Delayed Processes

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The work presented in this paper is based on a set of pedagogical investigations that are based in the author's simultaneous fascination and trouble with the wide spread use of digital media leading to seemingly complete and multi-faceted drawings which impose themselves as definitive, over-determined renditions of ideas. In the interest of slowing the process in the early design phases, where students are learning about developing design thinking, an effort has been made to make time still and slow, allowing for ambiguity, contradiction, deformations and distortions to unfold within the space of architectural thinking, before passing into more conventional forms of drawing. In attempts to stay away from the form-based and the process-oriented paths, the structure is set to use conventional platforms of digital drawing as the basis for the project. By focusing on the making of drawings at various scales and with different purposes, the studio is one that binds the design and drawing together and requires the students to navigate the process of creative thinking by making and assessing a substantial body of drawings. Embracing the idea of drawings that are of the project, and are not directly translatable to space, implies that in the space between the early 'generation drawing' and something that can intelligibly be recognized as architectural artifact/ space, there lies a gap within which withholding from getting to an immediate result yields both the most challenging and the most interesting architectural artifacts. The aim of the studio is to make drawing into a practice that is flexible and canny, able to adjust and responsive to multiple factors and forces introduced at different stages of the project

> Architects are bound to treat as real that which exists only in an imagined future, and to specify the ways in which the foreseen things can be made to exist.[1]
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> —Marco Frascari, *From Models to Drawings*

PROLOGUE

Stan Allen refers to the fact that prior to of the computer technology's widespread use, the discipline's engagement with the computer was mostly "metaphorical," followed by an "experimental" phase in the 1990s, and suggests that the third phase of the digital may be recognized as a "more mature and less complex" phase, which centers around "strategic and operative potential" of the computer.[2] The work presented in this paper is an examination of structures designed for a first semester Masters' studio, unfolded in the course of the past 3 years at the University of Massachusetts Amherst. Designed for a mixture of students with no background in architecture as well as those continuing their studies, the studio is primarily centered on drawings of different sorts. During the course of studio, attaining digital prowess is not the main goal. The drawings are explicitly not rendered, and the insistence on their perseverance as lines aims at not reducing them to an "optical image" as qualified by Perez Gomez.[3] The use of software, introduced for the first time to many of them, remains fairly conventional, though experimenting with different software had occurred previously, and in short the modus operandi of the studio revolves on making drawing, based on observations and translations and building upon them in the consecutive phases.

As such the work becomes a continuous thread of drawings, moving in time, scale, and density. Questions that are asked and answered through this making/ drawing stretch are: how to make drawings almost always in series to avoid reliance on a single drawing? How to move through idiosyncratic features of software and navigate different platforms? How to create drawings that can in turn become possible sites for architectural investigations? The work is mostly produced through the conventional platforms, to produce conceptual drawings that become the basis of the project. By simultaneously engaging the digital and maintaining at a less ideological stance regarding the tools and techniques, the studio puts into test the possibility of working through the design process strategically, and using the drawings from each phase as a basis for operation to leap into the next.

FRAMEWORK

The studio titled the CC 21st (Cabinets of Curiosity for the 21st Century) relies on drawing to investigate an array of natural phenomena and artificial apparatus by exploring Curiosity Cabinets. Curiosity Cabinets were developed from the 1500s onward and contained extraordinary objects of naturlia and articficialia such as minerals, monstrous births, rare animals skeletons, wax figures, fossils, corals, death-masks, ivory carvings, automata that imitated living things, machines of all sorts, scientific instruments, terrestrial and celestial globes just to name a few. The arrangements of these objects were to recreate microcosms capable of reflecting the outside world at "a reduced scale" and augment one's understanding and appreciation of it.[4] The intended meaning and significance of these collections were as much dependent on their assembly as the objects themselves. Inspired by such spatial and material backdrops, the studio invites the students

Figure 1. Samuel Hill studied mycelium and its growth pattern at different scales.

to select a phenomenon that they are fascinated with, and investigate their logic, structure and the interrelationships of the container and the contained in order to create a series of architectural artifacts in various scales.

