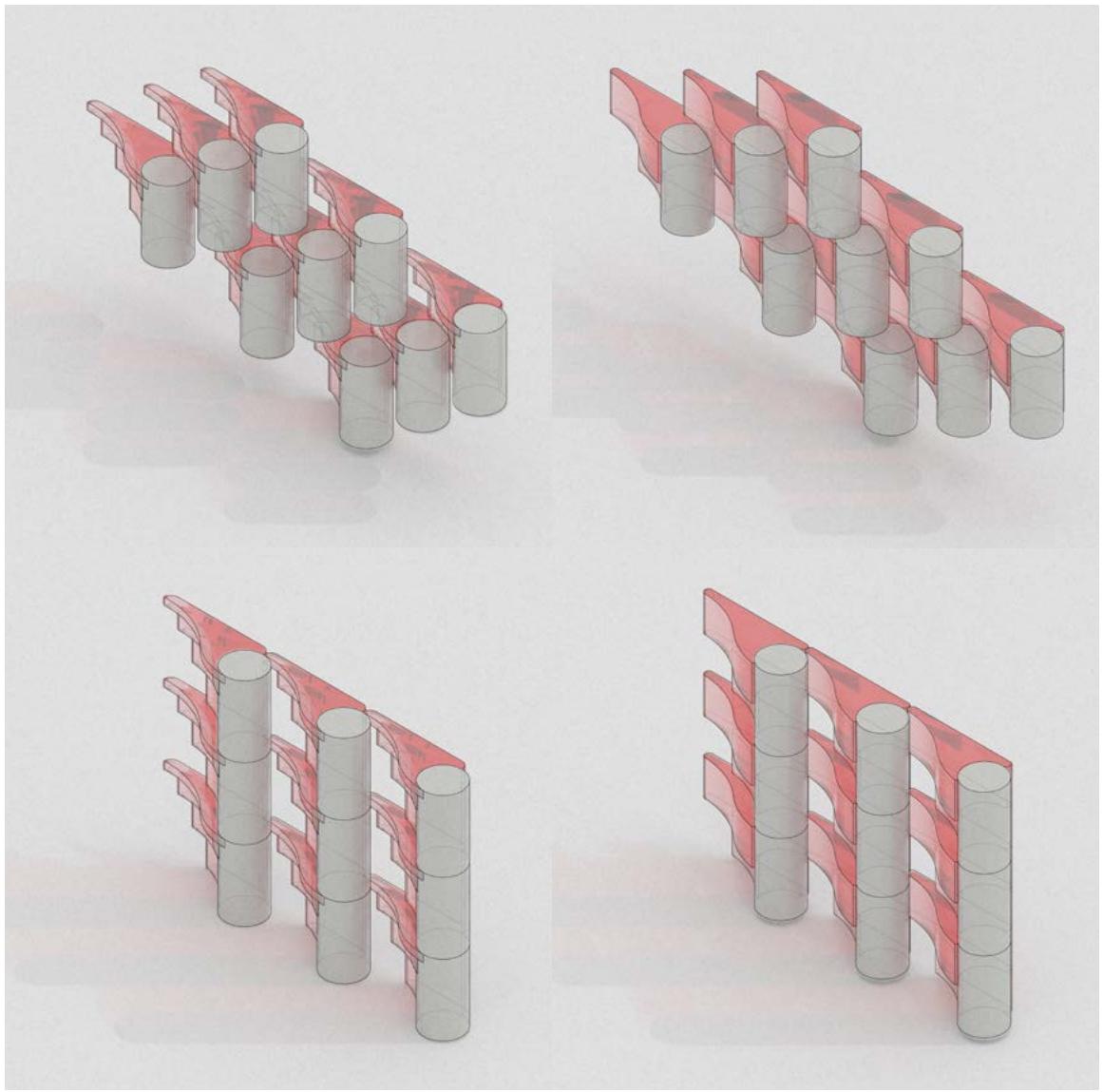
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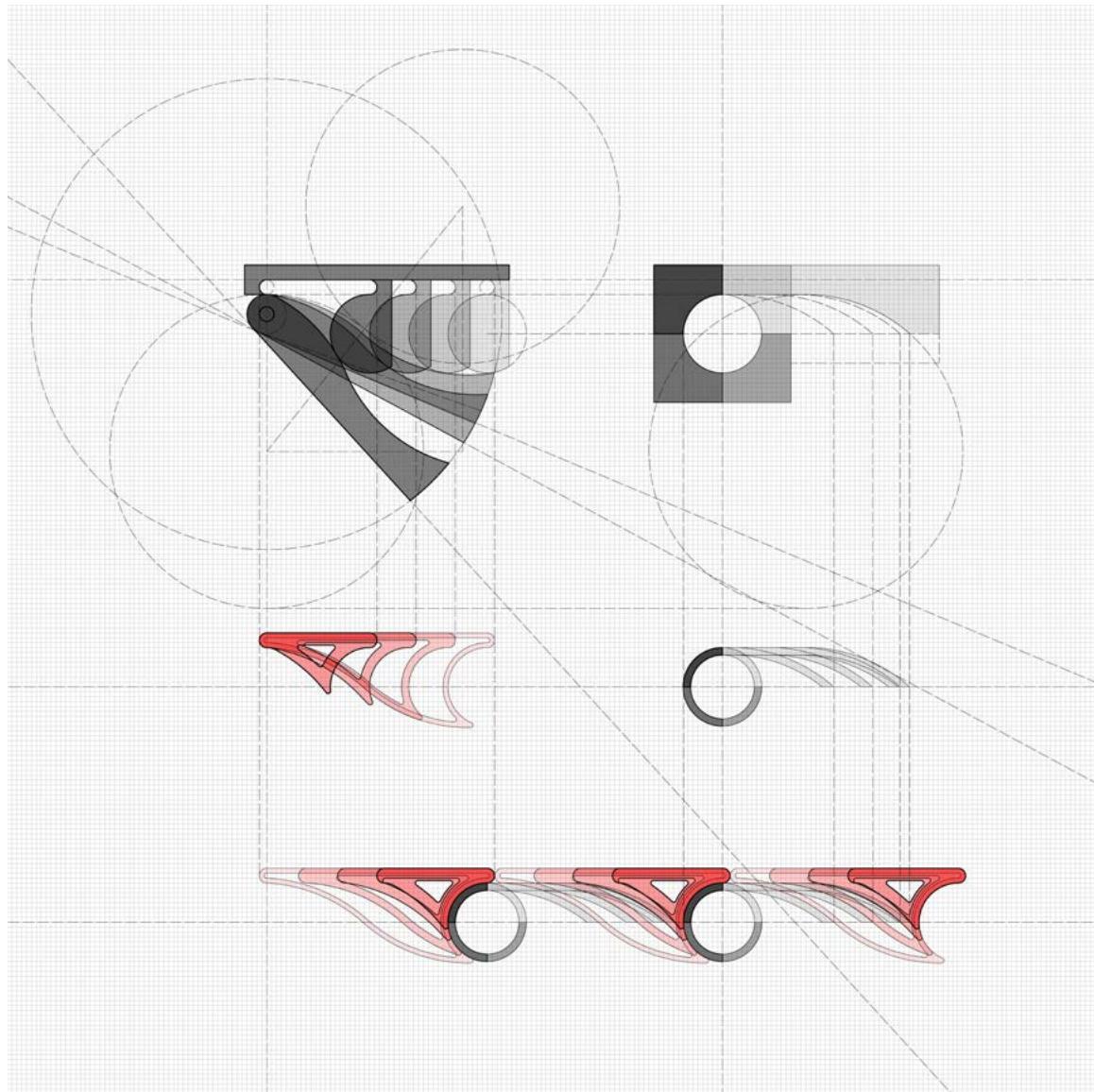


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Aggregation Study



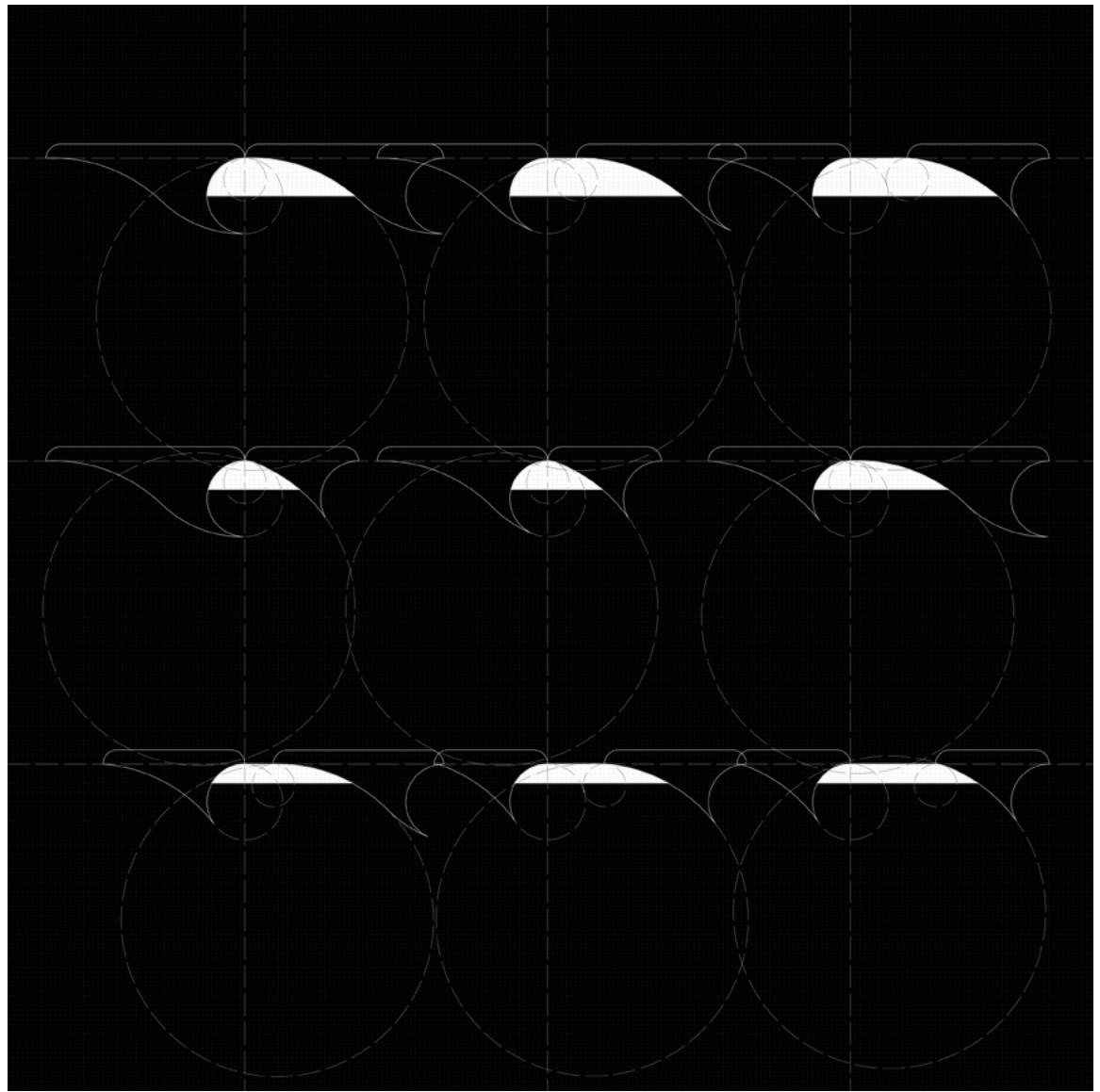


DIFFERENCE AND REPETITION: CERAMICS

The term “repetition” is clarified in Deleuze’s Difference and Repetitions. Repetition can only describe a unique series of things or events and is defined by Deleuze as “difference without a concept”. The world we are living in is full of “repetition”. The leaves of the trees, the pedals on the ground, and even the manmade building bricks are put together without any concept. In the case of the building blocks, when they are stack on top of each other and form a useful entity, the repetition gains its meaning and becomes generality.

