The Spatial Indeterminacy of Time: De[MONSTR]ative Architectures as Beginning Design Pedagogy

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"What would an ocean be without a monster lurking in the dark? It would be like sleep without dreams." — Werner Herzog, 2014

"What interests me is architecture as monster, those objects that have been catapulted into the city, from someplace else." — Jean Baudrillard and Jean Nouvel, The Singular Objects of Architecture, 2002

Introduction

Time is arguably a continuing civilizational obsession. Whether observed through a plethora of digital or analog devices and machines with increasing precision, or manifested through disciplinary interest and epistemological quandaries, the essence of time remains simultaneously well-known and elusive. However, it is this dual ambiguity that renders it such a fertile vehicle through which one can channel introductory architectural pedagogy. It was with this indeterminacy in mind that a new set of exercises for a design foundation studio was developed. Inspired by temporal cycles and systems, the UNLV School of Architecture's Design Foundation course—which must serve the dual constituency of beginning architecture and landscape architecture students—was redesigned and rebuilt around operationalized biological processes of aqueous [MONSTR]s as "site."

Beginning with research into the anatomical, structural, circulatory, and seasonal components of students' assigned "site," the De[MONSTR]ative architectures project was focused on creating a framework that facilitated reflexive operations between 2D and 3D representational modes of communication. Tasked with dissecting both static and kinetic features in a set of drawings that explicate spatial thresholds and transformative flux, students had to retranslate findings into paper and wooden dowel models before re-rendering them back into 2D drawings. Highlighting the power of repetition, layering, complexity, rhythm and composition, the students' work acquired a unique dimension tempered by the implicit fixation with time they had to integrate into their explorations. Furthermore, with each change in media, observation and analysis of what features retained mobility or acquired permanence resulted in a novel body of student work that encodes transformation alongside the devised gradated sequence of exercises making up this project. This paper is the initial presentation of the work produced for this inaugural configuration of the De[MONSTR]ative Architectures project, launching a new set of dynamic pedagogies for the UNLV School of Architecture's beginning design student.

To begin, each student was randomly assigned a [MONSTR] to be the generative tools behind this project that stretched throughout the semester. Straddling a gradient between the familiar and exotic, the assigned creatures were selected for their unique set of "monstrous" qualities. In both eastern and western cultures, the monstrous is often an emblem delineating the threshold between the known and the unknown. And in Latin, *monstrum* is related to demonstrate, meaning to show. Selected

[MONSTR]s were therefore the engine and catalyst behind the project investigations. In this case, we used the following sea creatures: the American Red Lobster (*Homarus americanus*), the Electric Blue Hermit Crab (*Calcinus elegans*), the Flamboyant Cuttlefish (*Metasepia pfefferi*), the Harp Sponge (*Chondrocladia lyra*), the Pacific Sea Nettle (*Chrysaora fuscescens*), the Purple Sea Urchin (*Strongylocentrotus purpuratus*), the Spiny Seahorse (*Hippocampus hystrix*), the East Pacific Red Octopus (*Octopus rubescens*), the Vampire Squid (*Vampyroteuthis infernalis*), and (finally) the Spot-fin Porcupinefish (*Diodon hystrix*).

This four-week long project was composed of four modules each geared to observation, abstraction, transformation, and documentation. Beginning with research and observation, the students documented anatomical, biological, circulatory and seasonal components of their given "[MONSTR]." They then worked iteratively to transform these initial dissection processes—having been recorded through drawing—into abstracted paper and wooden dowel models that focused on special and specific aspects of the "MONSTR." Finally, translating the models back to drawings through orthographic drawing techniques engaged in a series of reflexive operations between 2D and 3D representational modes of communication.

The primary objectives of the project dealt with this reciprocity of drawing what was made, and then, making what was drawn. Students were required to develop rigorous research strategies and observational techniques through sketching, graphic notation, and hard-line drawing. As well, they experimented with modeling techniques to represent movement, displacement, transformation, texture and scale. The students also used orthographic drawing to support provocative moments found in the three-dimensional models and vice versa. Analog methods for drawing and modeling were chosen for their inherent "sensory conjunction"—to develop an understanding of the relationships between the tactile and the visual, as well as allowing students to see and respond to each drawing or modeling operation made in situ (Frascari, 2013). And of course, working through iteration (a series of drawings and models) to explore multiple perspectives and further development was stressed, as was clear communication of observations, concepts, and intent (both verbally and through explored representational techniques).

Part One: DISSECT

Titled "DISSECT," the first part of the project asked students to research, observe, and then record through drawing at least three systems that mediate or negotiate between the body of the [MONSTR] and the environment it inhabits. As each was carefully selected for its unique set of anatomies, biologies, geometries, and textures—as well as growth, movement, and displacement potentialities—the [MONSTR]s were seen as sites of intervention. In a similar way to how one records a more traditional site, like a park, and its more traditional components, like its topography and vegetation, the [MONSTR]s were to be abstracted into a set of spatial relationship that transform and remain in a state of flux. Like all living organisms, the [MONSTR] sites exist within a series of seasonal, climatic, and biological frameworks—both the exterior, interior, and everything in between was fair and fertile territory for examination. These relationships and insights were converted into analog or metaphorical strategies to focus on the architectural possibilities provided by the "monstrous."

Through a set of nine 23" x 29" sketches followed by a final, hard-lined 23" x 29" drawing (figure 1), the students observed a range of examples of systems that included the movements from fins or tentacles, changes in shape, range of motion for a claw or joint, structure or bones versus skin, to name a few. In the final drawing, students were to treat their [MONSTR] as if it were architecture by using rigorous and precise orthographic construction techniques similar to drawing a building. The most successful drawings were those that layered and superimposed multiple views or time frames and focused not necessarily on how the creature looks, but rather how it works, moves, or changes over

time. And by success, we mean the drawings with the most potential ways to be abstracted in the next step through a process of making.

