

URBAN ECOLOGICAL ANALYSIS AND DESIGN

Jay Moorman
ARCH 483 | Spring 2020
School of Architecture | University of Hawai'i at Mānoa
Instructor: Simon M. Bussiere

Project 1. Reading Spatial Patterns

Ecological spatial patterns viewed "out the window of an airplane" can be broken into component elements: patches, corridors, and urban matrix. As a pattern detective, I captured views from 4000' above the terrain of O'ahu using Google Earth, analyzed their components, and abstractly reduced them to expose their core elements and relationships.

Project 2. Mapping Urban Nature

While often referred to as weeds, plants pre-adapted to urban environments spring up in the least expected places. I mapped what Peter Del Tredici calls "spontaneous urban vegetation," vegetation not mediated by maintenance or design at both individual and plant community scales.

Project 3. Environmental Change on the Surface

I searched for and documented engineering failures in rigid (concrete) and flexible (asphalt) pavement. These failures represent small-scale environmental change, change visible on the surface but related to subsurface conditions and natural and human processes.

Project 4. Reading Water

I documented interactions with water to become more sensitive to environmental changes at different scales and with various external stimuli. I observed water in plan view in different states ranging from calm to "high wave," rapidly moving. I also diagramed water at different temperatures to better understand how change can be predicted and/or managed.

Project 5.1 Simulating Environmental Change

I made a simple dough to simulate dynamic change in the environment. I simplified and abstracted the patterns that emerged over time.

Project 5.2 Simulating Environmental Change

I worked with Camilla to document static and dynamic interactions to simulate environmental change. Each interaction involved static (solid mass) and dynamic (particulate matter) components and a specific operation or interaction description (e.g. "stir"). We closely controlled the ratios of static and dynamic components.

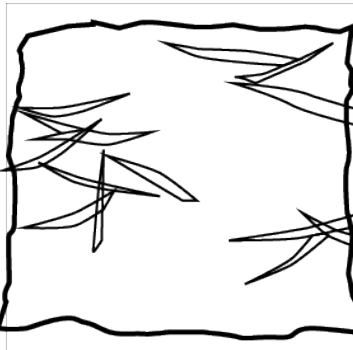
Static and Dynamic Interactions
Simulating Environmental Change

For each interaction, we measured the components and applied an operation in a 3” cube mold. In the next column, the static component is listed first followed by the dynamic component, the ratio of materials (measured by estimating volume), and the operation or interaction description.

The images represent: the components and ratio of materials, isometric and elevation views of the resulting cube, and a vector section diagram of the cube.

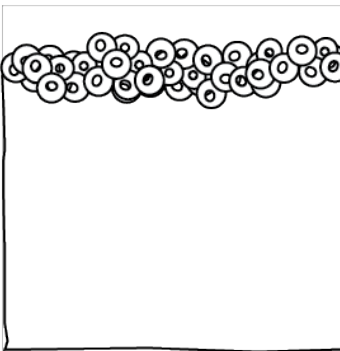
Joint Compound
+ Leaves

90%:10%
“Stack”



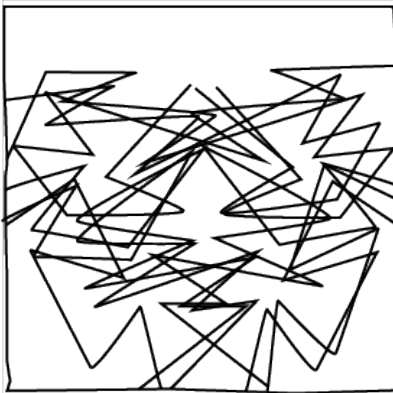
Paraffin
+ Cheerios

75%:25%
“Stir”



Epoxy
+ Glass

50%:50%
“Suspend”



Rockite
+ Rubber

25%:75%
“Clump”



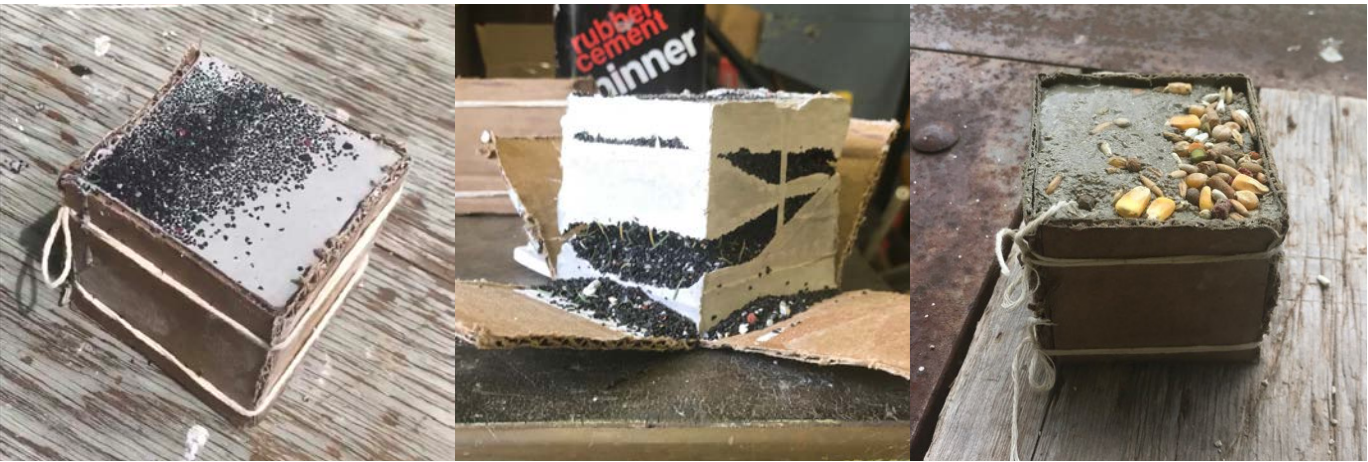
Static and Dynamic Interactions
Simulating Environmental Change

Quickcrete
+ Feed

10%:90%
“Layer”



Process
+ “Failures”



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Project 6.0 Urban Ecological Reactions
Camilla and I applied “disturbances” to our cubes from Project 5.2. The disturbances were appropriately paired with the static/dynamic materials to represent actual processes.

Urban Ecological Reactions
Simulating Environmental Change

For each cube, we initiated a disturbance. In the next column, the static component is listed first followed by the dynamic component and the simulated disturbance. The images represent: before disturbance (isometric view), during disturbance, after disturbance (elevation and isometric views).

Joint Compound
+ Leaves

Simulated forest
fire - "Burn"



Paraffin
+ Cheerios

Simulated scav-
engers - "Nibble"



Epoxy
+ Glass

Simulated im-
pact - "hammer"



Rockite
+ Rubber



Urban Ecological Reactions
Simulating Environmental Change

Quickcrete
+ Feed



Process
+ "Failures"