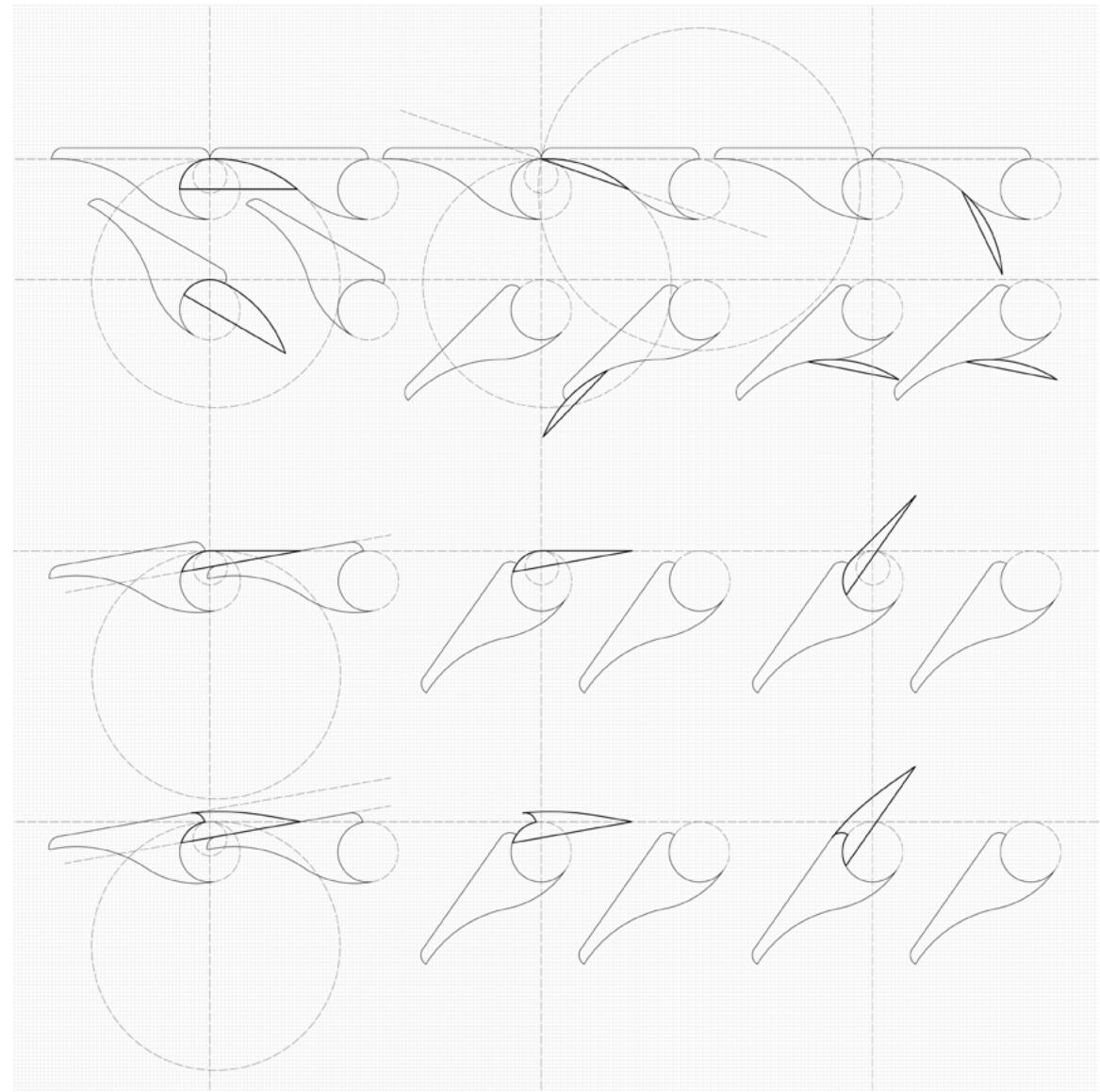
Deleuze’s idea of pure concepts contrasts with that of Nietzsche, who would treat the concrete things like the leaf or the brick as the essence of the world, rooted on top of which grows his philosophy ideas. An important concept in Walter Benjamin’s Work of Art is the aura and the loss of the aura in the post-industrial era. Human beings have invented the techniques of production and reproduction ever since the times of the Greeks. From the reproduction of bronze, wood cut prints to films and photography, human beings have revolutionized the methods of reproduction throughout each generation. What the reproduction and repetition do is breaking the aura of the artwork, a tradition, a unique existence when a specific work of art is placed at a certain point of time and space. What the contemporary world wants is a simultaneous bringing in and moving away. It wants to examine a certain object at a much closer distance, magnifying it, examining it, just as we do with the cloning of information. Yet on the other hand, the breaking of an aura has turned everything into the state of general universality, making it more distant.

The ceramic mold can reproduce the ceramic elements but with the help of a controlled parameter, differences can be generated in a controlled way through the process. I would argue that the repeated object in a process of repetition is worth focusing on. When the object is repeated without any purpose, the repetition process itself is the meaning. When the leaves are repeated on the tree or the bricks are placed without any purpose, we could see the concept of repetition.