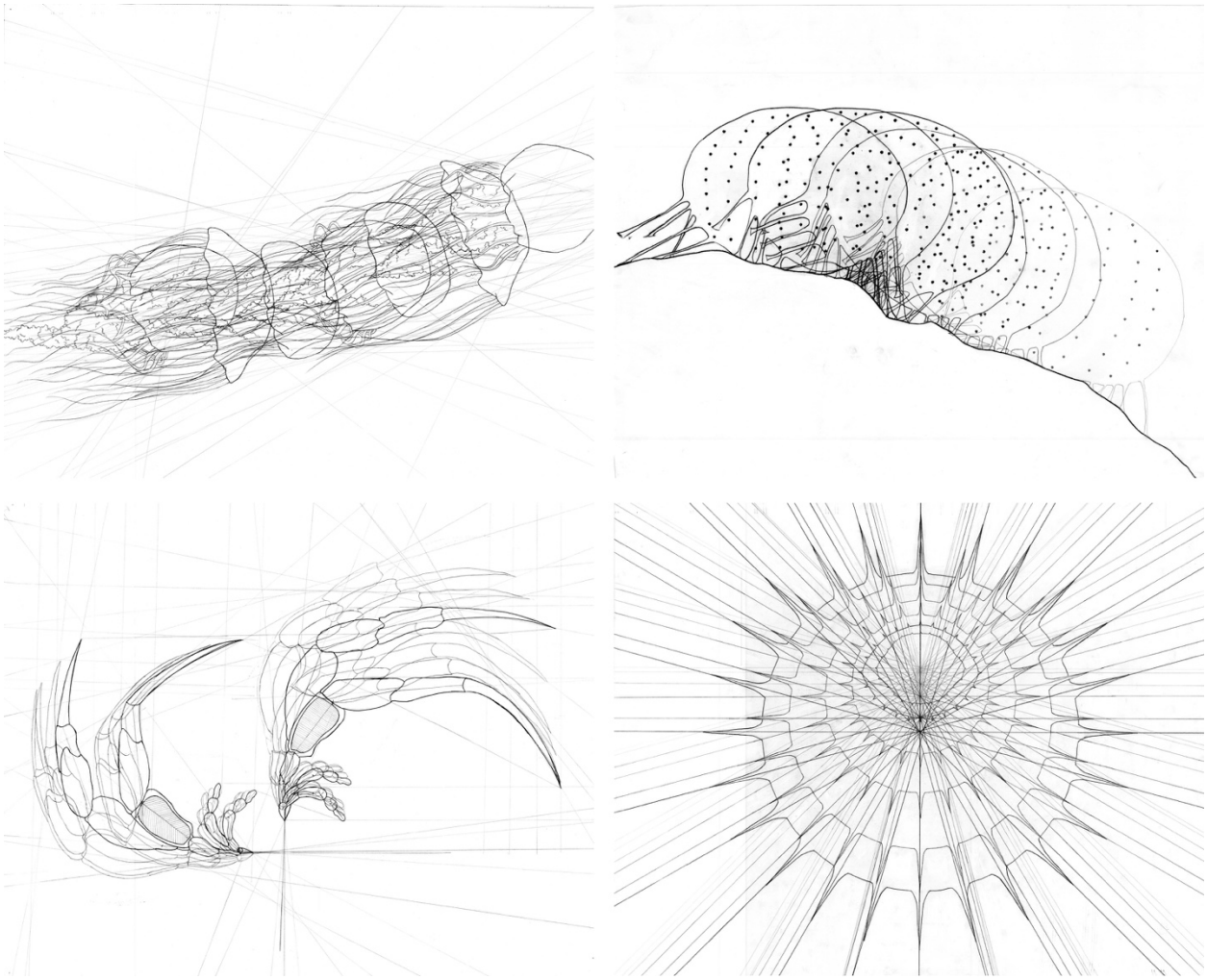

Figure 1. MONSTR Drawings, Graphite on Bristol Paper (Student Credits: Trevor Lytle, Alejandro Pinon, Cameron Yetta, Carlos Martin Agustin).

Part Two: ABSTRACT

In this second part of the project the students were tasked to expand their research, observations, and drawings by producing a series of draft paper study models, culminating with a final paper construction. By testing and developing a set of operations such as folding, cutting, creasing, scoring, pleating, curving twisting, and others, the objective was to further spatialize the system drawn in the previous step. In other words, to take the same logic from the drawing and make it three-dimensional. The students were reminded that the model was not necessarily about form, but rather using the same processes and logics to create different spatial qualities in different media.

The results, made from 2-ply bristol paper, varied in size and complexity (figure 2). Some were static while others were operable or kinetic. Spatial qualities emerged as volumes were defined by the surfaces of the paper and the interplay between these surfaces and light. “The prospect of realizing ideas into built form is a transition during which some qualities are gained and others lost,” as observed by Bob Sheil at the Bartlett School in London (2005). It was precisely these new insights and qualities

that we wanted to cultivate by having the students abstract their drawn observations with three-dimensional models.

Part Three: BUILD

For the third module of the project, the task was to use the same thought processes and logics from the original drawings and paper models to build a scaffold model of wooden dowels that also abstracted the [MONSTR]'s movements, flows, and mechanisms. In other words, repeating the last step but, again, with a different, linear or stick-based medium. The students were reminded that this model was not meant to be an extruded version of their drawing, but rather should attempt to reveal new information and spatial relationships governed through careful use of density, repetition, order, and spacing. And, of course, wood behaves differently than paper, with different strengths and constraints.

