

METATOOL

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The architect encounters a site. Armed with an arsenal of tools, she undergoes processes of observation, research, and analysis. These operations unearth constraints and situations, which in turn define the field of possibilities in terms of space, event, and movement. Other tools allow her to sketch, improvise, represent, modify, analyze, critique, and explore this field. And over a long process of deliberation, introspection, and collaboration, she arrives at a singular decision that creates a new kind of site and a new context altogether, when set in motion.

It goes without saying that the architect's tools are her most prized possessions. They are akin to bodily prostheses: new augmentations that not only alter what can be done, but what can be represented and thus what can be conceptualized. It could even be said that the architect is indelibly influenced by the logic and agency of those tools.

*This critical architect might ask: Where does the tool come from? What does the tool want to do? What new tools can be created? Should not every process of design be one that reinvents new methods of thinking, and new tools for creation? **In other words: Architects should not only be able to use tools, but should have the ability to design new critical / experimental design tools.***

METATOOL is a course about creating your own digital design tools. The course is grounded in a solid technical understanding of computational tools and workflows (mostly Rhino/Grasshopper, some Python, web APIs), anchored conceptually around a set of critical history/theory texts and group discussions.

METATOOL uses Grasshopper as a meta-tool: a tool that enables the creation of other tools. However, the course is not about software itself, but about experimental design processes. Using a series of custom scripts, techniques and workflows, Grasshopper will be used to create new interfaces that disappear and become part of the Rhino environment -- or even part of the physical world. External input devices will be used to create new relationships with 3d modeling, data will become incorporated into new forms of tools, and representation will be explored as a way to design the behavior of the user. Technology will not be used as form-calculating machines, but as intelligent prostheses of the designer that alters their design process.

The point to design and create your own feedback loops, where new ideas can generate new design techniques, and new design techniques can thus generate new ideas.

In **Session A** is oriented around the tool's agency or 'desire'; we will create one experimental tool: the tool will draw from a previous project, and will integrate in-depth technical knowledge with a larger design intent that it attempts to execute. Session A's focus is on balancing a deep understanding on how Grasshopper and computation works, with the conceptual question of how computation incorporates itself into your design.

A basic knowledge of Grasshopper is recommended, but not necessary. Students with prior programming knowledge (Python/C#/VB.net) are highly welcomed. The course is structured along the lines of the 'flipped classroom', in which lectures, discussions, and peer critiques happen during class; outside of class, video tutorials for Metatool will be made available, as well as the Skill Tree, an archive of general Grasshopper videos, developed in conjunction with the ADR curriculum. Over the duration of the course, students will collectively amass an 'arsenal' of new Grasshopper-based tools into a suite of experimental design processes that will enable and augment new design possibilities.

The **Session B course** will be oriented around the idea of an 'arsenal', in which students will share a brief in order to formulate a series of experimental design tools, including the tools from session A. These tools will be data-rich, nonsensical, performance-oriented, deliberately erroneous, computationally intelligent -- design projects in their own right. The goal of Session B is to collectively amass a series of playful design tools in relation to a project, so that a group of designers are able to engage in a rigorous and playful design process through a series of tools, so well-crafted they manage to alter the designer herself.

For Session B, students will be expected to have taken session A, or to be very comfortable with Grasshopper.

SESSION A SCHEDULE

Week 1: Introduction: Tools as prosthetics, augmentations.

Week 2: Hand-Eye Feedback Loops: simultaneous data analysis and design

Week 3: Representation As Manipulation: More outputs

Week 4: Beyond the Keyboard and Mouse: Other inputs

Week 5: Computational Collaboration: loops & evolutionary solvers

Week 6: The Stubborn Tool: Mobilizing Data

Week 7: Desk crits / Pinup.

SESSION B SCHEDULE

Week 8: Soft Coercion: feedback, or how the tool designs the user

Week 9: Slow Tools: delays and slowness as a technique

Week 10: Scan Sketching: basic computer vision as input

Week 11: Walking Inputs: GPS/spatial data

Week 12: TBD

Week 13: Going Faster: finding new techniques through Python and performance

Week 14: Final Review