The studio is structured around three projects of significantly different scales: Exploring the theme of Curiosity Cabinets students first make a portable curiosity cabinet of wondrous evidence and objects in form of digital drawings that articulate their interest in a specific phenomenon and serve as record holder and a foundation for the remainder of the semester. They then take the material gathered in project one and extend it to the size of a room, by using their initial drawings and creating strategies for spatializing then, adding structural and programmatic criteria to the process of space making. The last and ultimate part of the studio focuses on creating an architectural space, a hybrid of house/ small museum, pertinent to the specific theme of each individual's explorations at the sale of a public edifice in the city.

The students analyze and understand one of the natural or artificial phenomena that have always fascinated them through drawing. They study the inherent characteristics of their precedent by asking any of the following questions: Why/how does it work? What scale does it exist at? What are its fundamental logics of its existence? How has it evolved through time? They are asked to translate their observations into to a series of drawings. The drawings are set as large canvases and have to develop simultaneously and belong to the series. The drawings are not meant to be a representation of the subject matter, but an augmentation, a commentary, a translation, or an interpretation of it. Part evidence executed with forensic accuracy, and part substance suggested with imaginative desire, the drawings hold the promise of representing both "the sign and the signified" of their subject of study. Developing the series imply that the drawings, which are related to each other, reveal some aspect/ behavior of the case study. The series could be relational (based on spatial arrangements), cumulative/ diminishing or time-based.

By examining a series of natural and scientific phenomena, students initiate an investigation encompassing a wide array of actions: from analysis to interpretation, from translation to creation and from understanding to making. Part of the effort is invested in allowing every student to set up and develop processes and methods of one's own. Curiosity, observation, imagination and forming an individual creative process are the four threads that are at the core of the studio structure. The necessity of creating a series immediately brings in questions of depth, density, sequence, order and hierarchy to the forefront of each student's mind and requires their attention to the constellation of lines and shapes they are making. The drawings are often probing density and population, which is further pronounced by line weight sequencing. In some instances, the students opt for superimposing the series on top of each other, on a series of semi-transparent films, while others decide to deploy them in horizontal, or vertical processions, and in one instance a student opted for suspending the drawings in a series of curved configurations to corroborate her depiction of the sand dunes. These initial choices, while simple, indicate preferences and demonstrate an alignment between the choices made by each student and the subject studied.