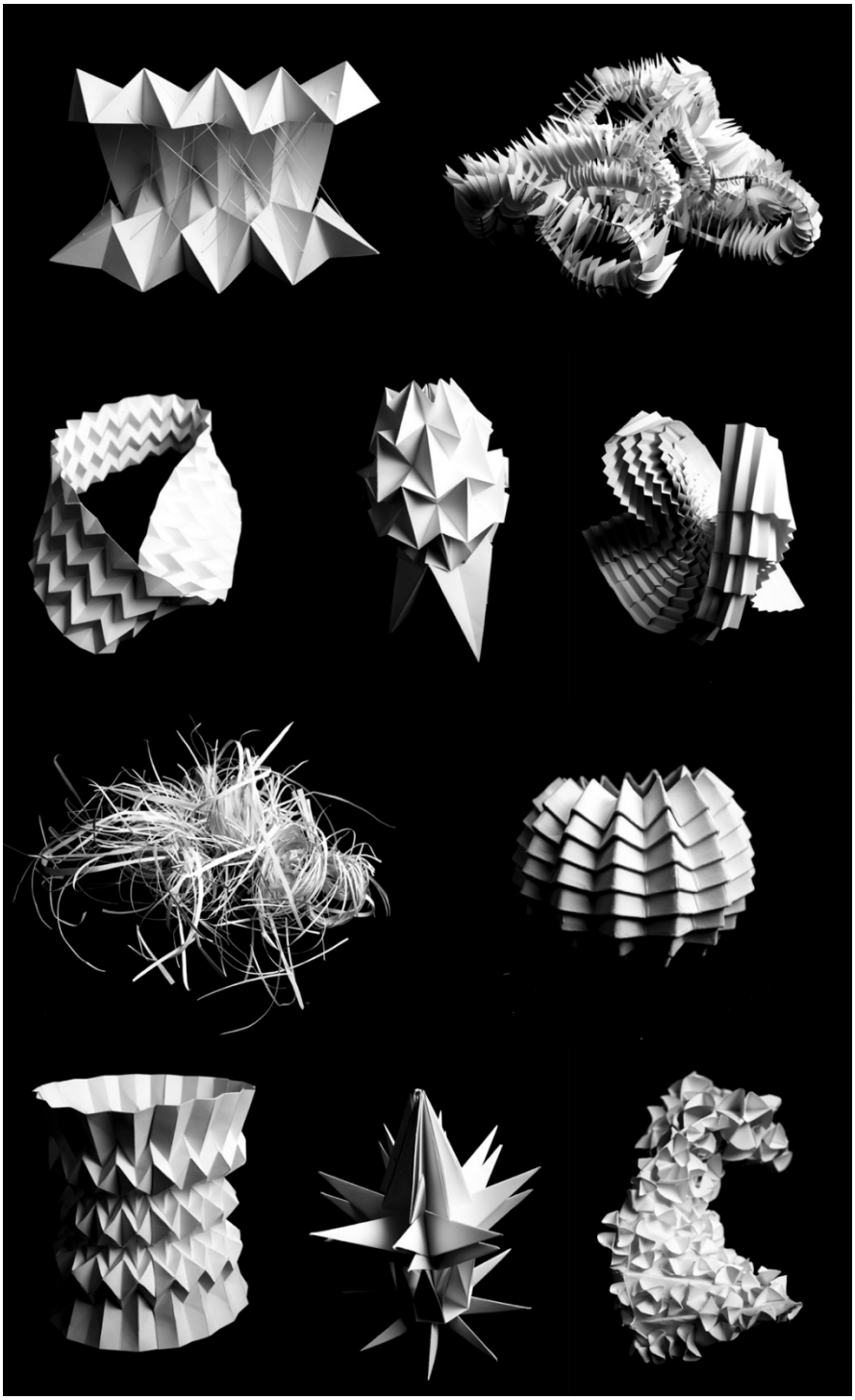

Figure 2. ABSTRACT Paper Models (student credits: Diane Pacpaco Arista, Kristen Carpenter, Jairo Fajardo-Arroyave, WonWoo Jung, Jesse Nava, Kyle Saca, Jonathan Saldana, Benjamin Tucker, Randolf Young, Saya Younis).

While building these models, students were only allowed to add one material in addition to the wood dowels in order to make connections and joints. While some chose glue, epoxy, or other adhesives, other students used pins to make hinged connections, or twine for tethering and knotting (figure 3). Interestingly, due to this added constraint of joint making, many of these models were operable and able to be easily adjusted to change their form and configuration. In fact, some students developed a deep understanding of this particular material system and changeable detailing with their connection studies. Their questioning shifted from 'what does this make?' to asking 'what does this do?" to embrace and further amplify the changeable, interactive, and time-based aspects of their scaffold models. This thread of inquiry is similar to the way of working described by Jesse Reiser and Nanako Umemoto as "material practice," or understanding the bottom-up, generative capacity of materials and details to model, in this case, spatial systems (2006).

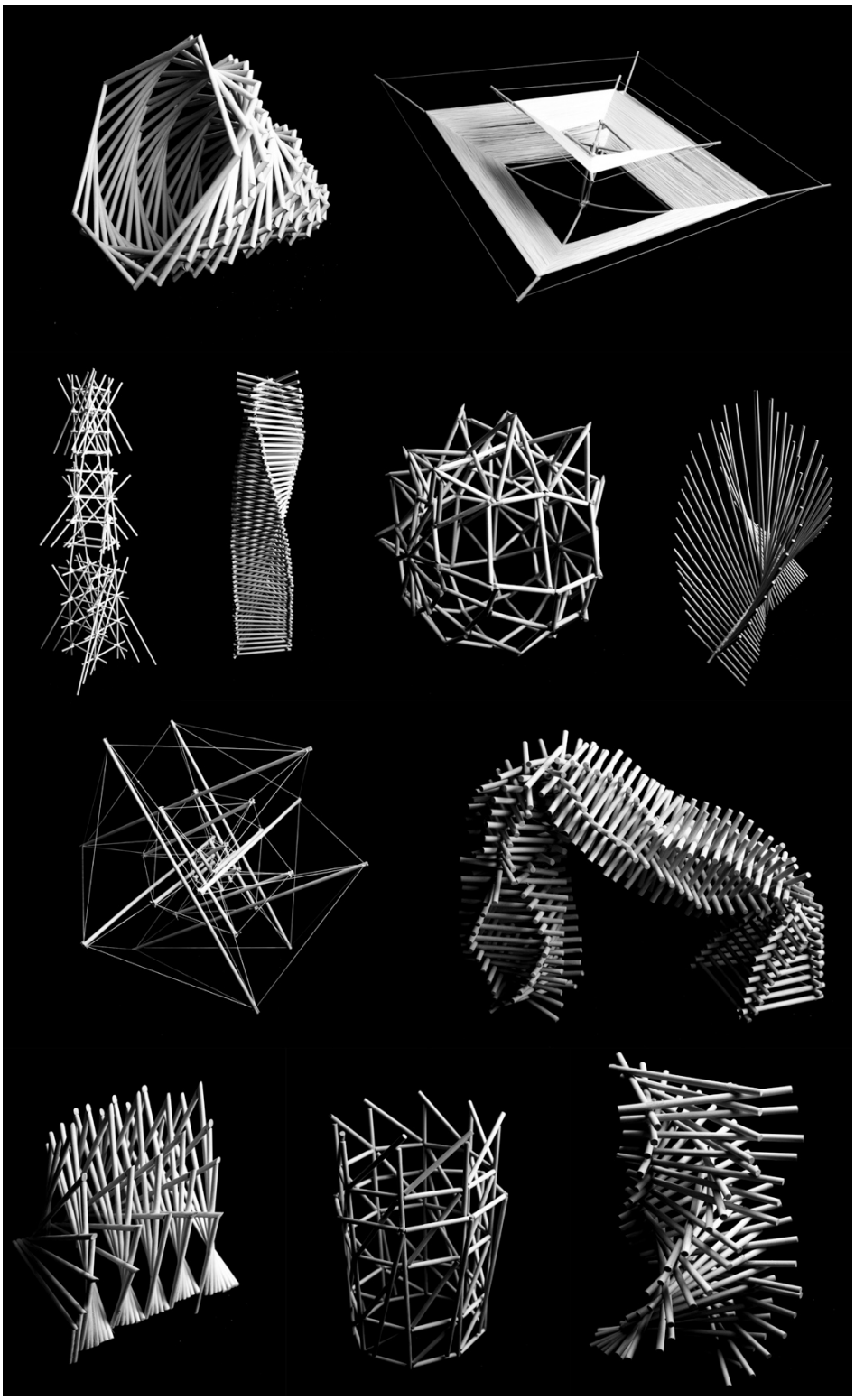

Figure 3. BUILD Wood Dowel Models (student credits: Trenton Artran, Jairo Fajardo-Arroyave, Trevor Lytle, Jorge Medina, Carley Pasqualotto, Alejandro Pinon, Kyle Saca, Jonathan Saldana, Xavier Saldana, Benjamin Tucker, Andrew Yahnke).

