

4.112 Project 2: “The Making Machine”

Imagine the perimeter of a (1'x1'x1') bounding box as a Petri dish in which your system is grown 3Dimensionally from Processing. Take the four drawings from exercise one and attempt different configurations for assembling them within the boundary of a box (1'x1'x1'). Develop a process of linking your drawings in the bounding box or further developing your Processing sketch to end-up with a 3D solid/void model in Rhino. You will be developing a mold-making technique to eventually cast the solid portion of your model. The volume of the poured cast should occupy no more than 75% of the total volume of the box. Take a position on the relationship between surface area and solid/void – does your processing system generate surface, solid or void – what is solid and what is void, why?

Think of your drawings as a machine that manipulates and informs the plaster. How does plaster give a new reading of your system? Draw 2 horizontal cuts (plans) and 2 vertical cuts (sections) and 1 axonometric drawing through your cast object at 1:1 scale. Map out the solid and void in your drawings. Determine which orientation seems more appropriate to allow or block the flow of plaster. Determine cavities vs. solid spaces, notice thin faces vs. thick ones. Dwell on the extreme conditions created in your cast object, and build upon them using your precedent logic, your drawing system, and the characteristics of your models. Through the process of drawing, what new opportunities arise, how does this new medium allow you to influence the design? How does your system & machine act to inform the plaster, how does it allow flow, block flow or embed gravity into the material?

In order to make the mold for your project, the most important question is to understand the nature of your project and its grain. What are the necessary elements and details that you need to retain in the mold-making process? Think about how to make a mold to achieve high resolution, easy pour and simple release. A few options for making your molds:

CNC Milling

In order to make your mold by using the CNC Milling machine, you will use 2" foam, which you can cut, glue, and assemble, prior to subjecting it to the CNC (i.e. you can have thicker pieces than the 2" for layers). Based on the nature of your project and its grain. Then surface mill the foam and cast in place.

Laser Cutting

To laser cut, you will be using thin sheet material that you will then assemble (by using dowels to register and make precise structures). You might need to think of a two or three part template for each layer, so that you can ultimately detach the mold and release your cast object.

Fabric Casting

Create a structure (rigid or wires etc) to hold a network of fabric (latex, spandex, other fabrics etc), then cast inside of the fabric to get rigid structures and smooth surfaces

Plaster of Paris

Create a structure to hold/tension fabric then paint-on plaster to make rigid surfaces. Then cast within the rigid surfaces.

Expanding Foam

Deposit drops of expanding flexible foam in a systematic process to additively build-up complex 3D structures. Then cast around that.

Build-up Solid (other method) and Cast Around

Use any technique of fabrication/lasercutting/paneling or others and build-up the desired solid object, then cast around the object with a flexible material to make the negative.

Schedule (Note: The schedule may change slightly throughout the project):

Week 6	Developing 3D & Solid/Void
M	Studio: Introduction to Project 2 & Working Session
W	Studio: Pinup First Pass 3D Translation
Week 7	Mold Design & 3D Printing
M	Studio: Send 3D Prints & Designing the Mold from 3D
W	Studio: Fabrication & Building the Mold
Week 8	Casting
M	Studio: Assembling the Mold + Casting
W	Project 2 Interim Review
Week 9	Drawings – Plans/Sections/Axon
M	Studio: Plans/Sections/Axon Development
W	Studio: Plans/Sections/Axon Development
Week 10	Final Review
M	Final Review for Project 2

Final Deliverables:

Cast Object(s) + Mold
3D Printed Object
Set of Three Coordinated Plans and Sections
Axonometric Drawing of Solid or Void
Diagrams of Processing to 3D Translation

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