Project 3: Sullivan: Unpacking + Reconstituting

PREMISE

The idea of an algorithm as a generative methodology is routinely discussed as something new, a new way of creating architecture. This is patently false. While the process of creating architecture through the articulation of an algorithm has become en vogue it is essentially a procedural stand in for the use of the computer in design. Any number of our architectural forbearers have utilized the algorithmic process to create designs in either whole or in part.

By investigating historical works we are able to understand the process by which our predecessors investigated and created design - essentially 'unpacking' their design process through a deep study of their product. These studies become incredibly revealing and help us to understand the principles of design that we hold dear as well as help us to understand the tools that they were utilizing to accomplish their greatest works. This exercise is both celebrating history, our heroes and the beauty of architectural ornament, but also the rigid logic employed as as methodology.

OBJECTIVE

This exercise seeks to help you understand the inherent and embedded beauty of Louis Sullivan's architectural ornament and to begin an investigation into the geometric complexity that lies beneath the filigree. Then to translate this logic and beauty into a system of your own design utilizing the precedent research you are to study.

METHOD

This project will take place in two parts **STUDY** and **GENERATE**.

Part 1: STUDY

This portion of the project will take place in **four** (4) separate steps as outlined below and shall be executed on **three** (3) separate pieces of ornament. (i.e. you will execute this portion of the project three times on three unique pieces of ornament)

Part 1: Reconstitution

Utilizing Occam's Razor as a guide, you are to take apart and reconstruct your chosen Ornament in as few geometric moves as possible. This algorithmic process MUST be as complete and geometrically based as possible, simple assumptions are simply not a part of this project, each move must be investigated and clearly explained through the implementation of construction lines/geometry and/or geometry patterning. Dimensional information is not to be utilized, instead geometric relationships shall be your sole method of investigation.

METHOD: Utilizing Rhino as your drawing implement, you are to fully explore one of Sullivan's designs and

unpack the geometry in such a way as to understand each piece of the overall composition in a profound and meaningful way. The conservation of steps is paramount as the tools that we utilize today are more geometrically capable than those utilized by Sullivan, i.e. a simple polygon is more efficient than four separately articulated lines. You are to break down Sullivan's design to the simplest form, potentially down to a simple axial relationship and reconstruct the complete geometry in its entirety in as few steps as possible all while tracking the construction geometry that you are using to do so.

Part 2: Written Description

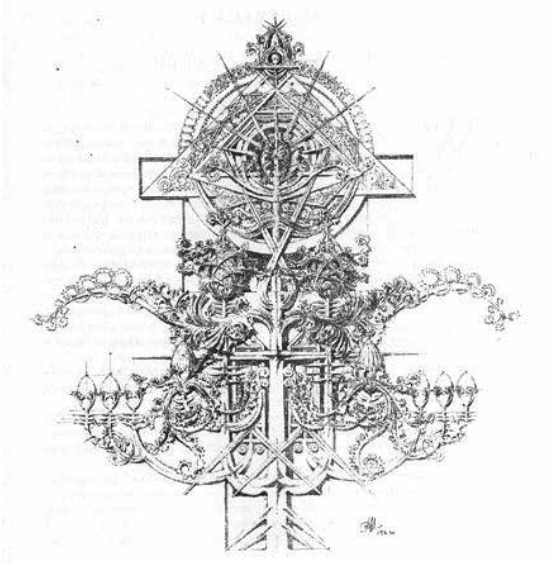
Provide a step-by-step written description of the process in a manner similar to bullet points. The goal here is to be able to hand this description to another person and they will be able to reconstruct your chosen precedent from the written algorithmic process that you have investigated.