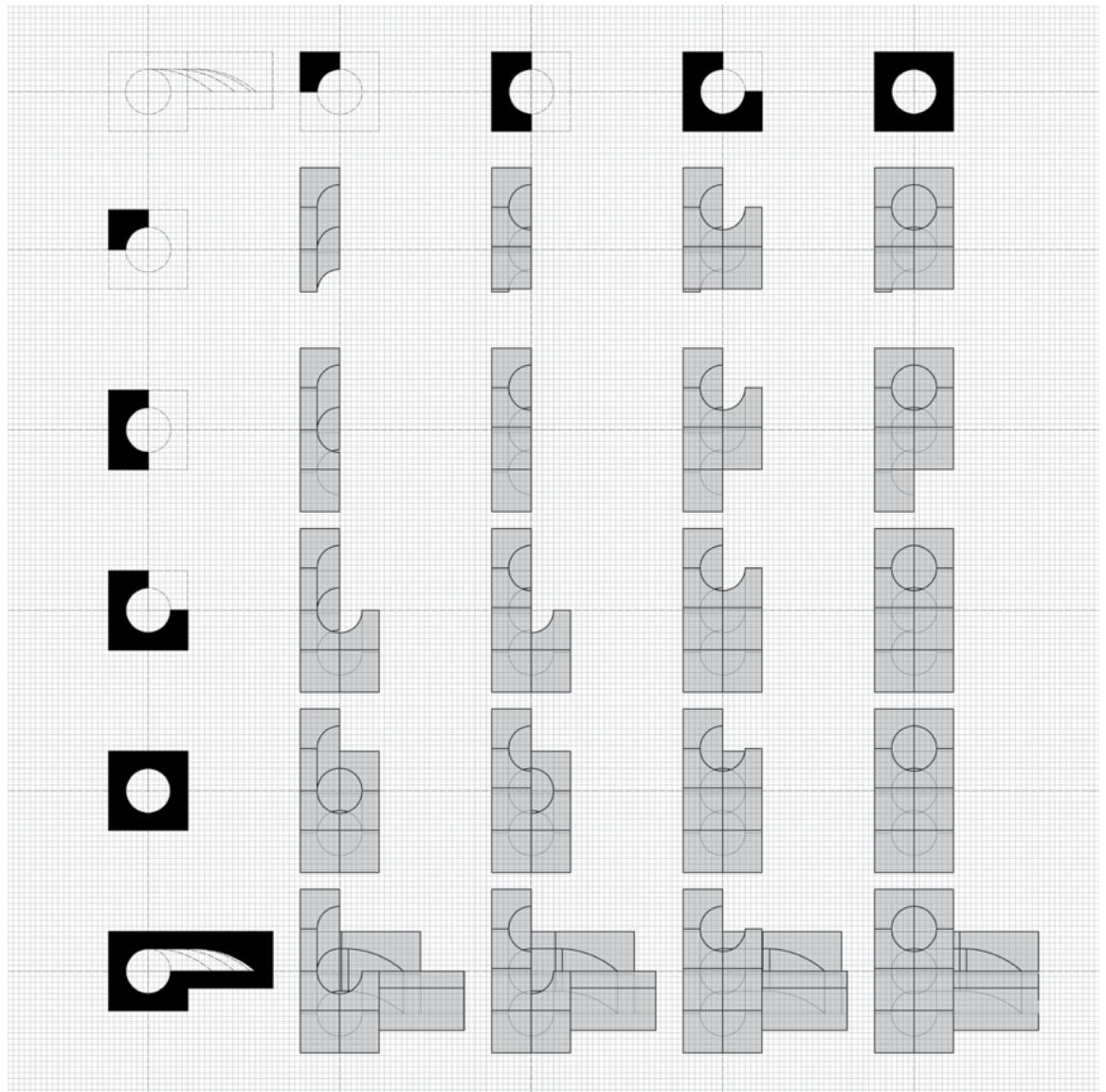


Ceramic Study

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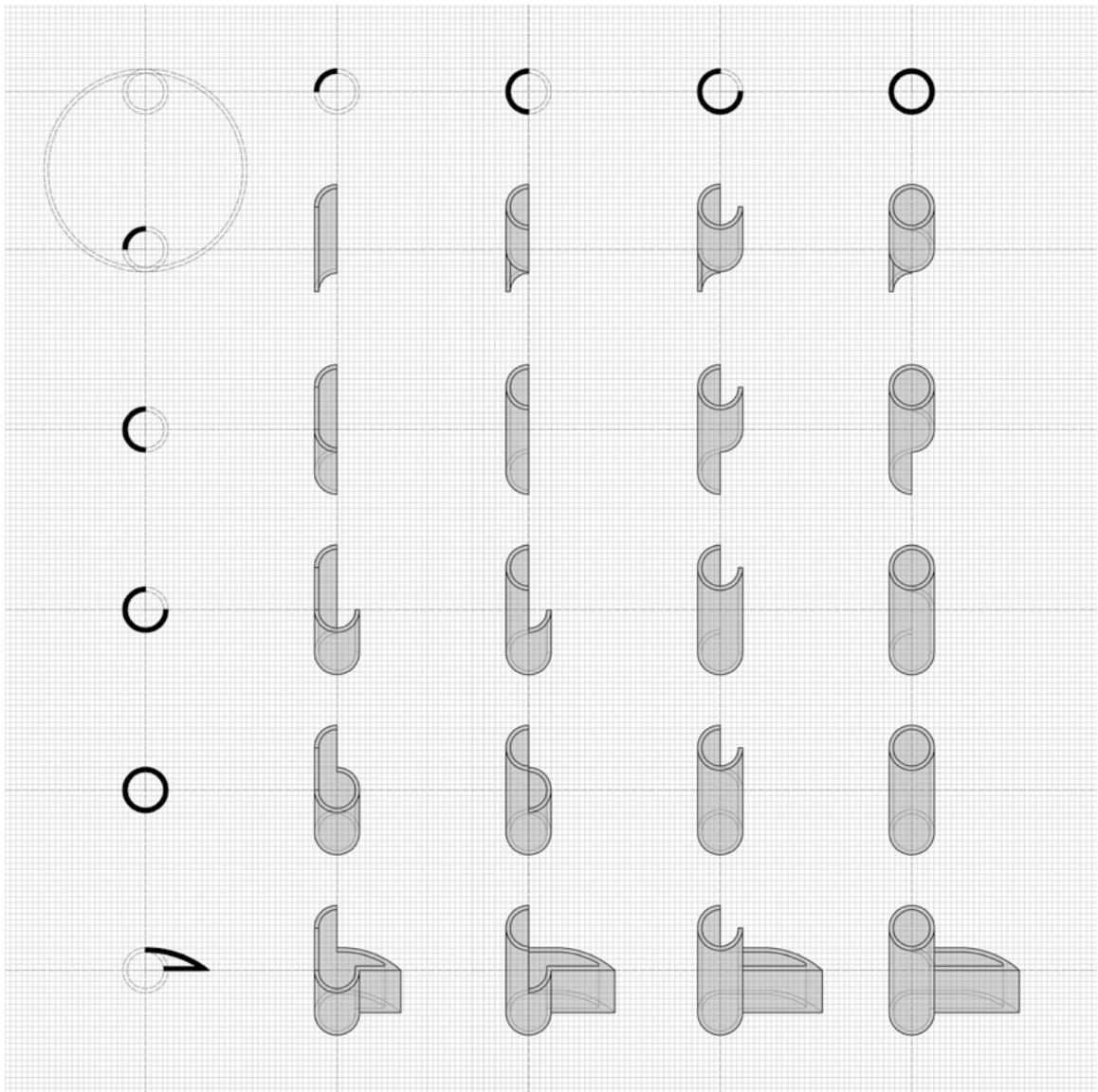


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Parametric Study of Slip Casting Mold

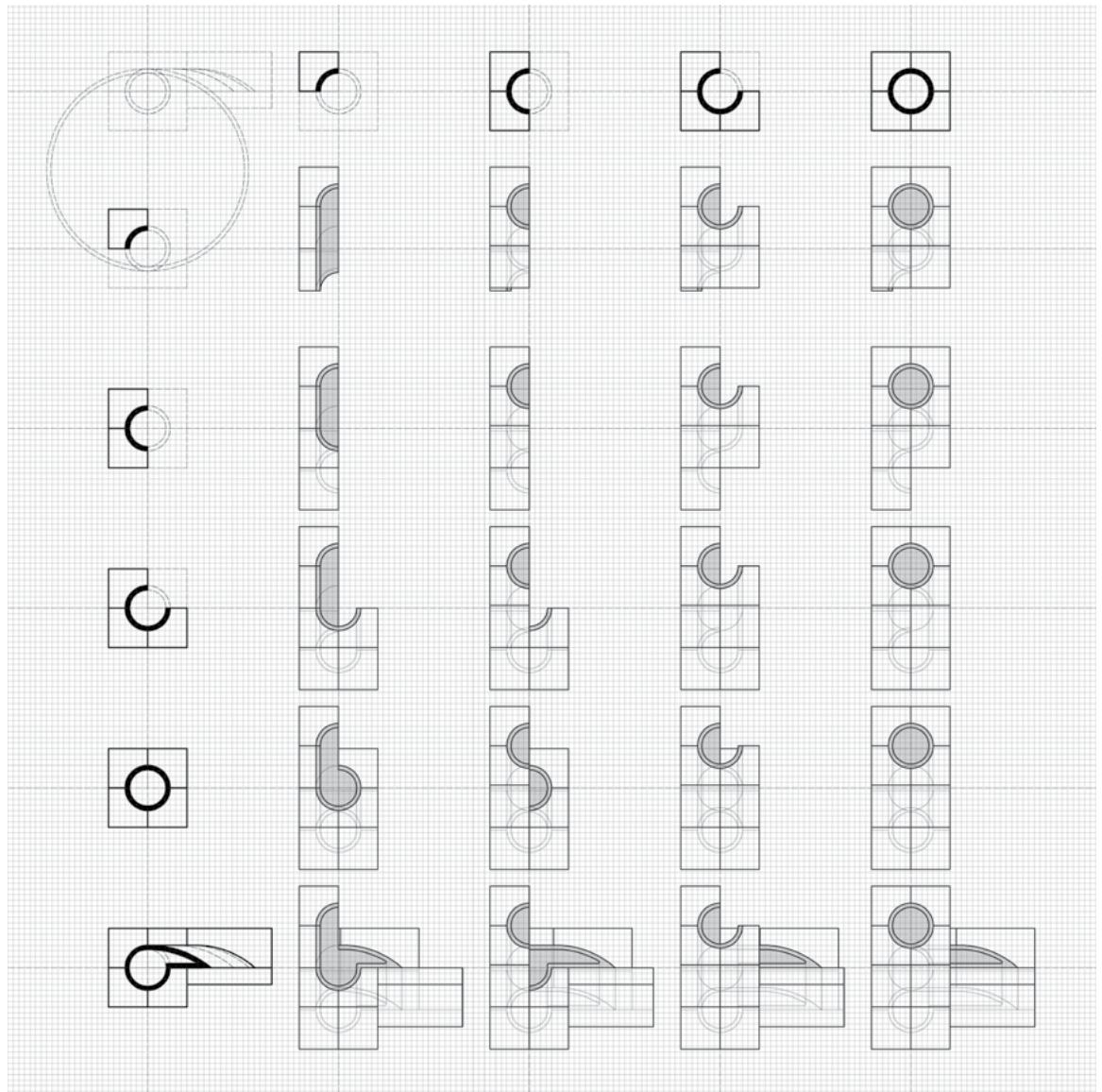
OCCUPYING CHAMBER



Parametric Study of Slip Casting Ceramic

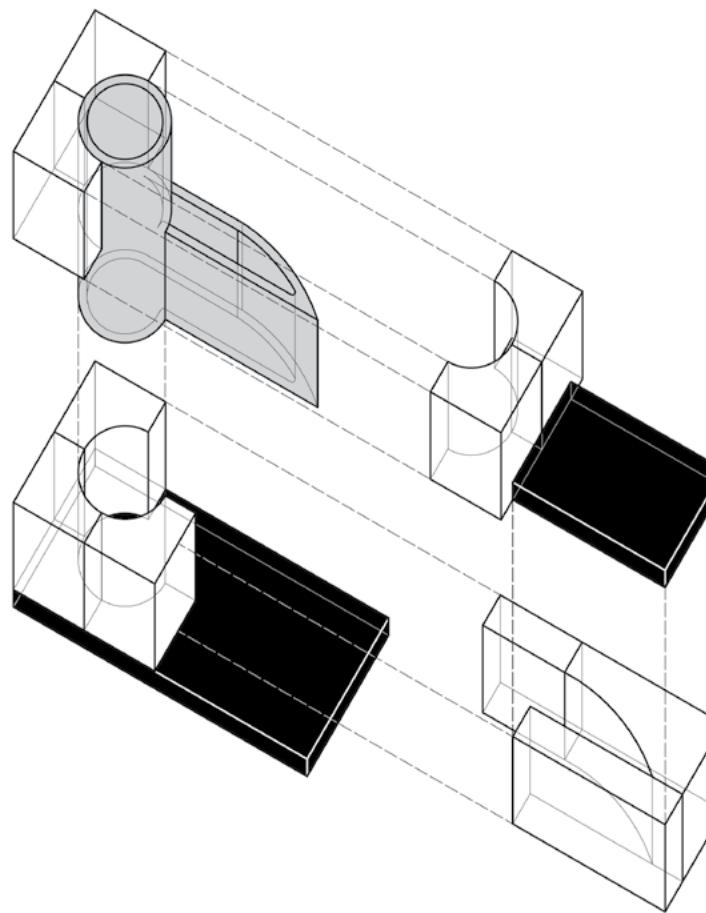
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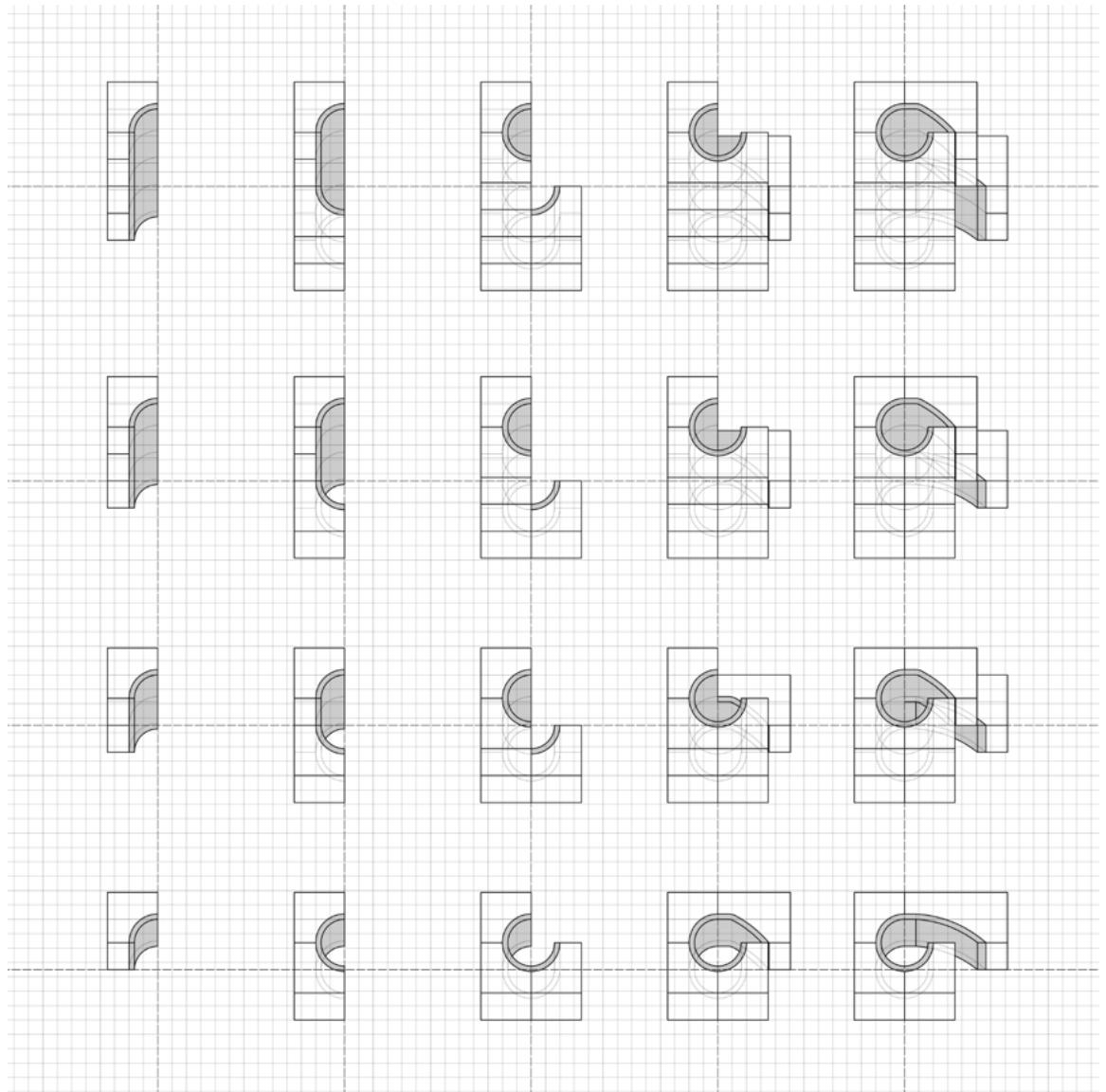
Parametric Study of Slip Casting Mold and Ceramic

