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Intuition Before Integers: Integrating Building Technology Into the Design Studio

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Abstract

The studio methodology, used almost universally to teach architectural design in the US, embraces speculative investigation and hands-on learning, offering unparalleled opportunities for integrated thinking and open-ended inquiry. Building technology courses, in contrast, tend to be taught in more constrained, and more passive modes - lecture classes, sometimes accompanied by a laboratory or including a project or two. As instructors of both design studios and building technology courses, we have found it difficult to generate the level of engagement and enthusiasm, or achieve the depth of inquiry, in the technology classroom that is common in the design studio. Moreover, we find that students fail to apply their developing technical knowledge to inform their studio design work. With a goal of greater comprehension and application as a guide, we developed an immersive making-based exercise in the design studio with an overt focus on building technology, elevating technical concerns to primary design drivers.

In this case, the development of a tectonic daylighting building skin was selected as an opportunity to incorporate building construction, structures, and performance, while exploring the potential of the envelope as moderator of the exterior environment and shaper of experience. The work was organized as a series of iterative feedback loops: make – learn – test – analyze – refine – make… This began with intuitive making – developing a series of material investigations in response to an initial prompt. Making was immediately followed by learning - the introduction of a specific building technology concepts and considerations. The previously-generated products then served as a subject for testing and analysis, applying the newly-learned technical concepts and tools. The feedback from testing and analysis directed refinement of the design. This pattern was repeated, with episodic technical workshops positioned throughout the project, presenting additional topics such as material selection, tectonics, and structures, for integration into the evolving design. This gradual exposure to new concepts and concerns incrementally built technical awareness and knowledge, spurring continued analysis and development. Additional design and performance criteria, aligned with the new technical topics, added complexity at a measured pace, allowing students to focus on a single concern at a time, without becoming overwhelmed.

By engaging with physical making and testing, and scaffolding technical concepts, students begin to perceive the opportunities to develop designs informed by a multitude of intentions – truly integrated design.