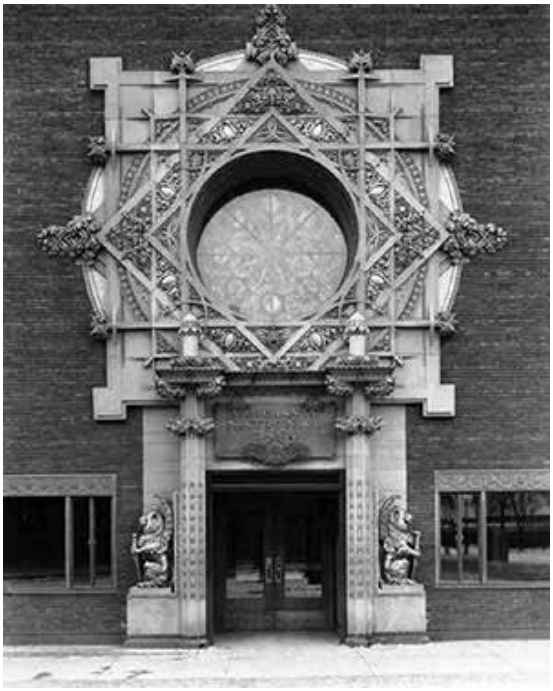
Part 3: Animation

Each step of the reconstruction of Sullivan's Ornament builds upon the one before it, a critical characteristic of any algorithm, you are to provide an animation demonstrating the aggregation of each of these steps via an animation. This animation may be either in video form (.mp4, .avi etc.) or through an animated images (.gif).

Part 4: Generative Exploration

Utilizing Grasshopper you are to reconstruct your detail to demonstrate the algorithmic process that you have discovered. This algorithm should not use numerical data for description, instead it should leverage the geometric relationships that have driven this study.





Part 1: PRODUCT

The product for each part will be as follows:

Part 1:

- 11x17 Layout demonstrating each step in sequential order - left to right, top to bottom.
- Lineweight shall be carefully articulated and can change between steps as necessary (construction lines)
- Lines to be black or grey only except those lines / geometry created at the current step

Part 2:

- Step-by-step written description of your articulated algorithm

Part 3:

- Animated generation of your study

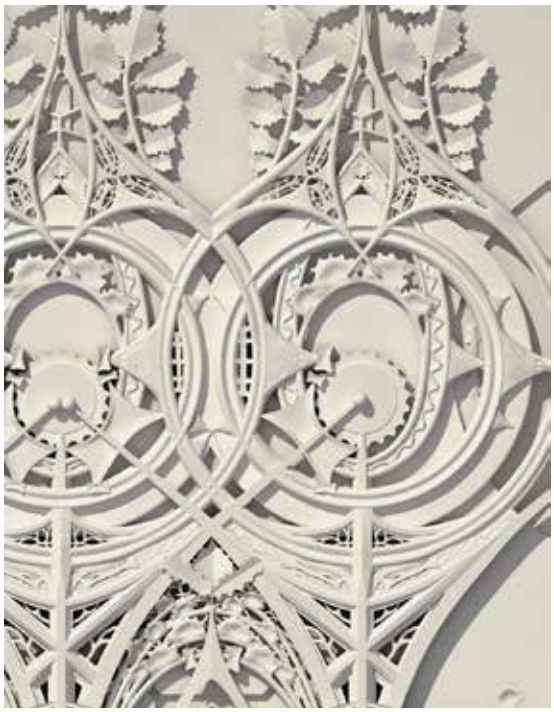
Part 4:

- Rhino + Grasshopper files of your algorithmic study
- This will be demonstrated in class

April 14, 2020
Submitted Through Course Website

Part 2: Create

You now have a fulsome understanding, and a set of requisite study of examples, of the algorithmic process utilized by Louis Sullivan in the creation of his System of Architectural Ornament. It is now time to put this system and your understanding to good use. Using this knowledge you are to a create a unique, one-one off piece of architectural ornament utilizing this system. With it's basis in Grasshopper, this 'piece' should leverage the software to parameterize each element and ultimately manifest a solid object in Rhino - you are not to stop a lines and this should be a 'from scratch' design not merely a reconfiguration of one of your studied ornaments. Our goal is to have a design that is prepared for 3D Printing.



Part 2: Product

Part 1:
- 11x17 Layout demonstrating each step in sequential order - left to right, top to bottom.
- Lineweight shall be carefully articulated and can change between steps as necessary (construction lines)
- Lines to be black or grey only except those lines / geometry created at the current step

Part 2:
- Step-by-step written description of your articulated algorithm

Part 3:
- Animated generation of your design

Part 4:
- Rhino + Grasshopper files of your algorithmic study.
- This will be demonstrated in class

Part 5:
- Solid Model submitted as a .3dm file of a single module
- 3d Printed Model - dimension 6" x 6" - relief to tbd (this step shall be articulated if possible)
- Render with Shadows in utilizing White Material

Part 6:
- Establish a Repeating Module and Articulate at least 5 Modules Repeated
- Render with shadows utilziing White Material
- 3d printed Model - dimensions to be 6" in the largest dimension and scaled to represent all 5 modules (this step shall be articulated if possible)

DUE **April 28 during Exam Time**