Part Four: RECORD

The last steps of this project involved more drawing to develop the ideas generated in the first three steps. Each student used traditional orthographic drawing techniques to translate both models (paper and wood) into a set of plan and section drawings (figure 4). While explicitly spatializing the models, these drawings were to employ careful measure, line weights, and poché, as well as to reinforce specific observations and intentions.

Concern was given to not only how the models and subsequent drawings looked but how they came to be through the actions performed—drawing in a process of formation. At this point (after an intensive period of production over the first three weeks of their design studio) students were able to reflect on this process of formation—their actions and decisions—and internalize their new understandings of seeing, transforming, and making. This new way of seeing for our beginning design students is best described by Taiji Miyasaka: "Seeing…means to explore beyond the obvious, to challenge existing perspectives, and to construct a deep understanding of what we perceive by examining and re-examining our frame of reference through careful observation, physical interaction, and imaginative inquiry" (2014).

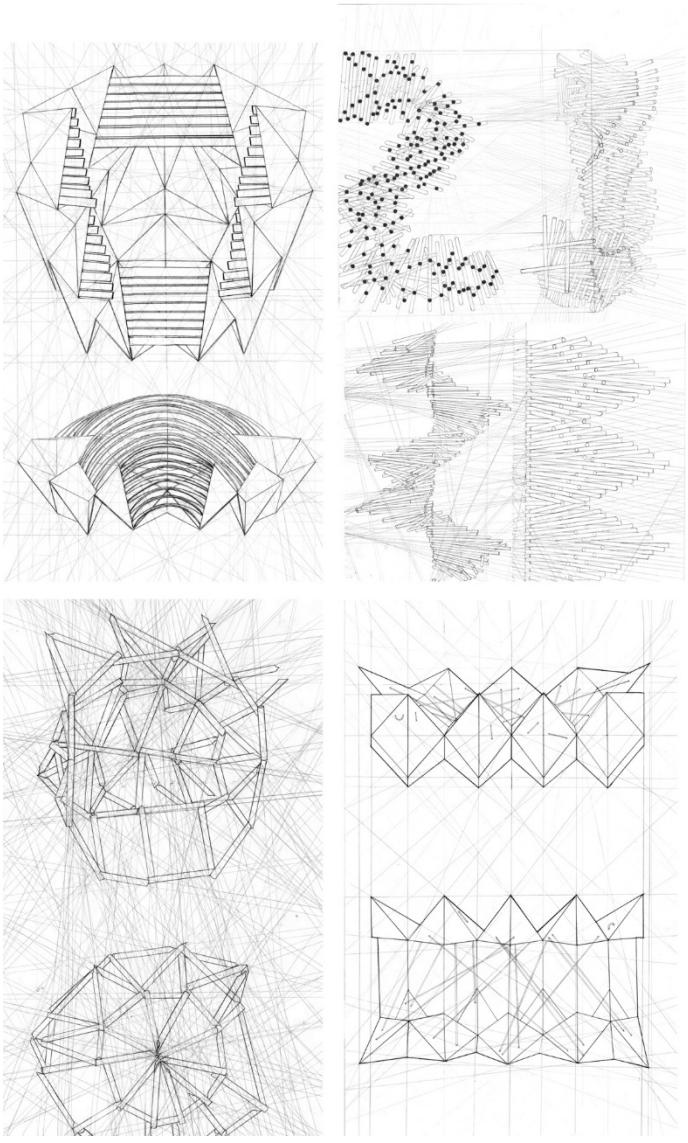

Figure 4. RECORD Orthographic Drawings (Student credits: Katherine Gonzales, Trevor Lytle, Jairo Fajardo-Arroyave, Carlos Martin Agustin, Kyle Saca).

Further Trajectories

This project was the first of four parts or projects in the semester, each meant to build off of or combine with each other. While the remaining projects will be articulated in future papers, this is a brief description of the semester and how this project fit with other projects as a sequence. Following this four-week-long project, the second project (ex[PLAN]ate) asked students to (again) begin with direct observation to document material components of a specific urban landscape through a series of on-site sketches and graphic notations (figure 5). Students then worked iteratively to translate these in-situ observations through physical modeling and orthographic drawing techniques (figures 6 - 8). Once again, this project engaged both traditional methods of representation as well as modes of abstraction and invention as tools for clearly identifying and communicating observed landscape materials and processes. At the conclusion of this second project, the students had designed two unique landscapes/sites through transformation and abstraction, facilitated by iterative modeling and drawing.

With both [MONSTR] drawings and models, and, site drawings and models, the remaining semester projects dealt with synthesizing the final deliverables from the de[MONSTR]ate and ex[PLAN]ate projects into design proposals for a dwelling that responded to an anthropomorphized program. Students were randomly assigned a human (profession and hobby) which acted as this anthropomorphized program. From these, the students constructed an inhabitant profile by assigning them a gender, age and their familial unit (single, couple or family). Design development occurred in iterative stages between modeling and drawing—with specific emphasis on plan and section drawings (figures 9 + 10). At the end of the semester, the studio put together an exhibition of work in our large library space on campus. The entire (and prolific) body of work for the semester was carefully displayed, reinforcing the importance of process, documentation, and reflection.

