Systems thinking at the get go

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ABSTRACT: As a practicing architect and an educator, I have long puzzled about the nature of the changing skill set that students now need, in face of paradigmatic shifts in our approach and relationship to the built environment. Advancing building science coursework, integrating LEED certification into the classroom, and so on, are key components, but it is clear that more fundamental shifts need to occur at the inception of a student's architectural education. While I hesitate to call my practice work research, experimentation with new material assemblies and materials is integral to my architecture—it is the subject of an upcoming book. While general design has been my forte, I have spent long hours deep into ASTM texts, conversed with manufacturers about material performance, worked side by side with engineers, fabricators and constructors to try to better resolve the numerous sticking points in our current methods of practice and construction. Distilled to its essence, current education and practice continues to be weak in training us to think and visualize in systems. Systems thinking has emerged in the last half-century as a fundamental underpinning of environmental and economic sciences. Simply put, it puts into practice the notion that objects, forces, ideas, and especially people—interact and are mutually influenced in somewhat predictable but nonetheless dynamic ways. Architects are often quick to claim that they are already systems thinkers— after all we think about circulation systems, structural systems construction systems—but it tends to be a rather delimited version, limited by perceived disciplinary boundaries or by specific components or aspects, and by a historically blunted awareness of the on-the-ground realities of getting a building made. With more rigorous training, we could more meaningfully think through, and design for not only more performatively integrated buildings, but with a comprehensive understanding of building processes from resource extraction to fair labor practices. In other words, with a much more comprehensive spatial, temporal and logistical awareness.

Over the past several years, I have developed a systems-focused introductory curriculum for an architecture studio typically taught in the second semester of the three-year track of a Master of Architecture. At the same time, I have been intensively involved in developing system-based approaches to my practice, from user analysis to material systems and construction logistics. Associated methodologies have also been applied to several design-build projects and courses that brought together practice and teaching directly. This paper explains the methodologies developed in each of these arenas, in the context of ideas put forth by scholar-practitioners such as Susanna Hagan from the UK, Kiel Moe at Harvard, Bill Reed with the Regenesis Group, Peter Papesche in Boston. The relationship between systems thinking in the educational context as compared to the professional or constructional context will be articulated. The relative successes and failures of different aspects of the undertaking will be evaluated, against the work of others with similar approaches.