OCCUPYING CHAMBER



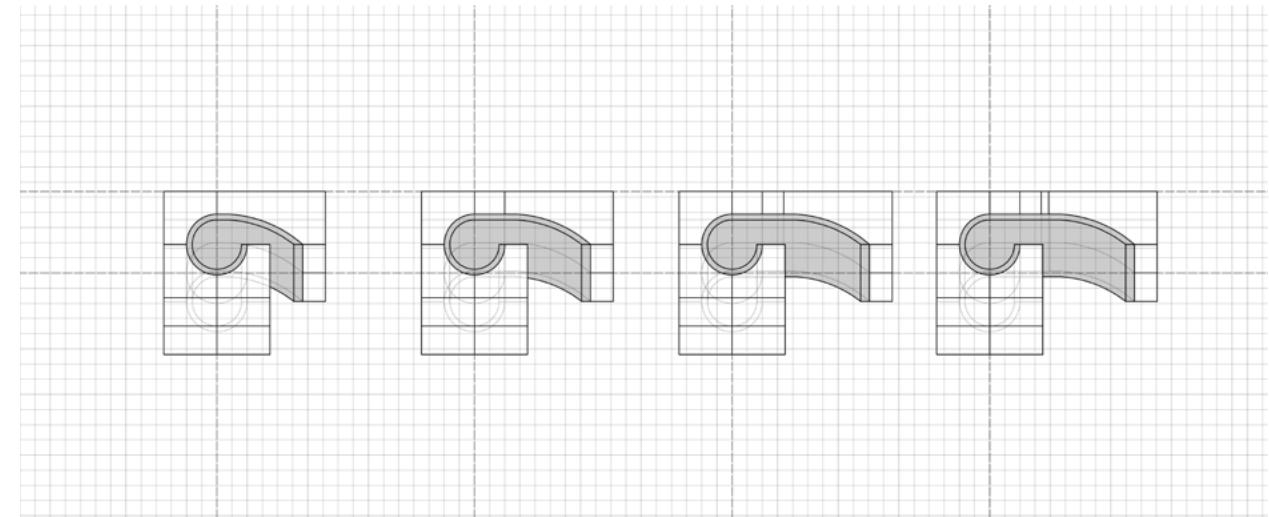
Plaster Mold Construction for Slip Casting

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Revised Parametric Study of Slip Casting Mold and Ceramic

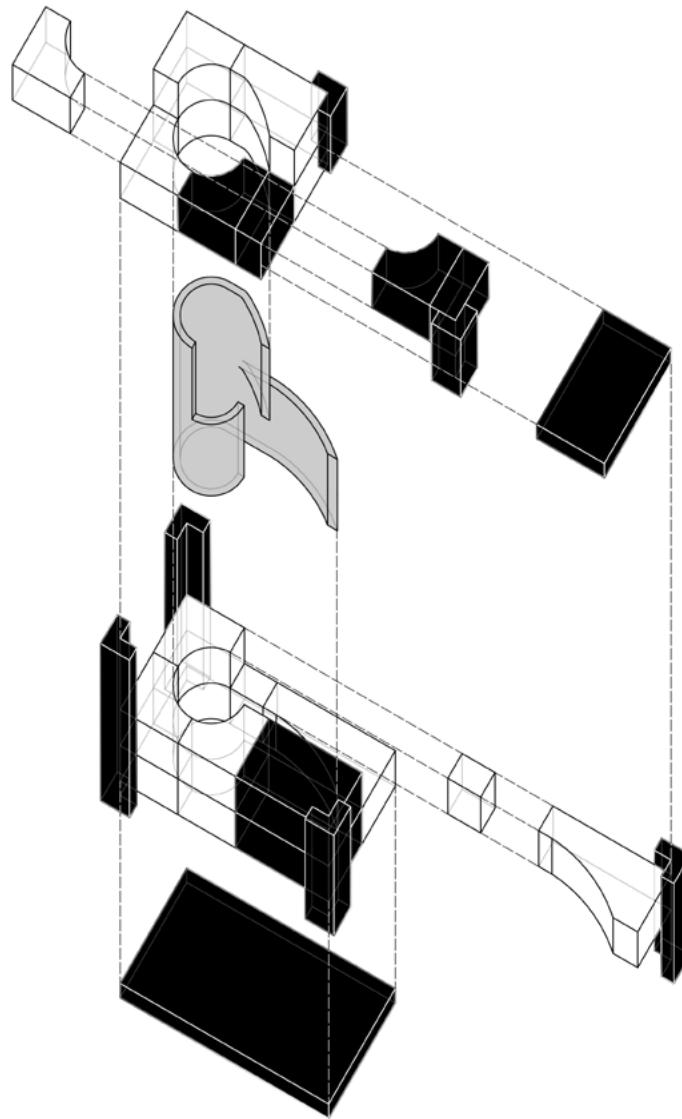
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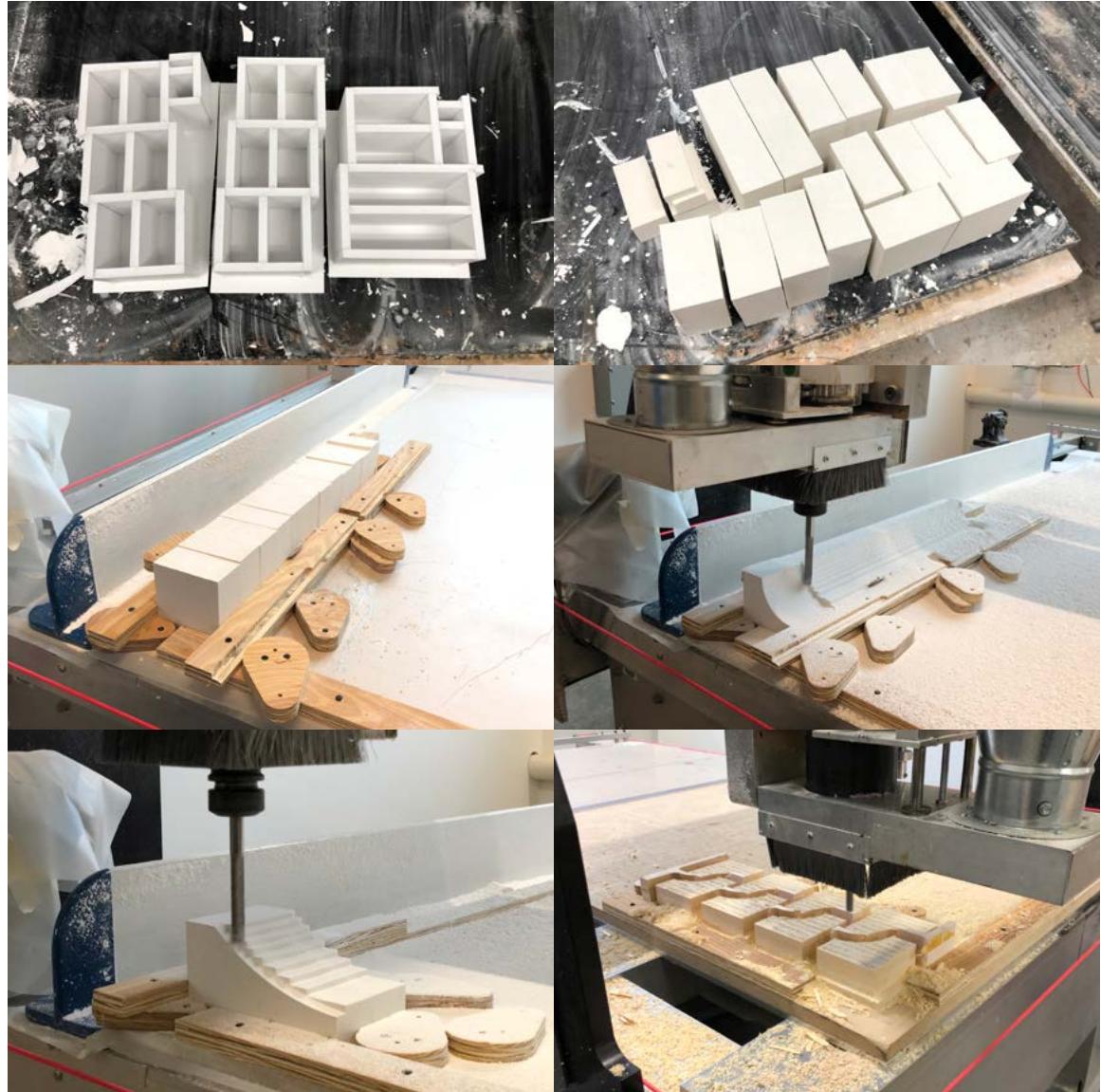
Revised Parametric Study of Slip Casting Mold and Ceramic

