Architecture Studio: 1st Year Spring

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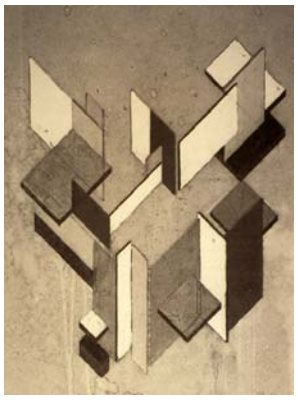
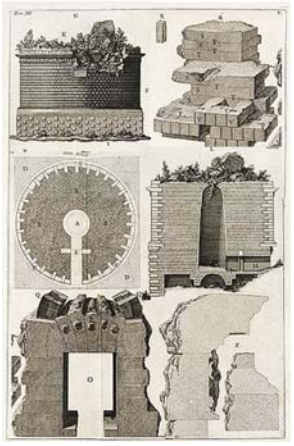
Spring 2014, CMU, Arch #48-105, M/W 12:30-4:20
Class Website: www.andrew.cmu.edu/course/48-105

(1/12/14)

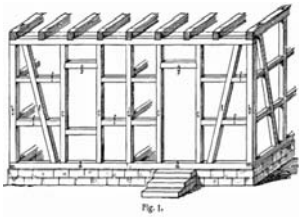
Project 1: TECTONIC SYSTEMS



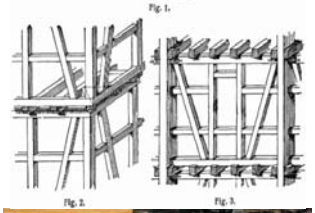
LEARNING OBJECTIVES: After the project, students should:
- be familiar and comfortable with the wood shop machines and wood working techniques
- be more confident about their own design process, able to generate sophisticated design ideas with increasingly iterative techniques, rigor, and complexity
- understand the elemental role of tectonics, joinery, structure, and construction in design and space-making
- understand the use of geometry and basic form-making principles as design drivers
- uncover, understand, and create systems, patterns, and logics for design; use systems and "computational thinking" to aid in the design process
- understand the power of abstraction, constraints, and a limited palette of materials or forms in creating rich and articulated designs



BACKGROUND: A long-standing tradition of CMU's 48-105 studio has been intensive engagement with the wood shop to continue to develop expertise using the tools, and to highlight "making" as fundamental to the design process and to becoming an architect. Making by hand, especially at 1:1, allows you to experience viscerally the resistance of materials and tools, the difficulty of technical precision, the aura of craftsmanship, scale in relation to the body, and the emotional thrill of having made the real thing, rather than just a drawing or a model.

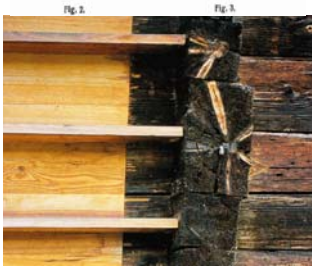


PROJECT: This semester's shop project will be integrated with a studio investigation into "tectonics," which we will define as the "poetics of construction" (see Frampton). We will combine shop exercises, design experiments, and readings related to tectonics, "systems" and "computational thinking," with the ongoing development of clear communication skills in both analog and digital modes. The underlying framework for this project will be three simplified "tectonic systems" or "kits-of-parts" that can define space, support structural loads, articulate the fundamental elements of architecture, create order, and begin to shape experience by leveraging the distinct geometric systems implied by the point, line, and plane:



1) Planes: a system that defines and encloses space through thin planes and surfaces. Although cardboard and paper planes are at the heart of architecture studio today, and much furniture is made of plywood and other planes, architecture is rarely actually made out of planes, and usually relies on the other systems for structure to create "implied planes," or combines planes as panels or scales of a skin. At their core, planes are "a-tectonic," more about surface than construction.

2) Blocks: a system that stacks and joins small, discrete units to sculpt space through constructs such as arches, load-bearing walls, and vaults. Examples include log cabins, brick and block buildings, intricate stonework made possible by stereotomy (for which Monge invented descriptive geometry), and more recent hybrid systems such as textile block and woven brick. Except in a few climates with abundant timber, block construction was the dominant system for creating architecture before the 20th-century.



3) Sticks: a system that connects linear structural elements to frame space and carry loads. The system has been explored in several different materials including timber, steel, and concrete skeletal systems. It is the most pervasive modern, large-scale construction system.

The project will be broken down into a series of inter-laced phases and assignments, moving from one tectonic system to the next. We build on the investigation of simple, orthogonal planes as well as the focus on "spatial definition" from 48-100, but add ideas about performance, tectonics, joinery, systems, construction, and materials to inform our space-making, work from simple surfaces towards articulated systems of sticks and increased complexity and diversity of parts. Throughout the project there is an intense focus on developing rigorous, iterative, generative, ordered design processes that organize and synthesize ever more parameters.