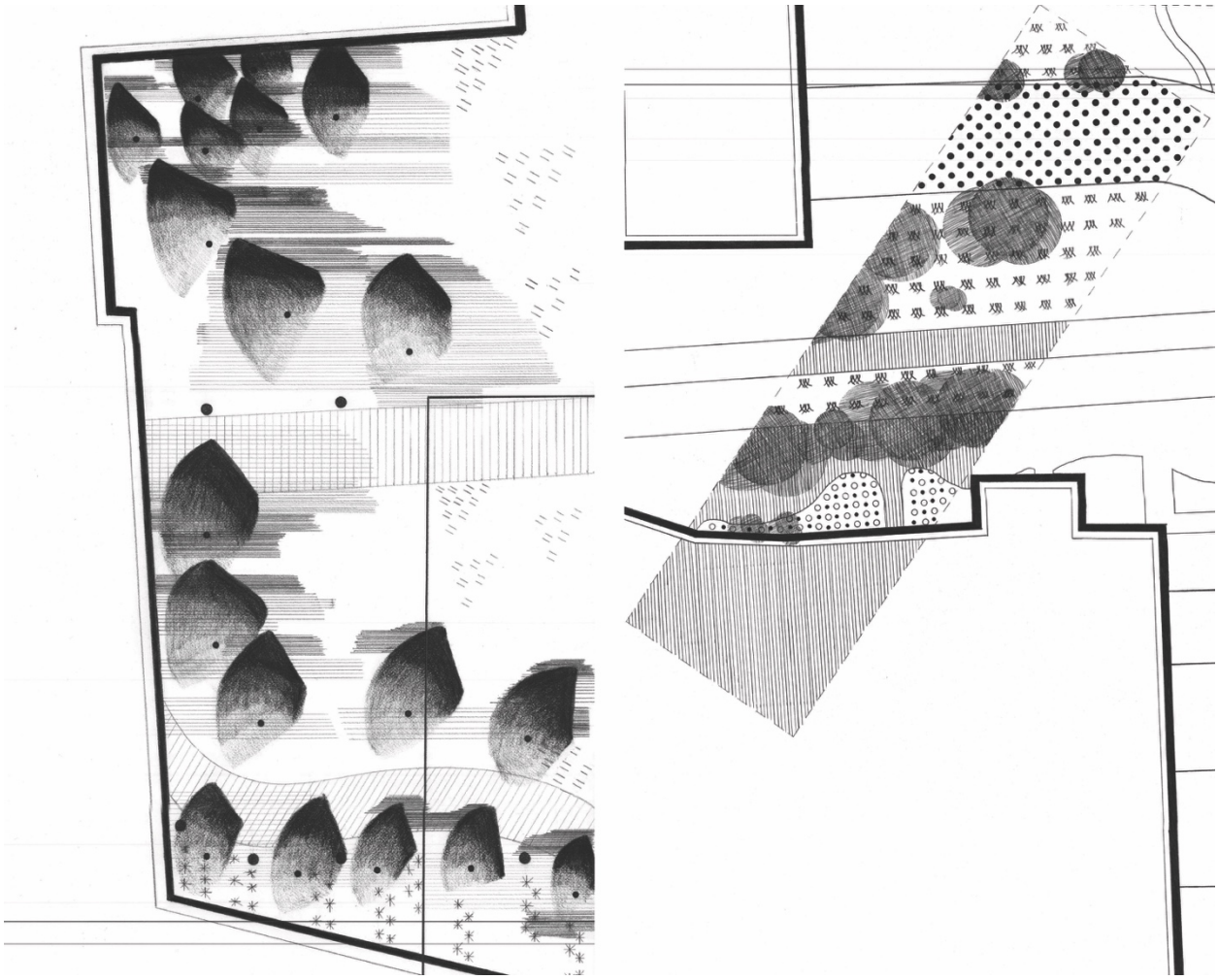

Figure 5. ex[PLAN]ate Site Graphic Notation Drawings (Student credits: Jorge Medina, Yaquelin Lizaola).

