

Computing Drawing: Animating Thick Surfaces **Syllabus**

This studio will explore the role of computation as medium for thinking and making. This means avoiding the treatment of the computer as a tool to help solve already defined problems. It means going deeper than using software. It means operating outside the bounds of the digital. Perhaps most importantly, it means conflating the action of design with the action of computing.

The course is divided into two phases. The first will be a kind of calisthenics and will begin by coding in the Python programming language to control a machine (pen plotter, laser cutter or other) that will affect material. This process will be augmented by—or perhaps convolve with—visual computing with graphite on paper. Although computing is usually associated with building models, operating in the realm of the drawing will allow an exploration of architectural issues before they manifest as buildings. Drawing also is a prime territory for learning the language of computing because its reduced dimensions make mathematics and logics simpler than working in three dimensional space. We'll begin programming with an emphasis on live input from a user, so authorship and the role of the human remain at the center of our process and discourse. Each drawing will be autonomous as a work of art, but each student will be assigned a depth position within a communal “stack” of all the drawings and will be tasked with reading and responding to the neighboring drawing positioned above.

Because Python has recently been adopted as a scripting language in Rhinoceros and other software, we'll be able to tap into those geometric libraries as needed and eventually extend our algorithms into the third dimension and/or build out the thickness that we read in the drawing surface into a digital and physical construct. Non-uniform rational basis spline (NURBS) surfaces are of particular opportunity because of their inherently two-dimensional operational structure in three-dimensional space. These models will evolve based on prompts laden with enigmatic and seemingly contradictory requirements rooted in inherently architectural problems and conditions: the corner, ground, and perception by a moving observer.

If the first phase of the course is calisthenics, the second phase is performance. A site and program will be introduced that challenge the methods, tactics and products cultivated in phase one. The specifics of the site and program will be revealed only after the first phase is complete in an effort to control earlier research and inhibit bias. The program will have demanding and nuanced requirements for observing, connecting,

isolating, socializing, and learning. The site will urban, finite, and be contextualized by unusually varied and highly structured systems of movement around and through it. As this phase progresses, drawing, now as a medium for representation, will remain at the center of attention and critique.

Objectives

As an advanced studio, this course aims to convolve a research agenda with with an educational agenda. Students are asked to confront and produce (and combine) questions, techniques, methods, and products that are new to them and new to the discipline. Process and product will be subject to rigorous critique. This studio will rely on and leverage the foundational education—students will continually be asked to operate at their “highest level of craft and intellectual acuity to date”—while simultaneously inviting the a questioning of individual as well as collective conventions and defaults.

This studio will include technical instruction and an inquiry into the “topic” of computation, but technique will be presented concurrently with concept. As has been the case throughout the foundational core of this curriculum, thinking and making will be seen as indistinguishable.

Grading and Evaluation

Process and product will both be evaluated together. Iteration and other strategies for asserting methodological rigor will be essential for student success. Students will be evaluated for their participation (through their work and their verbal engagement) in every studio session. Students are expected to respond to prompts provided in each assignment brief as well as those offered through in class discussion and critique. RISD defines final letter grades as follows: A Excellence; B Above Average; C Average (successfully fulfilled all course requirements); D Below Average (course requirements minimally met); F Failing Grade (course requirements not met)

Attendance

This is a fast paced studio with little opportunity for redundancy. Absences, excused or otherwise, will set a student back and will be difficult to make up.

Tentative Schedule

- 1.1 Drawings sited in a sequence associated with depth. Review 3.07
- 1.2 Midterm review 3.21
- 2 Progress review TBD
- 2 Final review week of 5.20