



Grow by Dan Roosegaarde

The Material Landscape

Trans-scalar approaches to global material design

Arch 4050/5050: Architecture Topics Seminar
W 9:00-11:30 pm, 1001 Dubois Center, 3 credits
Instructor: Blaine Brownell, FAIA LEED AP

Concrete is the second most consumed material on the planet after water. The world is currently running out of sand, based primarily on urbanization. Due to human settlement patterns, only a quarter of the planet's original wilderness remains. Polis, metropolis, megalopolis, eperopolis, ecumenopolis. The Anthropocene epoch is here.

Scientists and planners point to geodesign—an approach to modeling land use and climatic behaviors on a global scale—as a means to address global warming and other environmental hazards. Yet “geodesign”—designing and manipulating the surface of the globe—is precisely what humans have been doing for millennia. As a species, we have developed a remarkably effective and homogeneous set of material systems that can be found in nearly every human settlement. We understand the details of these material operations, but the comprehensive scale—and its holistic environmental influence—alludes us.

In this research-based seminar, students will analyze humanity's most commonly utilized material systems and assess their total environmental impacts. We will employ methodologies such as Ecological Footprint (EF) accounting, Material Flows Analysis (MFA), and Life Cycle Assessment (LCA) to develop a trans-scalar understanding of planetary material use that connects local details with global systems. Students will use innovative mapping and visualization techniques to describe material effects, conduct precedent studies to highlight alternative design approaches, propose a novel material strategy, and calculate its total potential impact. Class assignments will include analytical reports, trans-scalar material maps, a collectively produced website, and a group exhibition.