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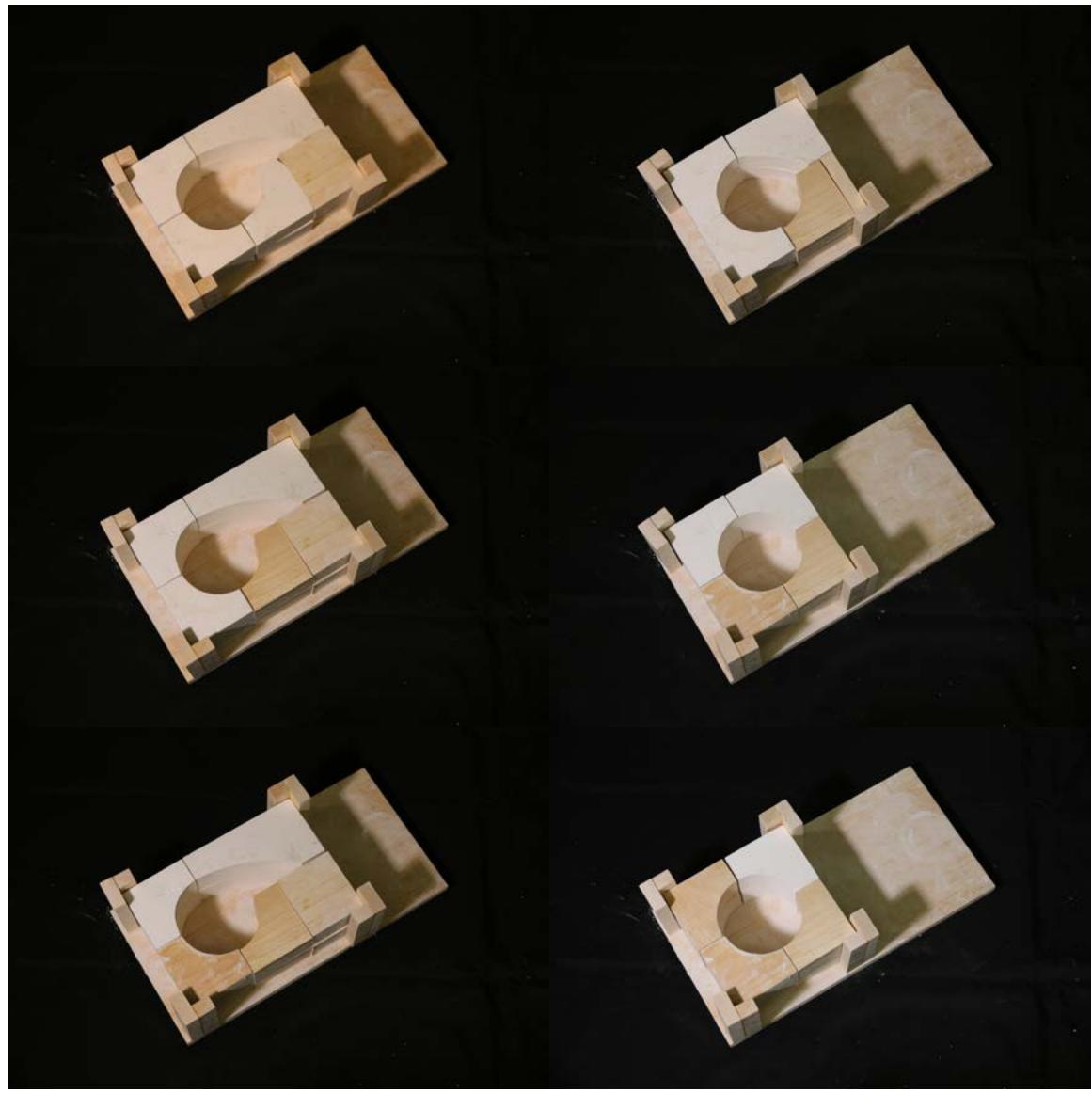




Revised Plaster Mold Construction for Slip Casting

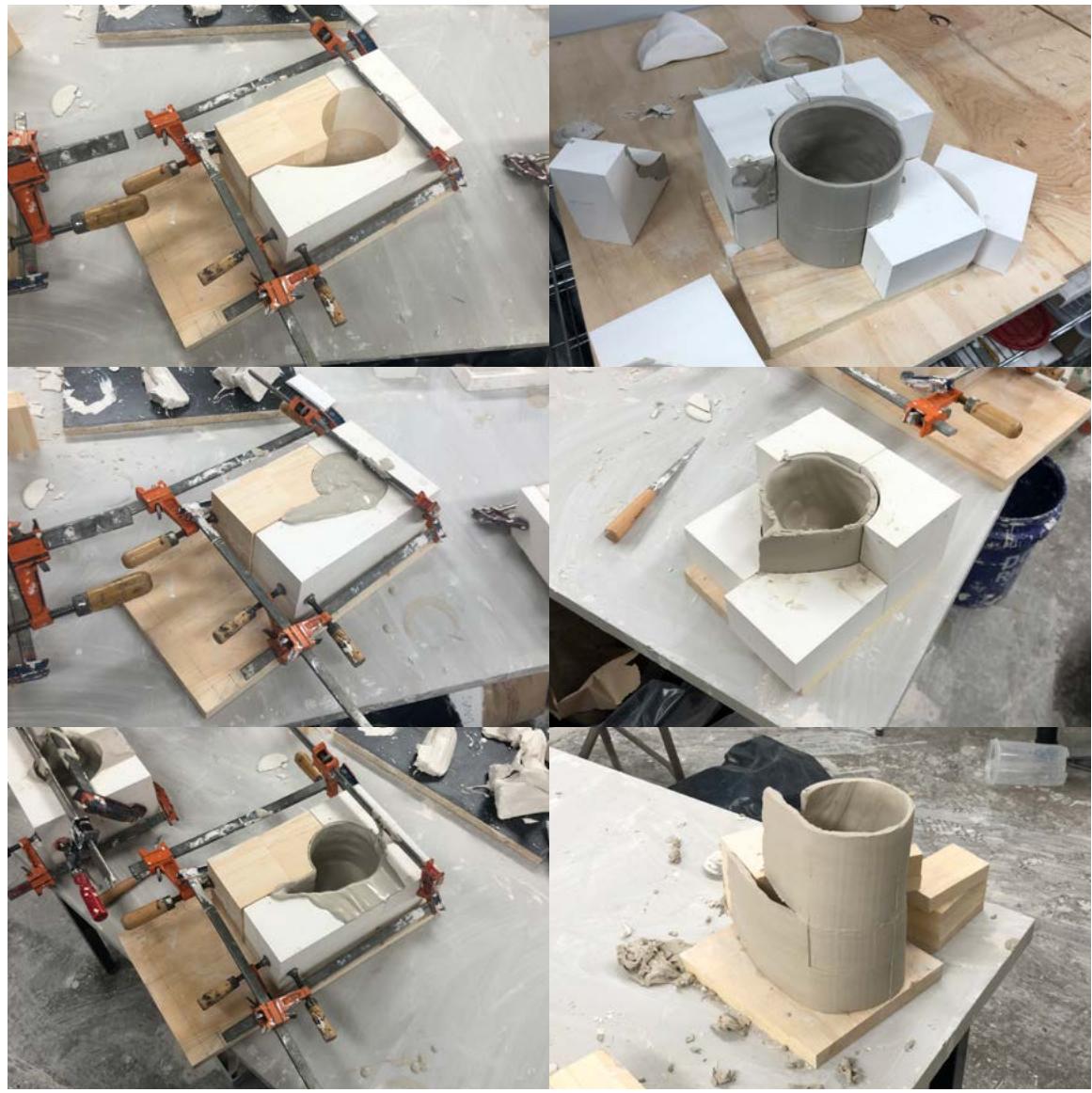


Plaster Mold Construction



Plaster Mold Configurations

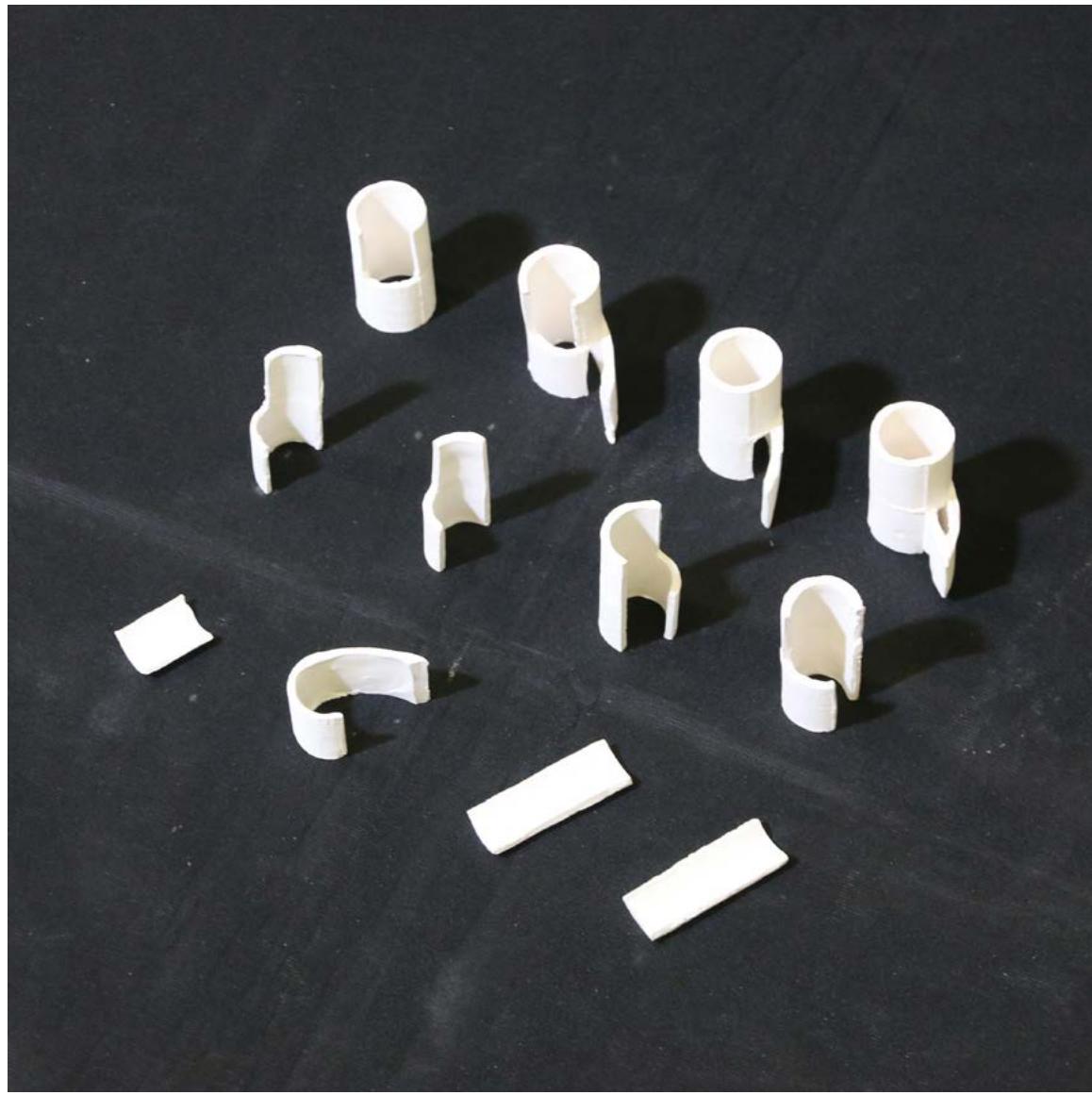
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Slip Casting

