

An Architecture of Tasks

Architecture is the masterly, correct and magnificent play of masses brought together in light.

- Le Corbusier

Maybe for him. But this is *my* architecture:

As an intern on my first day of work, I was given the task of making a massing model. This was not a massing model of a building that the firm was designing, but of a building that stood next to the building the firm was designing. I was making a massing model of the project next to our project! Although this task might sound nonsensical at first, it had a very useful purpose. This model was to be sited next to consecutive iterations of our building in order to calibrate the design to the most favorable contextual relationships. Once the purpose of my endeavor was understood, I had to take the following steps to execute this seemingly simple task.

Since the building I would be modelling was being currently designed by another firm, I had to open their files to understand its exact geometry. I received two files, both incomplete, and in different formats. The first was a set of 2d AutoCAD floor plans, and the other was a 3d SketchUp model. Because neither file displayed the entire design, I had to combine the most up-to-date features from both files to create the most plausible Frankenstein. It's interesting to note that despite the fact that this mishmash of a building did not exist in any document nor even in its designer's mind, it still was the most accurate representation of the building's form at that moment.

The next step was to transform my invented building into a format that could be fabricated using stacked 1" foam, a material and method I was given by my supervisor. First, I had to figure out how many pieces of foam I needed to stack to achieve the true height of the building in 1/16th scale. A quick calculation showed that the answer was five pieces of foam. Since the building actually had seven stories, simply tracing the boundary of each floor and cutting them was not possible. What needed to happen was another round of abstraction and disfiguration: squeezing the most prominent features of the building's seven stories into a five-layered wannabe. After a process of tracing, cutting, and pasting five contour lines emerged as the most representative of the building's essential diagram. Using Rhino, I scaled these lines to 1/16th scale, and then extruded them to replicate what the actual model would look like. Being satisfied with the 3d model, I moved on to the next step of the task.

I was to use the laser cutter available in the office's modelling corner to cut the foam. The machine had a cutting bed dimensioning 18" x 32". Due to this constraint, the five contour lines had to be oriented and positioned most efficiently within the cutting bed area. It became clear that the five lines were too big for any two to be cut at the same time, therefore five different cut orders were to be executed. Once that was decided, an AutoCAD file with each piece nested within an 18" x 32" bounding rectangle was saved to the firm's shared server. The same file was opened using the designated computer that controls the laser cutter. But before the cuts could be run, the foam stock pieces had to be prepared.

The 1" foam available in the office came in long sheets that had to be manually cut into sizes that would fit the laser cutter bed. But there was no need to cut the foam into the full 18" x 32" area. In order to minimize material waste, I measured how much of the laser cutter bed each contour line occupied, and then cut each piece of foam to that size. Once those dimensions were measured, I used a box cutter, metal ruler, and a cutting mat to prepare the five pieces of foam.

At this moment, the AutoCAD file was open in the laser cutter's designated computer, and the first piece of foam was loaded into the laser cutter. The next step was to 'print' the contour lines into the specialized software that controls the laser cutter. From this software, the laser cutter had to be calibrated to the needed values for its power, speed, PPI (pulse per inch), and Z-axis. These values were specific to the 1" foam material, and were handed to me by my supervisor. In total, the laser cutter was to 'pass' over each piece of foam 27 times, with each pass cutting a little bit deeper into the foam. These passes were divided into three progressive stages (10 + 10 + 7 passes), each stage being more intense than the one before it. But even with all those passes, the laser did not cut all the way through the foam, therefore I had to break off the extra foam by hand. The physical manifestations of the contour lines were created. This process had to be repeated for all five pieces of foam, meaning that the laser cutter conducted a total of 135 passes.

With the five pieces of foam ready, all that remained was gluing them together. Using white glue of several brands, I poured the viscous adhesive on one side of each piece of foam. Then, using a small piece of cardboard as a DIY paintbrush, I spread the glue over the largest area of foam possible. One by one, the pieces of foam were landed precisely in their correct position over the piece preceding them. Separating these 'landings' was the essential step of placing an assortment of weights (mostly precision steel blocks) on the foam sandwich. This applied a distributed pressure on the foam, providing the ideal conditions for the glue to work. With the weights resting on the topmost piece of foam, the model was completed.

By this time, it was already 6:15 pm, and other employees were already leaving the office. Placing my trust in gravity and those weights to continue strengthening the bond between the foam pieces, I also left the office. I had completed my first task as an intern, and tomorrow would surely come with a new one. Although the nature of that task might be completely different, I was sure that it would similarly include the execution of many small, systematic, and probably boring steps. And even if those steps cannot be understood as 'architectural' in themselves, they will contribute to the advancement of the project, and consequently the firm. This is my architecture: an architecture of tasks and steps and slow incremental progress. There are no astonishing breakthroughs of genius or mind-bending paradigm leaps. But then again, I am not Le Corbusier; I am only an architecture intern, doing *my* part in making a better project. It's also important to note that this type of architectural occupation defines the contributions of countless architects all around the world. This means that maybe, just maybe, architecture is more about making foam models than about Villa Savoye!