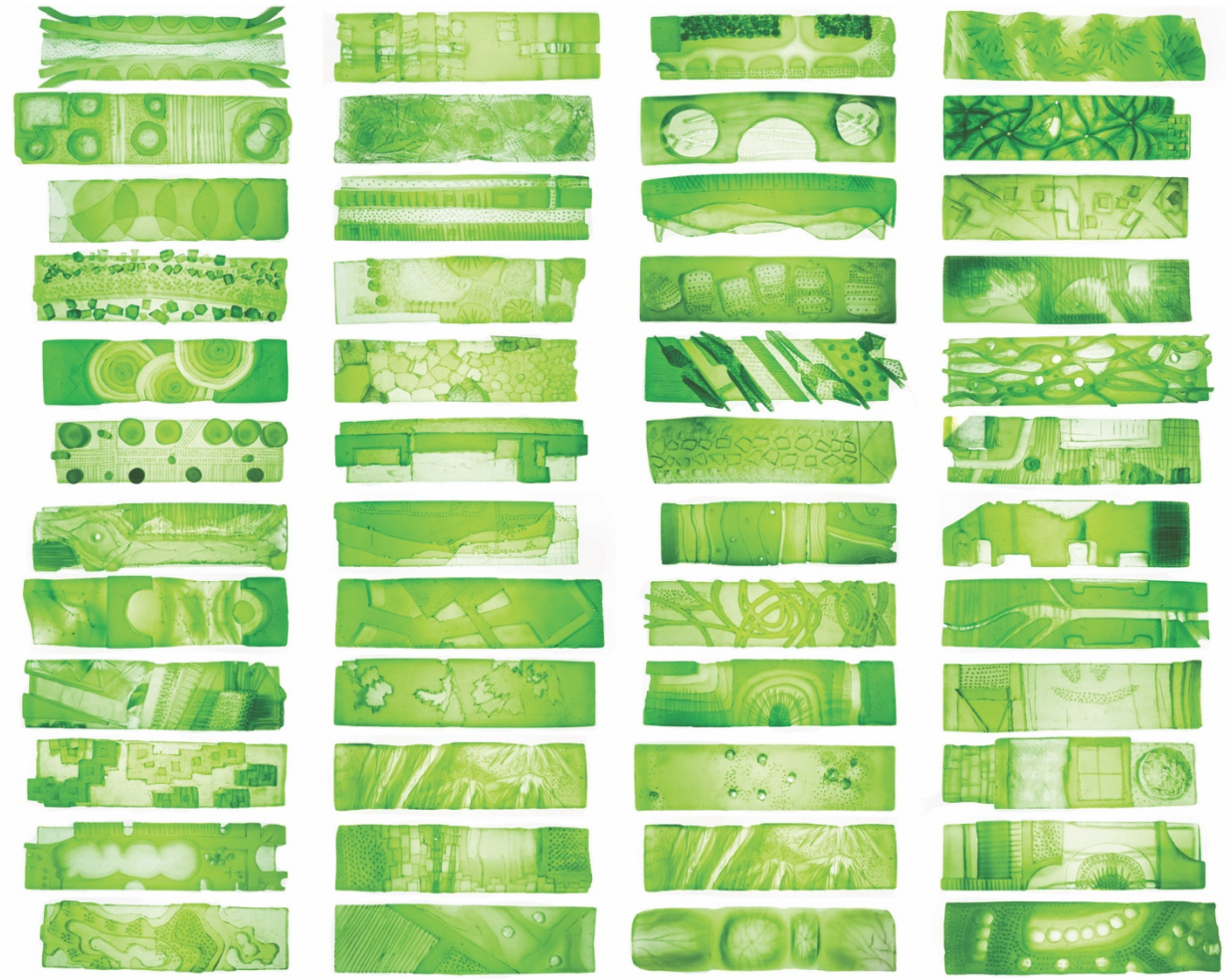

Figure 6. Subtractive Site Models Carved from Glycerin Soap (Student credits: Marychris Aliado, Diane Pacpaco Arista, Trenton Artran, Alan Avendano, Mahsa Azari, Troy Brannon, Pedro Camacho, Mey Fa Choy Anicama, Jake Hampton Cray, Oscar Delgado, Micaela Diaz, David Douglas II, Lyric Evans, Jairo Fajardo-Arroyave, Gabrielle Fernandez, Marcantonio Fodera, Sonny Geronimo Jr., Katherine Gonzales, Lorenzo Gonzales, WonWoo Jung, Isaiah Laeha, Alexander Larson, Yu Xiang Li, Yaquelin Lizaola, Trevor Lytle, Carlos Martin Agustin, Collin McGaughey, Jorge Medina, Jhanna Rae Montimor, Jesse Nava, Brianna Nava, Jazmin Navarro, Roxayna Pais-Evia, Carley Pasqualotto, Alejandro Pinon, Kyle Saca, Jonathan Saldana, Xavier Saldana, Kristi Stedman, Chozen Takei, Benjamin Tucker, Naomi Valdez, Klaire Viduya, Douglas Wong, Andrew Yahnke, Cameron Yetta, Randolf Young, Sara Younis).

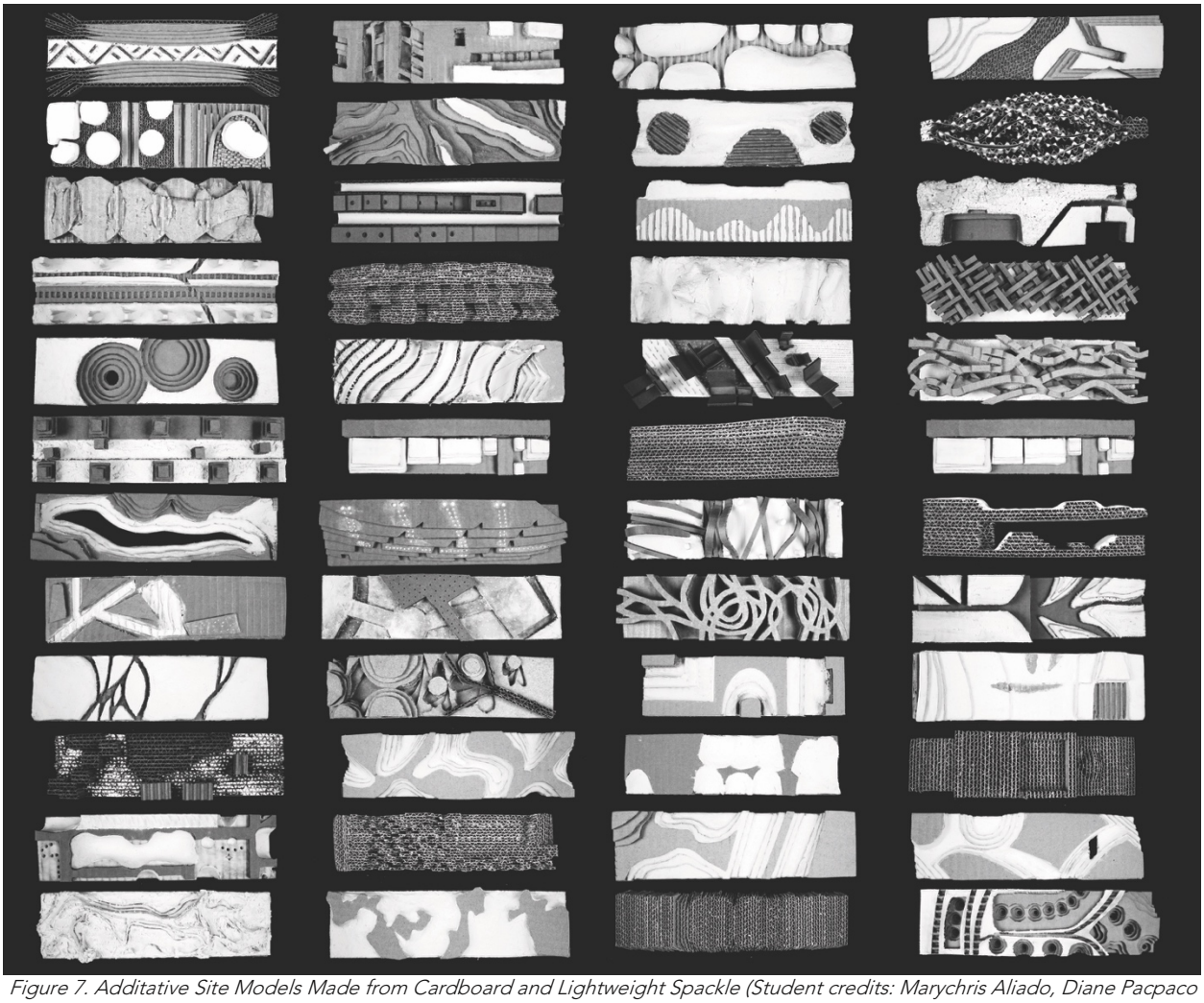

Figure 7. Additative Site Models Made from Cardboard and Lightweight Spackle (Student credits: Marychris Aliado, Diane Pacpaco Arista, Trenton Artran, Alan Avendano, Mahsa Azari, Troy Brannon, Pedro Camacho, Mey Fa Choy Anicama, Jake Hampton Cray, Oscar Delgado, Micaela Diaz, David Douglas II, Lyric Evans, Jairo Fajardo-Arroyave, Gabrielle Fernandez, Marcantonio Fodera, Sonny Geronimo Jr., Katherine Gonzales, Lorenzo Gonzales, WonWoo Jung, Isaiah Laeha, Alexander Larson, Yu Xiang Li, Yaquelin Lizaola, Trevor Lytle, Carlos Martin Agustin, Collin McGaughey, Jorge Medina, Jhanna Rae Montimor, Jesse Nava, Brianna Nava, Jazmin Navarro, Roxayna Pais-Evia, Carley Pasqualotto, Alejandro Pinon, Kyle Saca, Jonathan Saldana, Xavier Saldana, Kristi Stedman, Chozen Takei, Benjamin Tucker, Naomi Valdez, Klaire Viduya, Douglas Wong, Andrew Yahnke, Cameron Yetta, Randolf Young, Sara Younis).