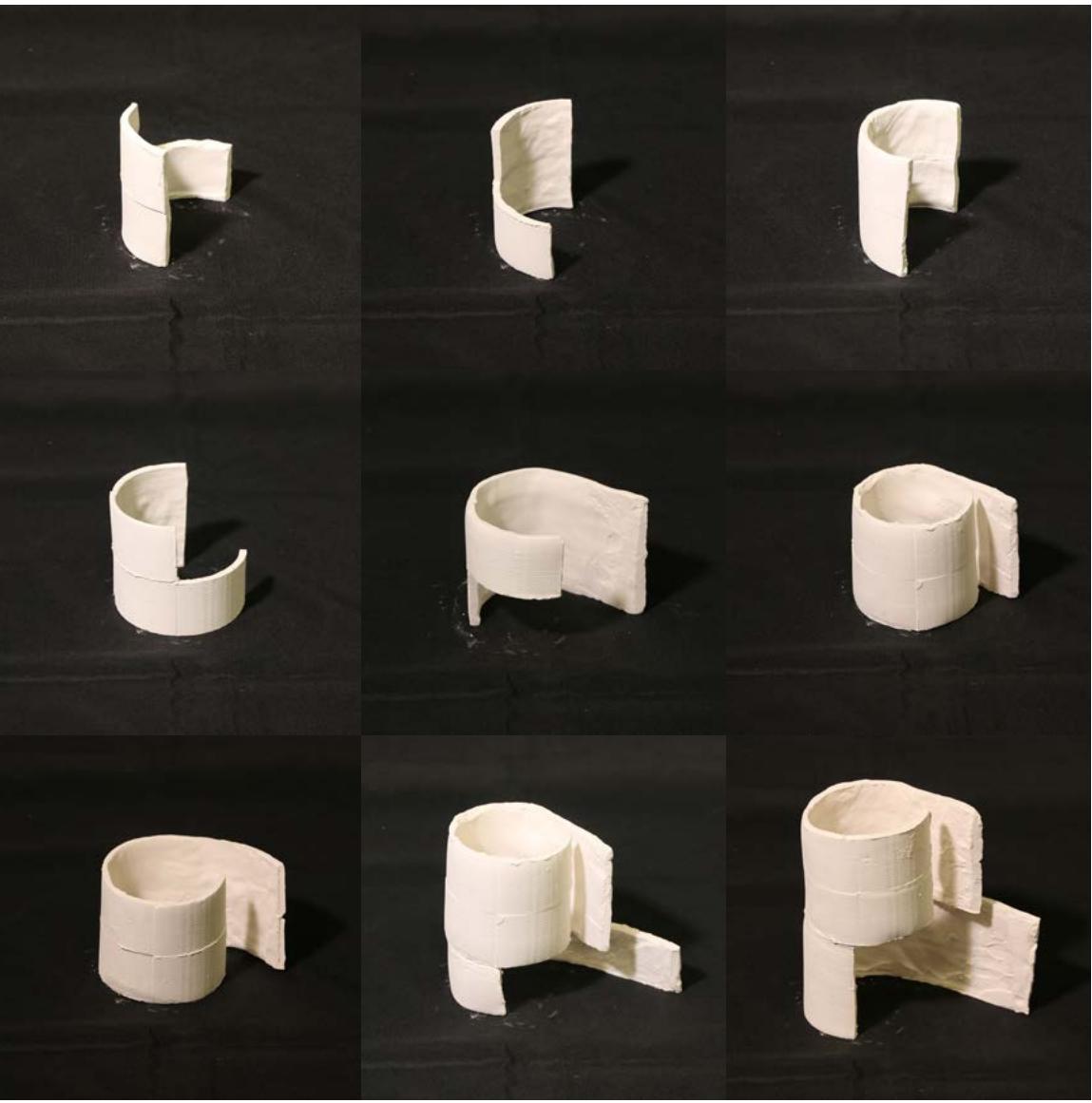
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Ceramic Studies

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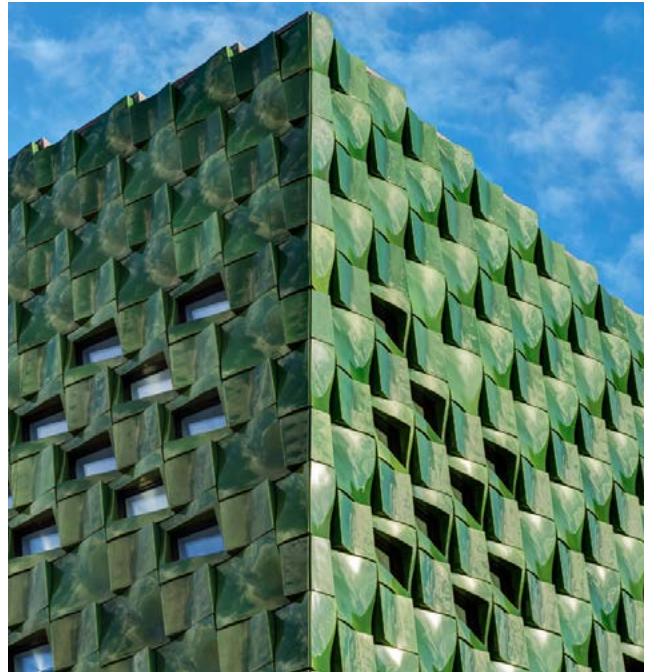
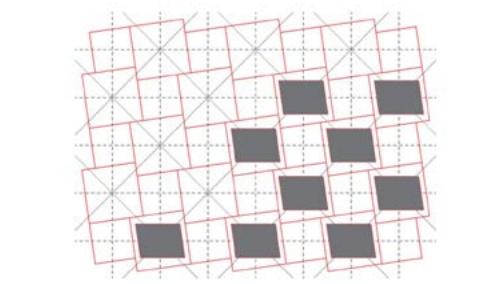
Ceramics

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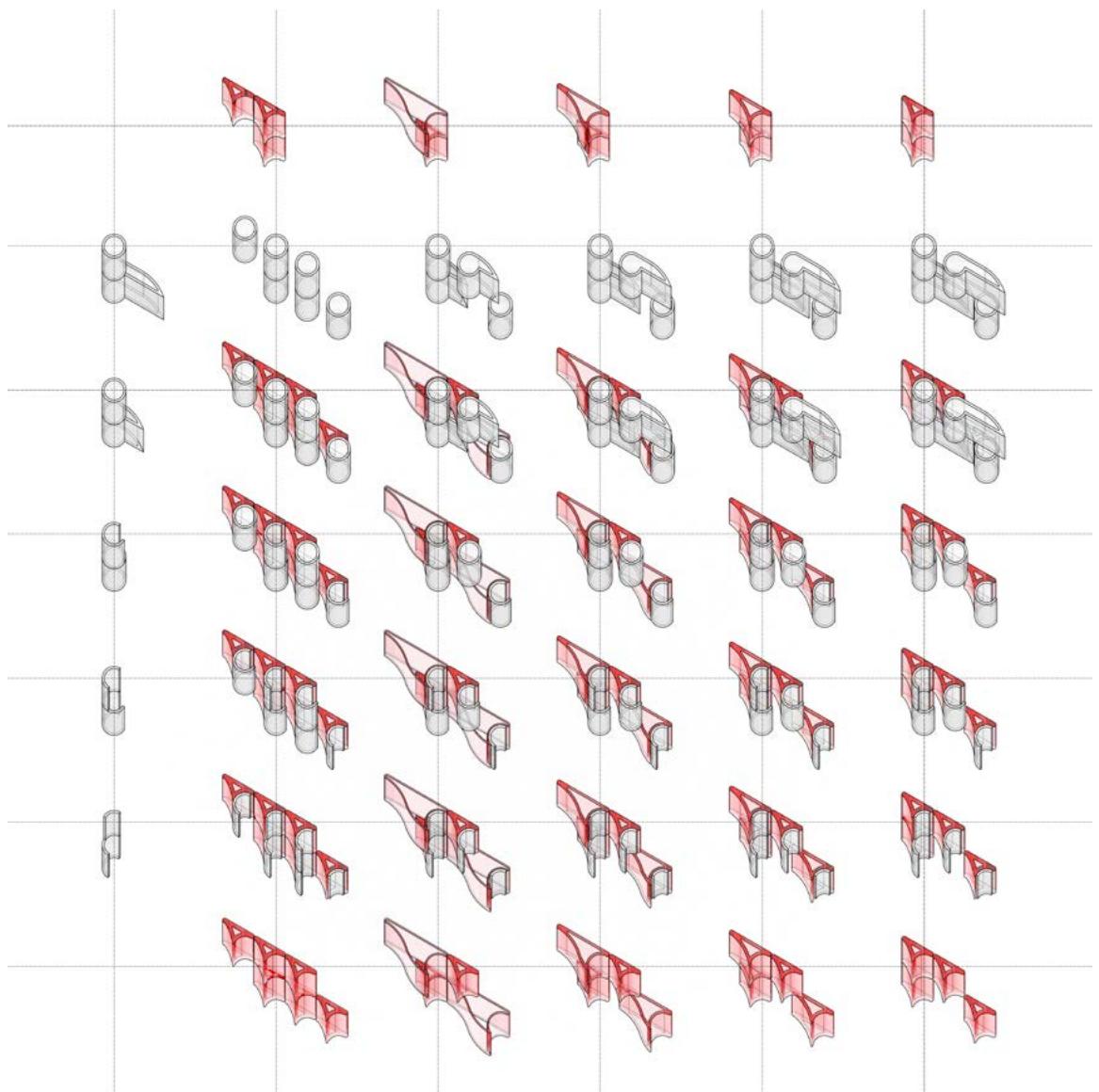
Facade Precedent: Ringling Museum Center for Asian Art