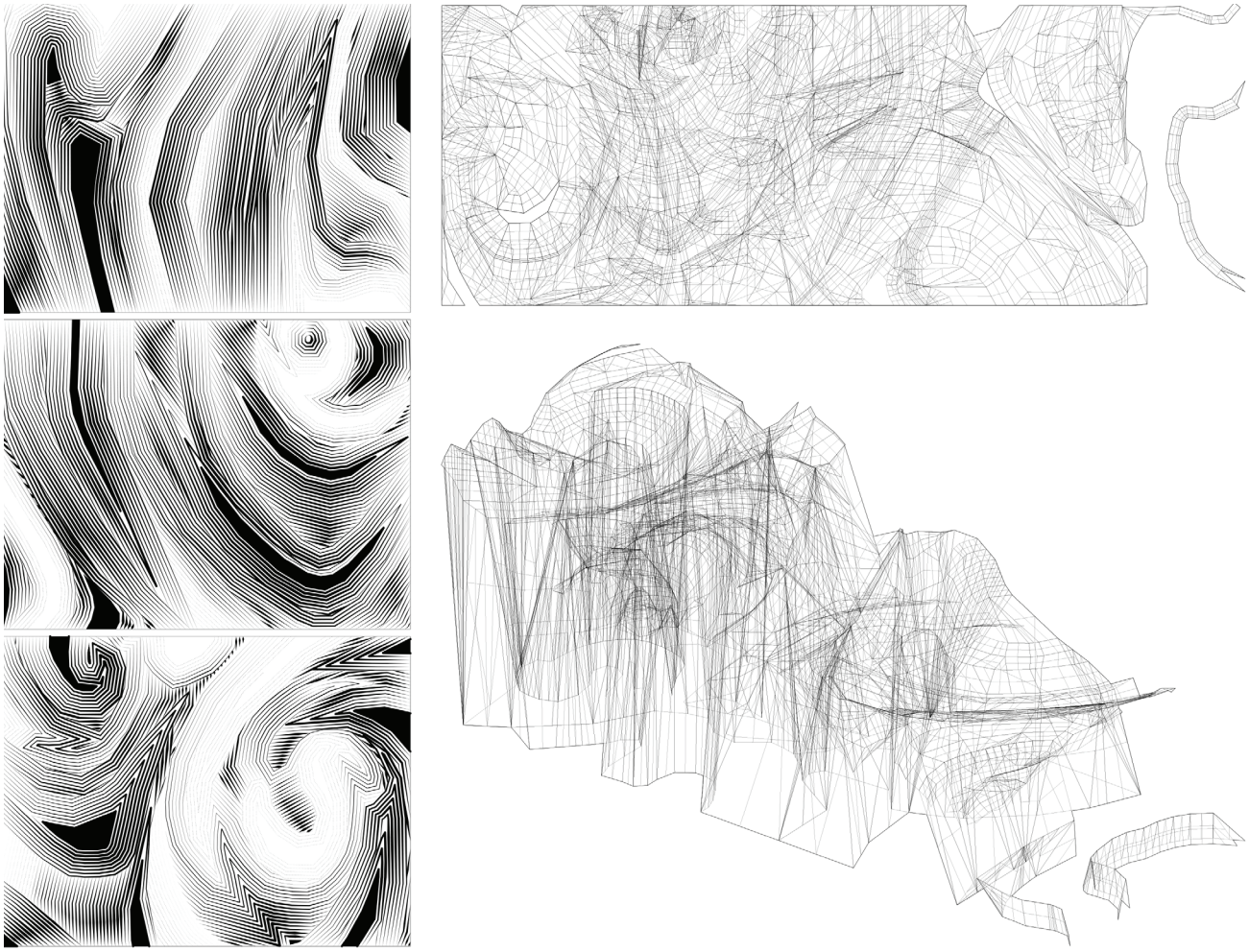

Figure 2. Emily Moreau studied Wind Vortices and mapped the chaotic behavior of fluid in high velocity.

One of the most critical steps at that stage is the distinction between making an actual depiction of the object/phenomenon and the more abstracted, paired down drawings. To create a certain distance and make for abstractio immediately moves the drawing beyond representational evidence and moves it toward more of a reciprocal vessel. Another major challenge is to make the series of drawings and create relationships between the different pages. Choices are to be made between a progression in scale, time, density or a combination of those to make the series. Creating hierarchies within each drawing and also through the series, by way of line weight control, adds another layer to the expression of the drawings. By making decisions about the order, hierarchy and density, the students make a series of 2D lines, points and simple shapes legible. As manifest in figure 1, the student mapped out different scale of growth, moving in between different entities and scales to establish a family of drawings that are relevant and navigable at the same time.

In this phase the process of translation and interpretation takes a more complex turn as the assembly of the 2D drawings into a 3D construct requires a further level of abstraction, as well as a distanciation from the more immediate resemblances to the object. In this process, the students take many different routes, and test out different strategies in order to find productive ways to translate the drawings from 2D templates to 3D constructs. The first attempts are often directly traceable to rhino commands, as lines are extruded, curves lofted, circles swept, etc. However in a process that unfolds over a few weeks, the students realize that there are other possibilities, though more complex and less immediate, may allow for the mergence of compelling spaces that connect back to the phenomenon they have been studying and often combine a series of operation. As an example, in figure 2, a simple extrusion was replaced with a winding trajectory of certain lines in space, ebbing and flowing with in the length of the structure, therefore creating a tumultuous field that then gave way to a series of pathways, staircases, ramps, and walls. While the process proved to be more complex than typical extrusions, it also led the way providing a series of templates for possible pathways and thresholds to be further developed in Project Three.