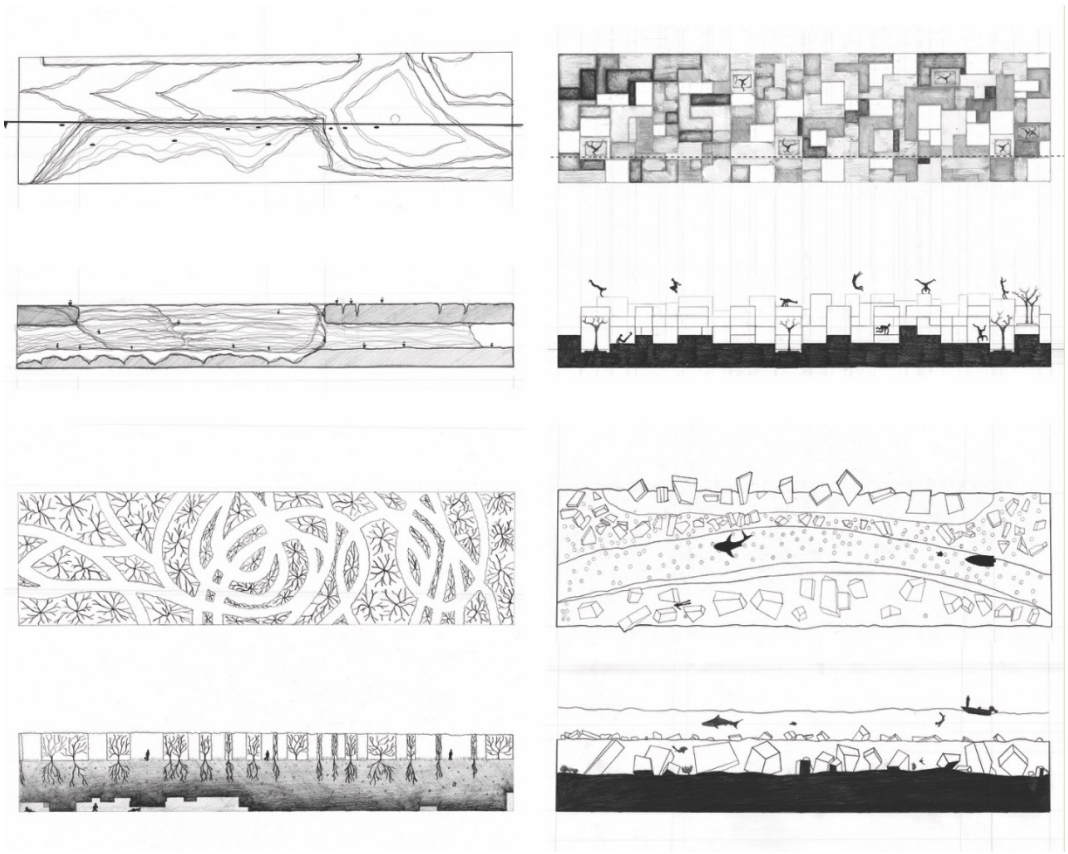

Figure 8. Translated Site Drawings (Student credits: Carlos Martin Agustin, Jhanna Rae Montimor, Katherine Gonzales, Kyle Saca).

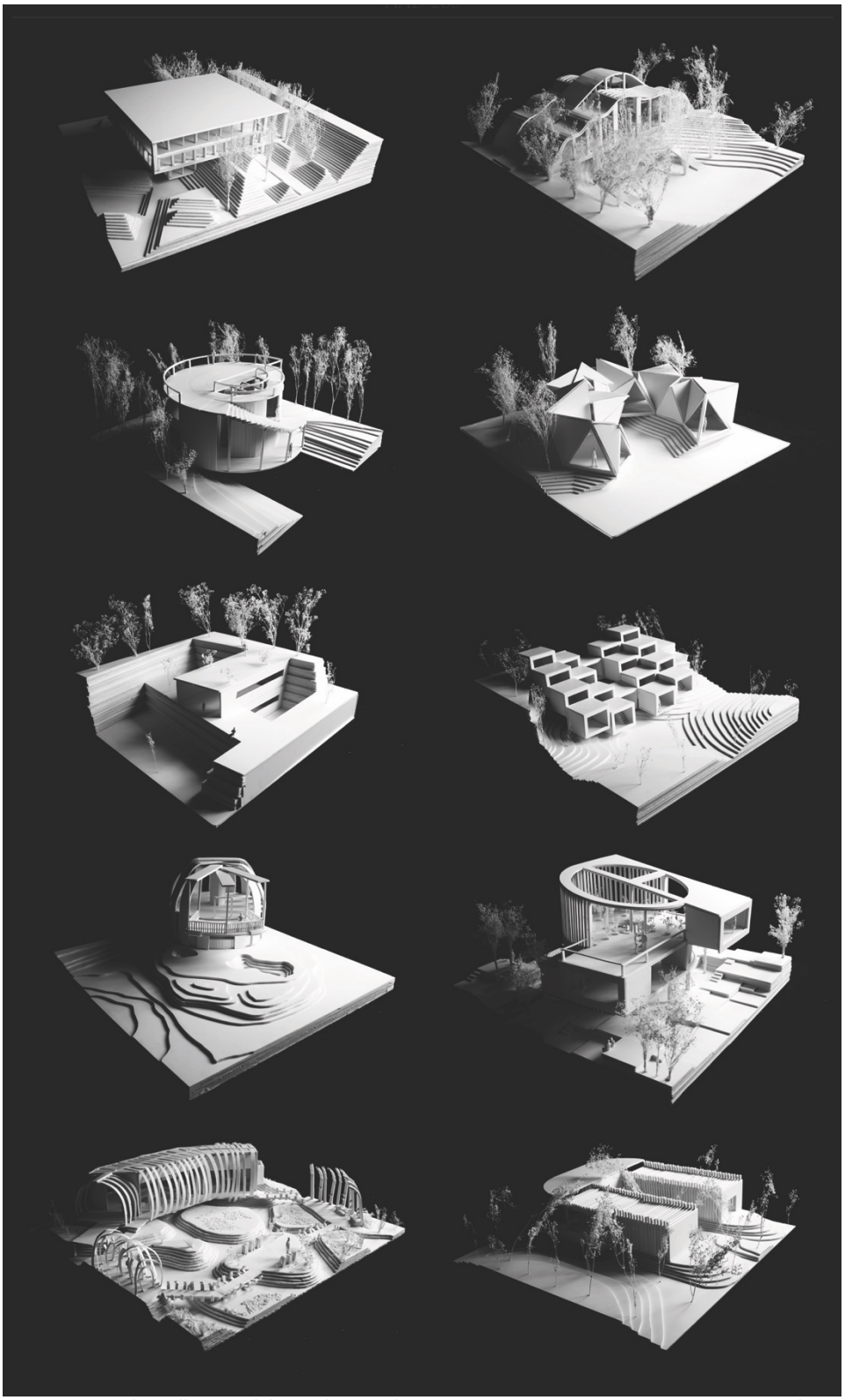

Figure 9. Final Dwelling Models (Student credits: Trenton Artran, Lyric Evans, Marcantonio Fodera, Sonny Geronimo Jr., Katherine Gonzales, Isaiah Laeha, Collin McGaughey, Jorge Medina, Naomi Valdez, Cameron Yetta).