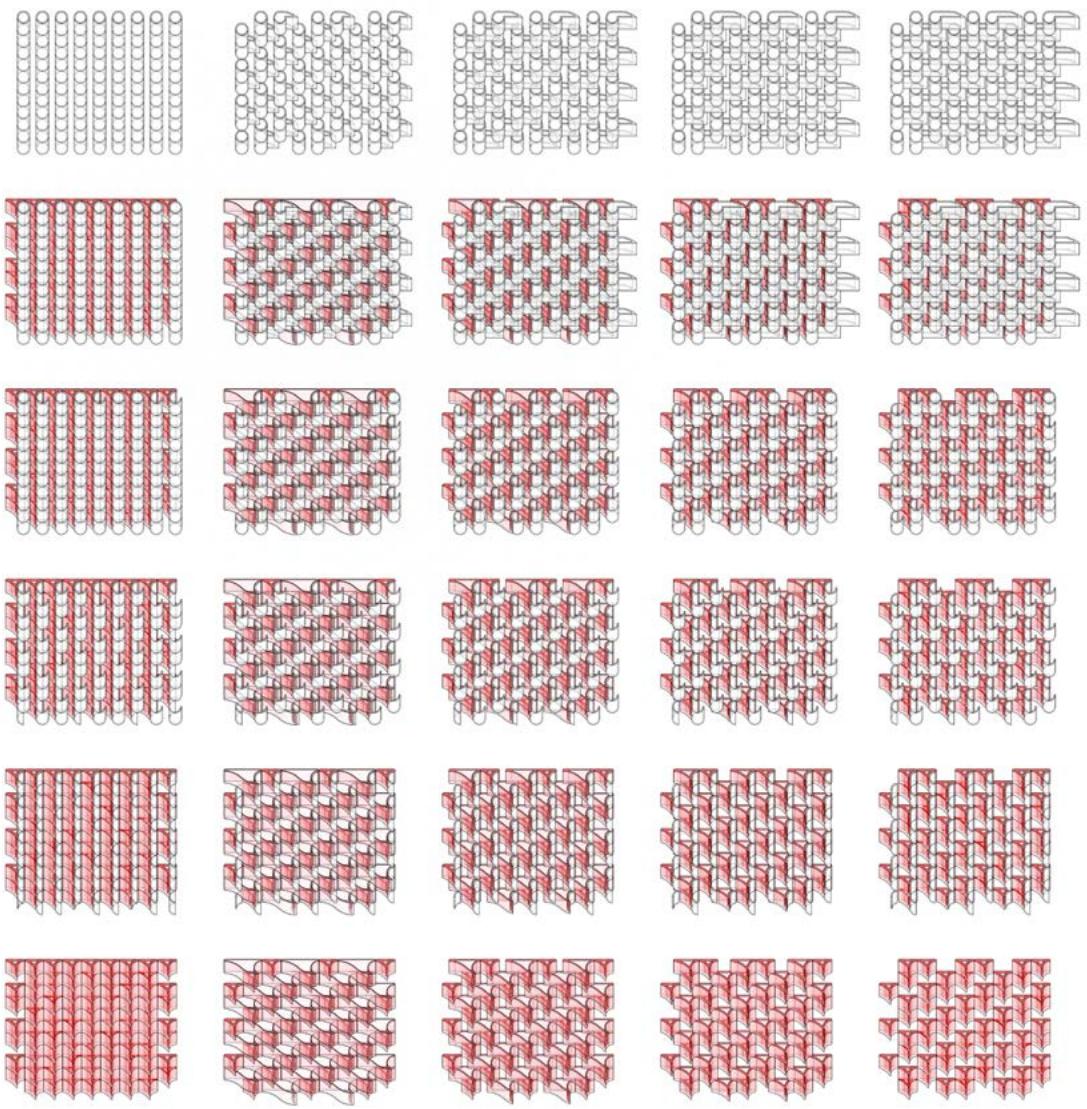
Facade Precedent: The House in Malaysia



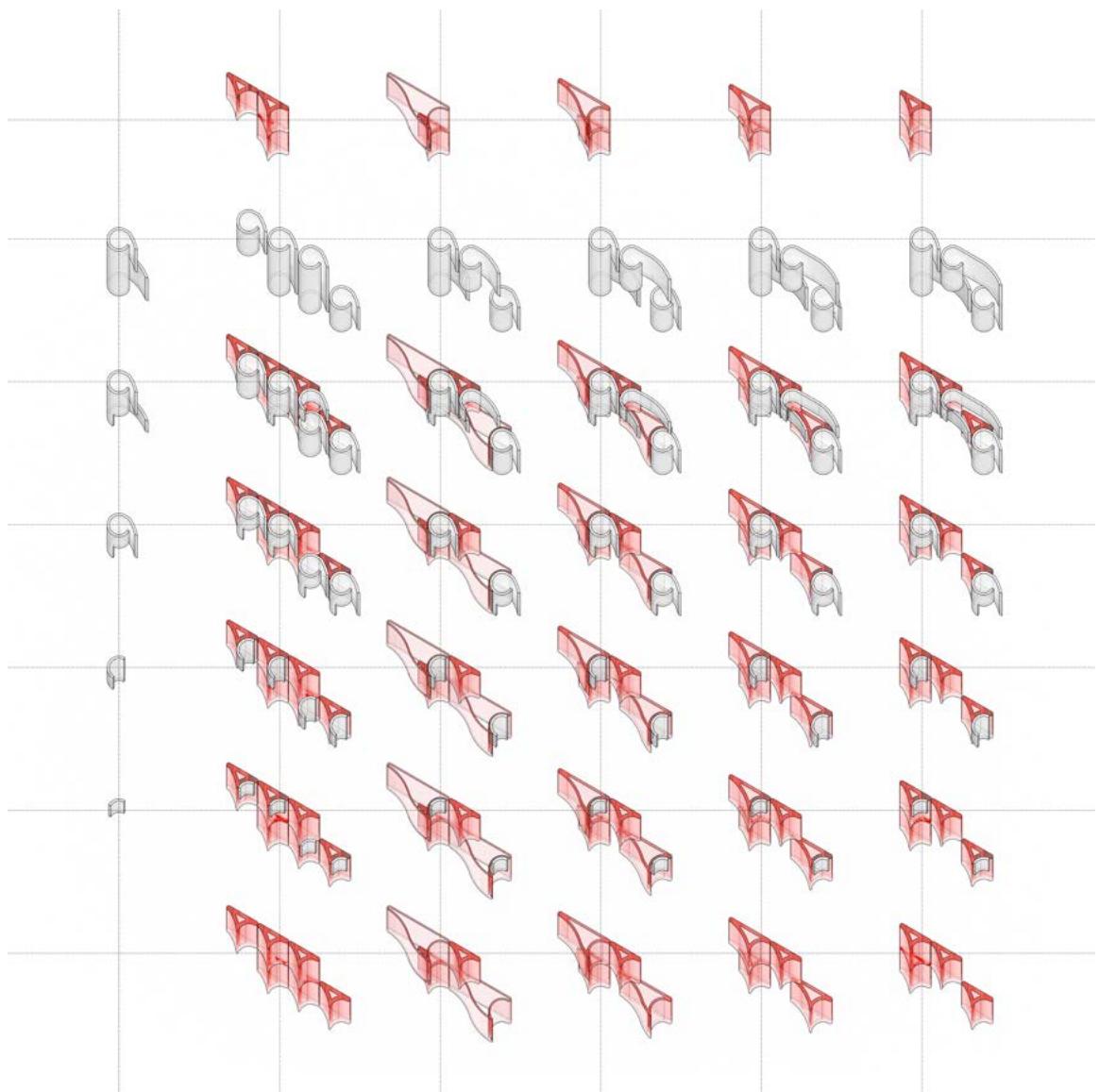


Facade Aggregation Matrix

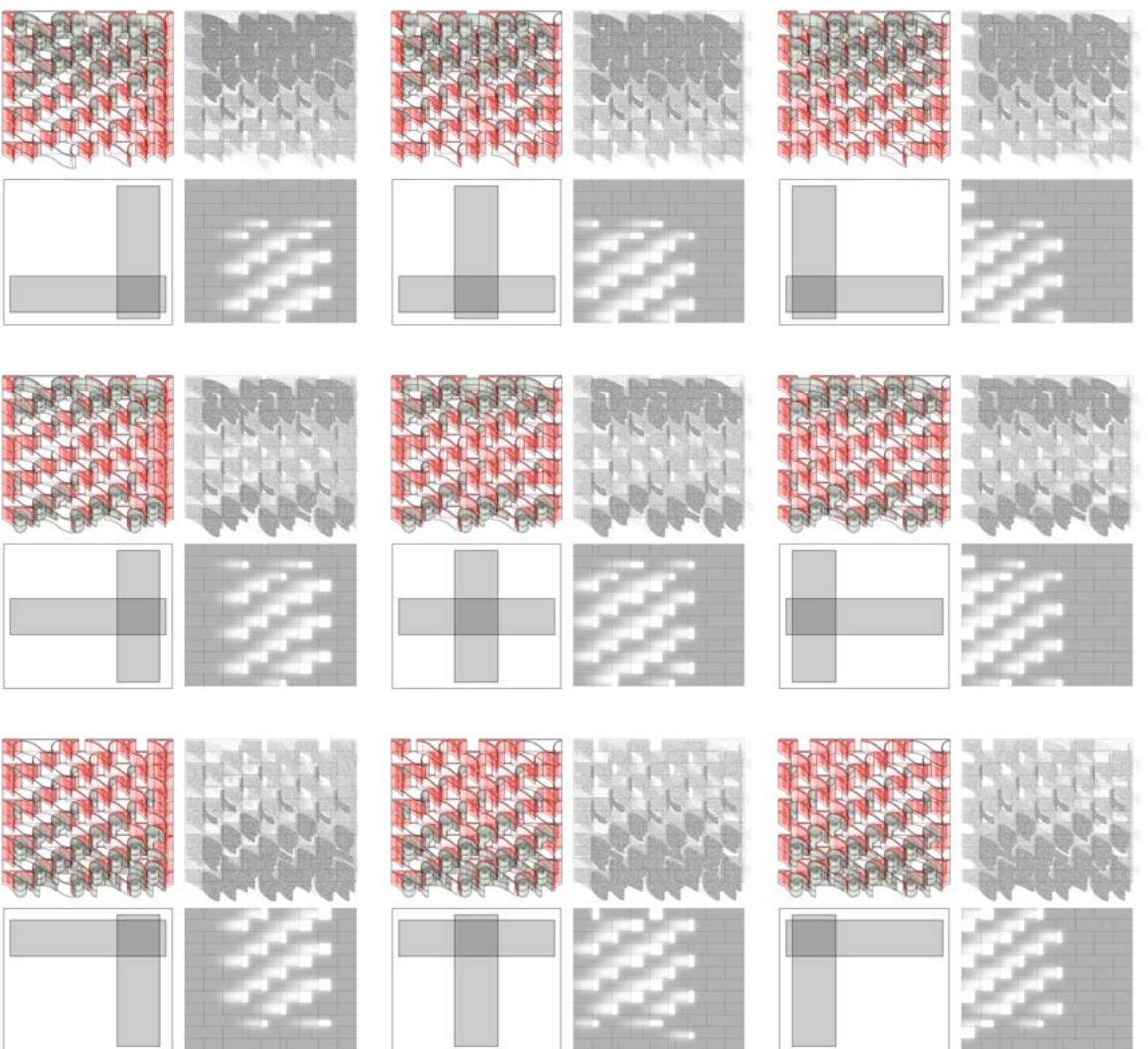
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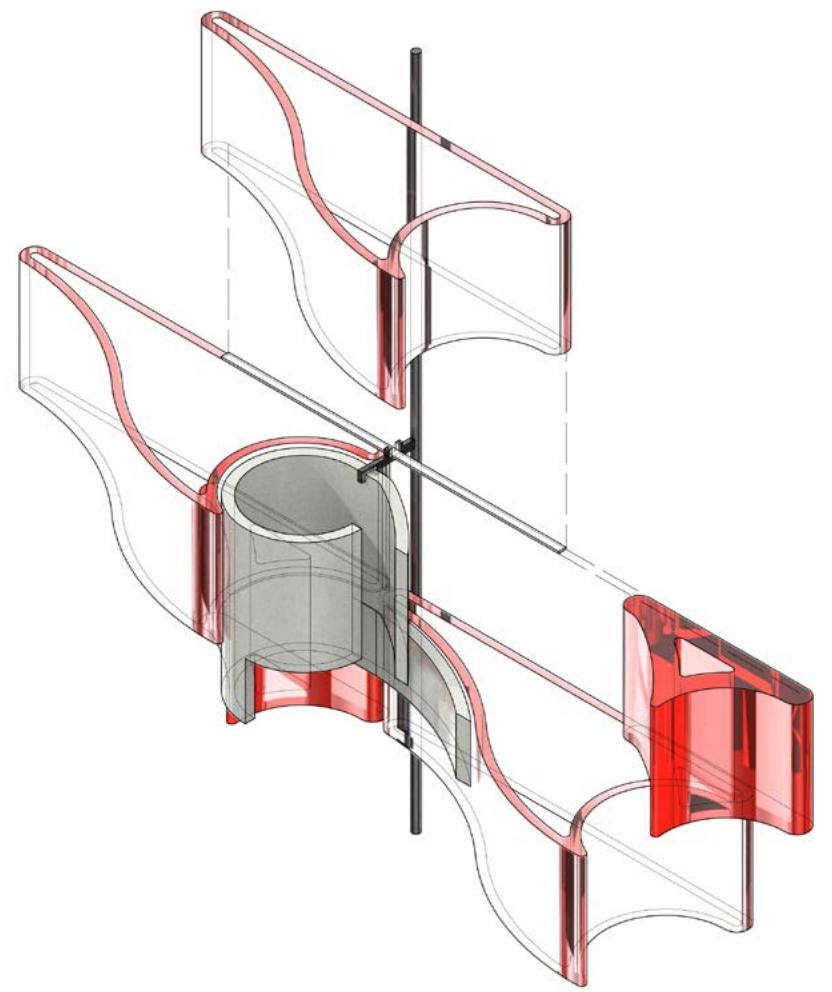
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Facade Aggregation Matrix Revised