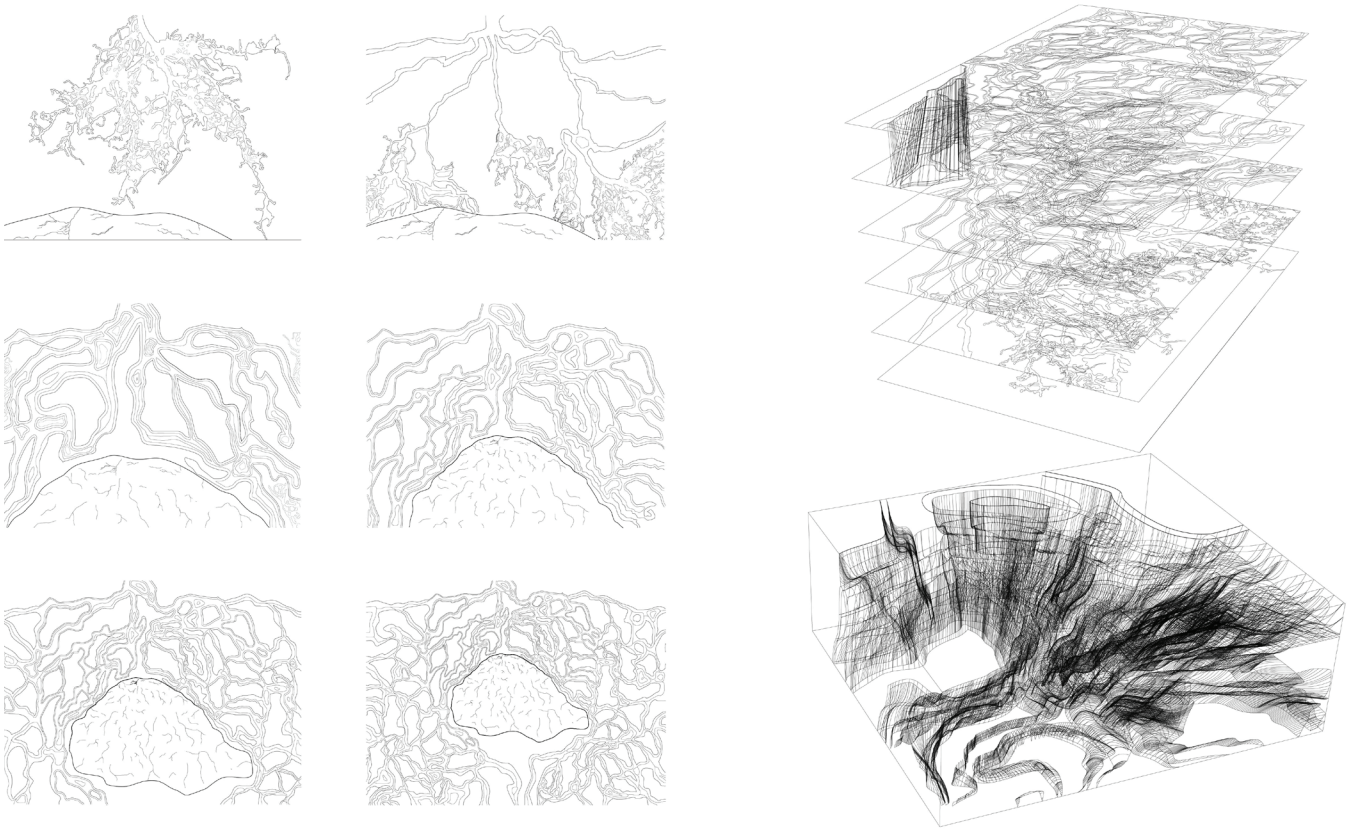

Figure 3. Andrew Jones studied tree roots and their growth.

In the second part of the semester, the students are asked to take the six drawings and use them as a basis to assemble a three-dimensional construct. The series of drawings can be imagined to become the six faces of an imaginary cube, or they can be stacked, intersected or assembled in other configurations. In this step, similar to the first project, the student are asked to make a series of rules, and observe the implication of their decisions in the formation/ transformation of the spatial characteristics of their construct. Once they achieve one configuration that seems more in line with their subject matter's logic and behavior, they may take that as a basis in order to make a space of roughly 450sq.ft. The space in question, designed for the collector of the evidence related to their subject matter should provide three different areas: an area for observation and contemplation, an area for containment and safeguard of the evidence, and an area for routine functions such as sleeping, eating, etc.

In figure 3, the level of abstraction and interpretation is apparent in the translation between the 2D and 3D drawings. While the 2D drawings depict a constant zooming out coupled with incremental root growth around an obstacle (a stone in this case), the gradual shift and the incremental lofts turned the 3D drawings into a dynamic interpretation that is not an actual depiction, but reminds one of the themes that are studied thoroughly in the first phase. A requirement for Project two is that the students only present their 3D models as line drawings and avoid renderings of any sort. The only measure to be used to make spatial distinctions was adjusting lineweights and in the process of those adjustments, the students rediscovered facts about their drawings that they might have overlooked. The intentions of each drawing, its ability to communicate its translatory power were solely reliant on the bare drawings that could only articulate spatial depth and hierarchy through the means of lineweights.