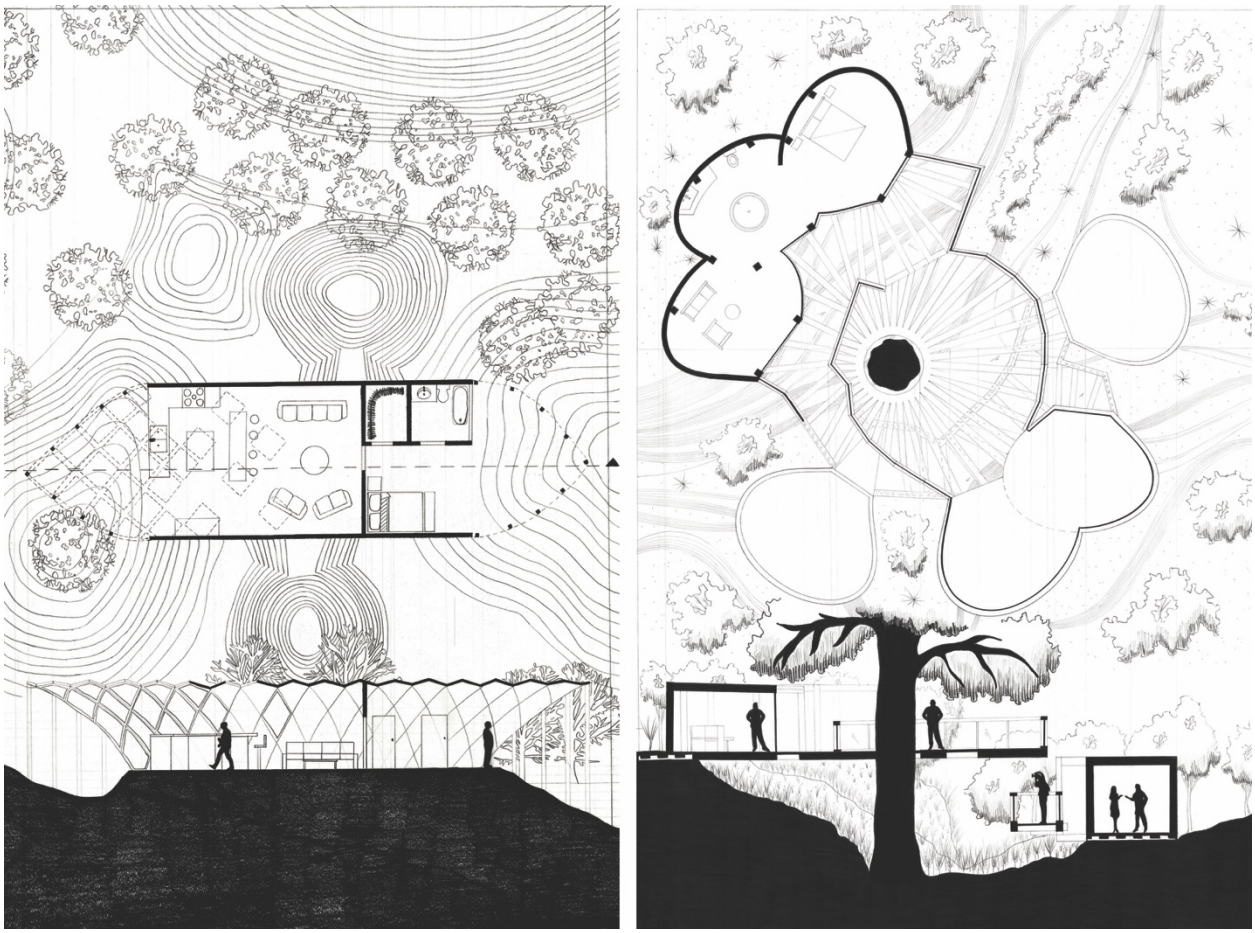

Figure 10. Final Dwelling Orthographic Drawings (Student credits: Carley Pasqualotto, Jairo Fajardo-Arroyave).

Conclusion

By using biological organisms as the initial design provocation for a beginning design studio, our students were immediately tasked to confront the important notions of time, motion, and transformation, not only to analyze their [MONSTR]s, but to use these change-based systems as informants for design generation. The result was a prolific, process-based investigation using drawings and models, while working to opportunistically find spatial qualities via abstracting and transforming the original dynamic system. While only four weeks long, this project set the table for the remainder of the semester in several ways, the first being to make our expectations for the pace and cadence of production, time management, and work ethic clear to the students. Throughout the semester, each module of each project lasted a approximately a week involving an introductory workshop, production of study models or drawings, review, production of final drawings or models, and final presentation. As well, this project laid the groundwork for important skills in orthographic drawing (particularly plan and section) as well as model-making with a diverse range of media and tools. Finally, the project forced the students to work iteratively and to reflect on and value of what they learned in the process of nearly constant drawing and making. Beyond the individual study models and drawings, the students eventually produced an impressive collective body of work produced from the same problem-based inquiry but approached from various vantage points and directions—a body of work which was usefully applied towards various design scenarios and situations later on in the studio.

References

1. BAUDRILLARD, J., NOUVEL, J., BONONNO, R., & HAYS, K. M. (2005). The Singular Objects of Architecture. Univ of Minnesota Pr.

2. FRASCARI, M., HALE, J., & STARKEY, B. (2013). From Models to Drawings Imagination and Representation in Architecture. Florence, Taylor and Francis.

3. HERZOG, W., & CRONIN, P. (2014). A guide for the perplexed. London, Faber and faber.

4. MIYASAKA, T. (2014). Seeing and making in architecture: design exercises. New York, Routledge.

5. REISER, J., & UMEMOTO, N. (2006). Atlas of novel tectonics. New York, NY, Princeton Architectural Press.

6. SHEIL, B. (2005), Design Through Making: An Introduction. Architecture Design (AD), Chichester, Wiley, 75: 5-12.