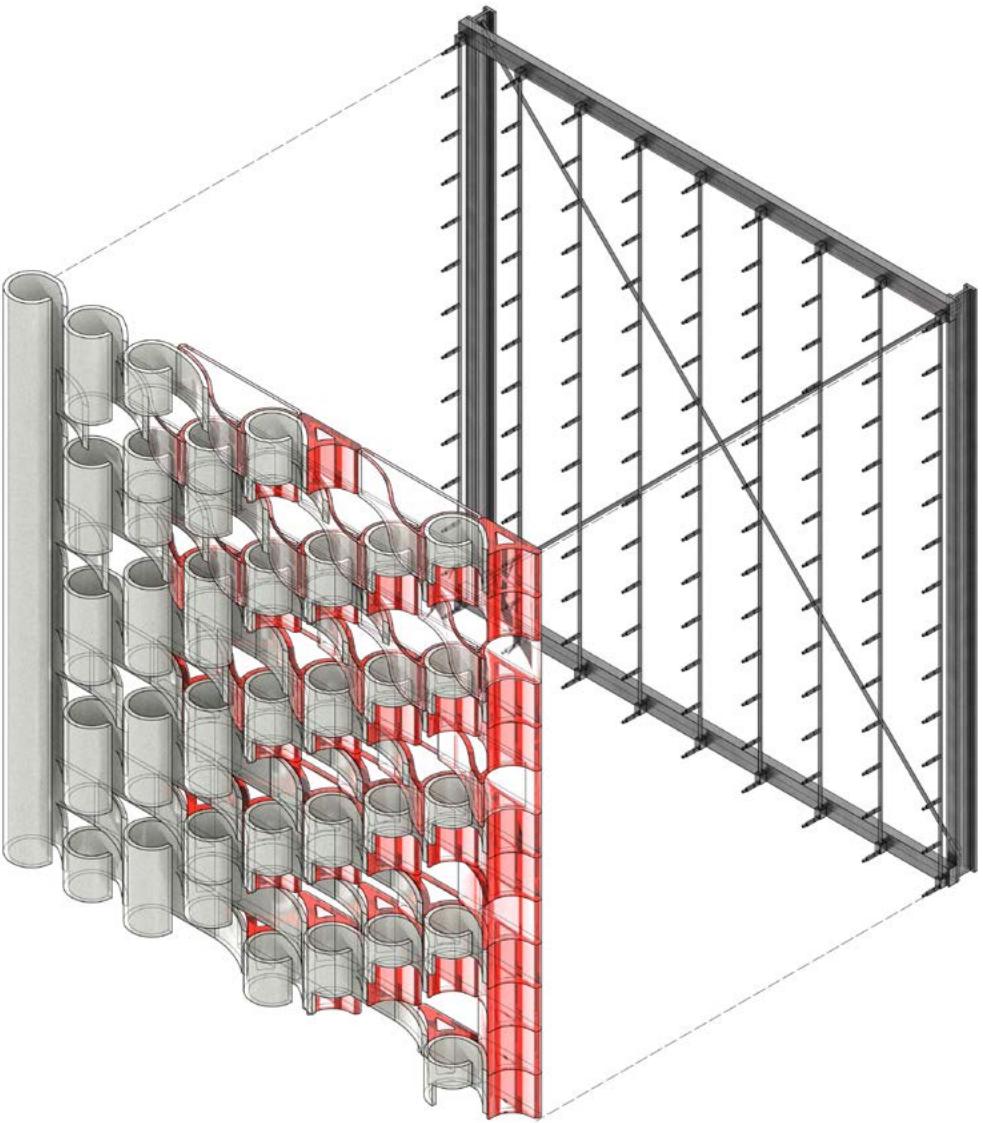


Facade Grasshopper Study



Facade Construction Detail

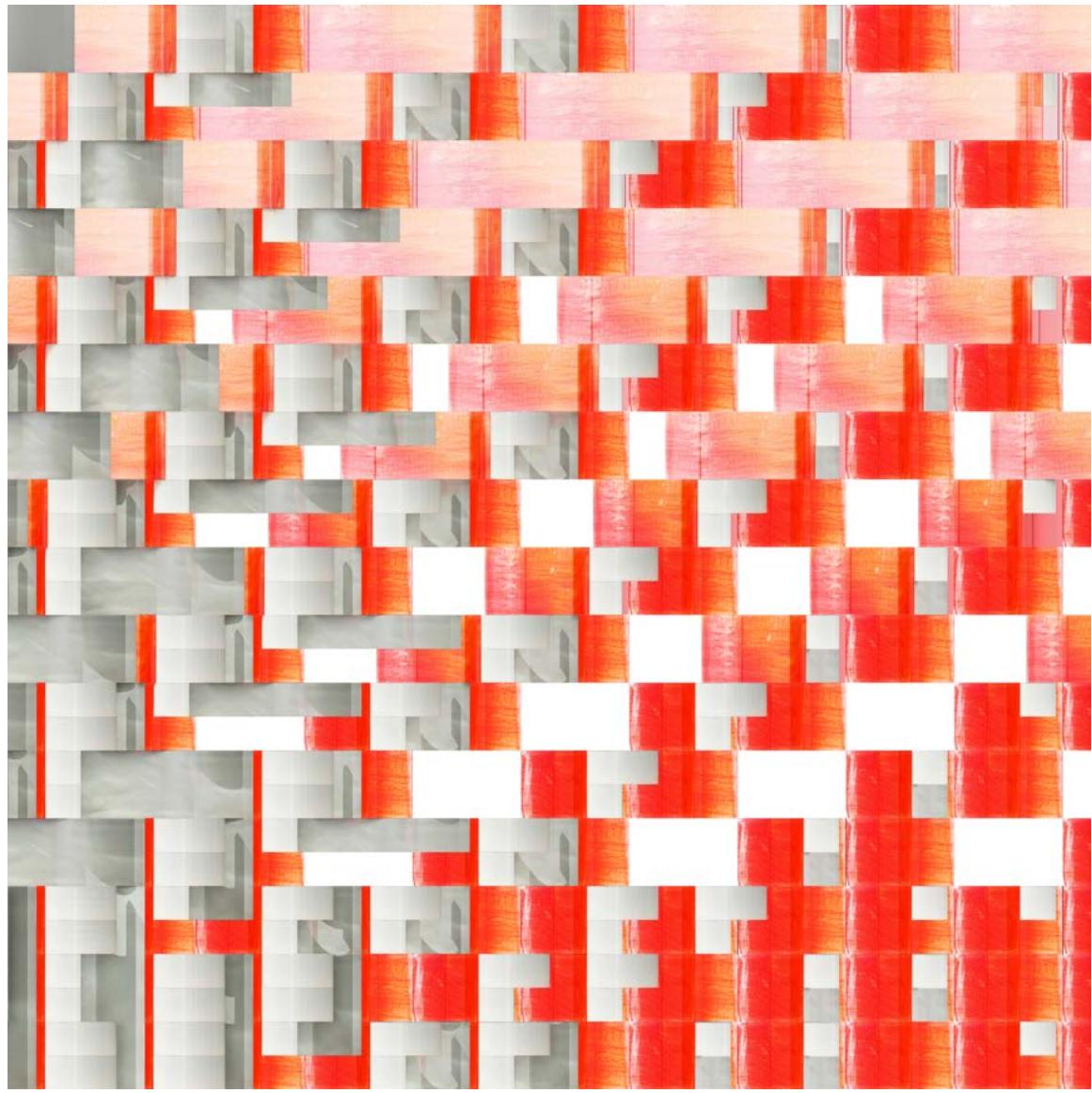
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Facade Structure

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Facade Aggregation

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