Project Three requires the students to take the spatial construct they made in the second phase and turn it into a habitable space, in form of a dwelling unit that contains a collection of objects they studied for one person. The project calls upon the student abilities and their discoveries from the two previous phases to build a hybrid building of a unique type: half museum/ gallery and half private residence, the project targets two distinct concepts of life, work and congregation focused around the theme of curiosity, display and containment of one's collection of drawings and objects. The students are encouraged to propose new modes of living which will allow one to reconcile these two seemingly opposing modes of inhabitation: one of r solitary life juxtaposed to one of extreme public presence and visibility. that relates to their precedent study and draws from it (in an array varying from the most literal to the most interpretive).

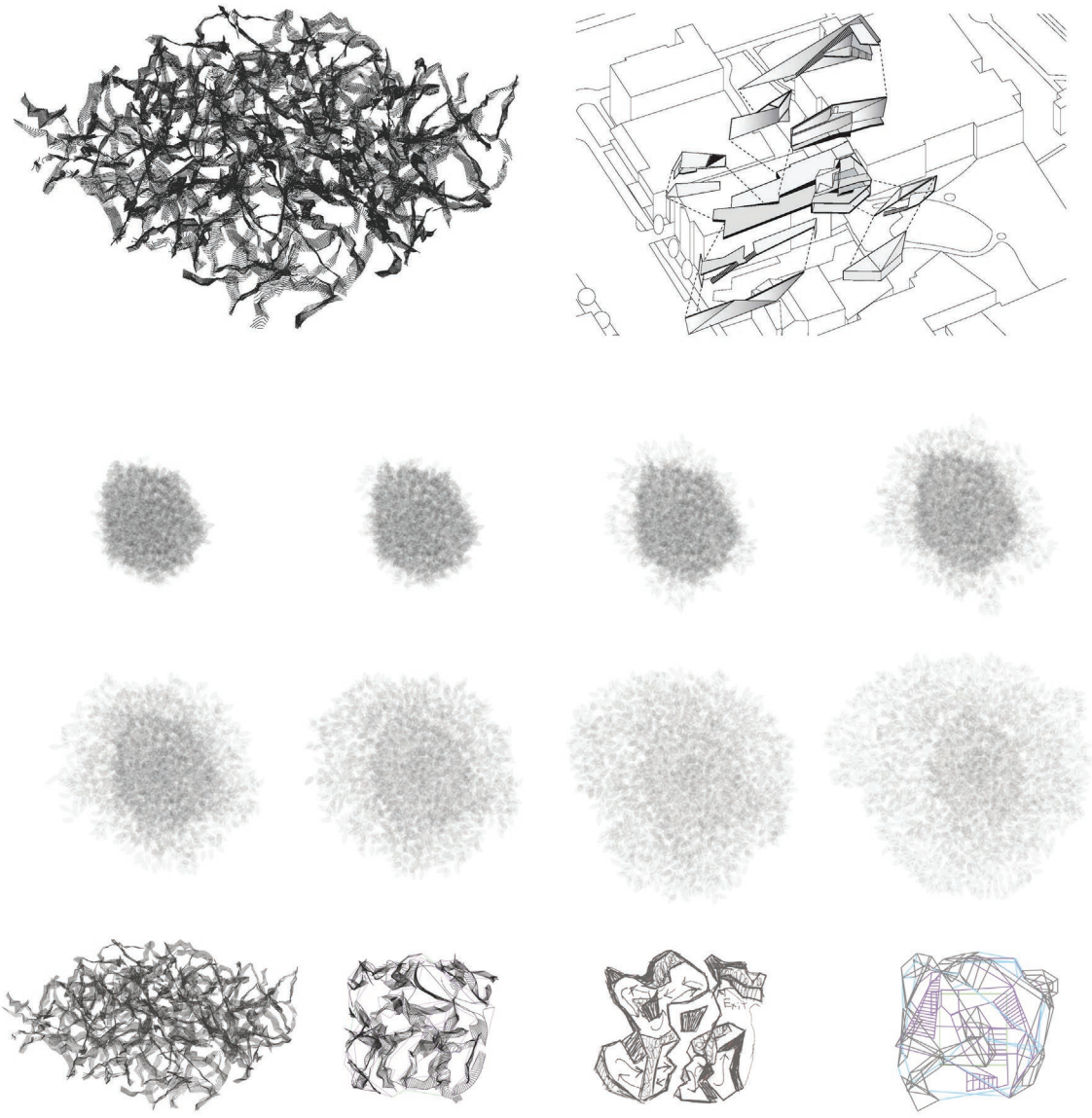

Figure 4. Givan Carrero studied 3000 Solenopsis Invicta dispersing into water. Lower drawing on the left depicts the abstract 3D construct and the drawing on the right depicts the final project within the urban context.

From a programmatic point of view the students are asked to think of spaces of circulation, spaces of solitary work and relaxation and spaces of display and containment. Their previous projects are to be brought into this phase as both guide and foundation. From Project Two they inherit a spatial framework, which has to be adjusted and transformed, based on the realities of the site and the program. In addition keeping the themes of curiosity, display and containment alive at many different levels throughout the project calls for having additional frames of reference. By adding view and spatial sequencing, the students key-in notions of circulation, direct vs. indirect observation, paths of travel, etc. into the already existing structure of their spatial constructs and reinterpret display and containment.

The students navigate between their axonometric drawing from Project Two and a series of plans and sections to work through the project being exposed to external phenomena: light, air, sound, precipitation, location in the city and internal elements: program, modes of life, the nature of the hybrid space. As an example, the figure 4 depict the same students' development of work from Project One to Project Three, depicting both the reciprocities and the differences in each phase, showing the attempt to interpret and keep a continuous thread while also allowing the project to evolve. The leap from the compelling 3D construct to the architectural drawing is neither easy nor fast. Often times, the progress is not linear and the students find themselves backtracking to the

previous steps. The digital files are often matrices of possible steps and procedures and reveal processes that are not scientific or quantitative. Ultimately, as there is no right or wrong drawing, it is through the process of developing them, that the students find ways of making connections, interpretations and transformations that become necessary steps in their progress through the semester.While there is a hesitation in the beginning and an initial anxiety about not knowing, there is also a gradual recognition that through the making of the drawings and the constant examination that is happening at every stage, there is both insight and intuition that are developed through this process. Contrary to the students' initial belief the process set up in this studio is not fast or particularly efficient. The stages in between the different project are dotted by periods of trial and error, by not knowing and by multiple trials. The thread in between the different phases is one of structure, logic and strategies. To borrow the term from Allen, the work is "more interested in consequence than consistency" and the leaps in between each phase are embraced as ones that could enrich the architectural investigation.[5]

EPILOGUE

There are many iterations, frustrations, seeming delays and transgressions and of course grappling with techniques of drawing from simple representational choices to that of platforms and process that are more complex. The students constantly refer back to them and reconfigure them. The process shapes their attitude towards design. While these drawings are produced in the first few weeks of the studio, one constantly refers back to them, builds upon them, and takes them apart. The drawings are not immediate; they are not spatial in the most obvious sense, and certainly not habitable. They suggest possible, potential and poetic thresholds that one could step into and imagine as architectural. In their abstraction they hold the promise of solid and void, of light and dark, of open and close, concepts that are inherently architectural and yet they are unapologetically abstract, universes of their own that might lead one down the path of design. These drawing are not architecture, they are at their best a path to a possible architecture, formulations of poetic preconceptions of what might unfold and develop as a possible space of inhabitation.

ENDNOTES

1 Marco Frascai, Jonathan Hale, and Bradely Starkey, eds., *From Models to Drawing, Imagination and Representation in Architecture* (Abingdon; New York: Routledge, 2007), 4.

2 Stan Allen, *Practice: Architecture Technique + Presentation* (Abingdon; New York: Routledge, 2009), 85.

3 Perez-Gomez, *Attunement: Architectural Meaning after Crisis of Modern Science* (Cambridge, MA; London: The MIT Press, 2016), 100.

4 Albertus Seba, *Cabinets of Natural Curiosities* (Koln: Taschen, 2015), 13.

5 Allen, *Practice*, 92.