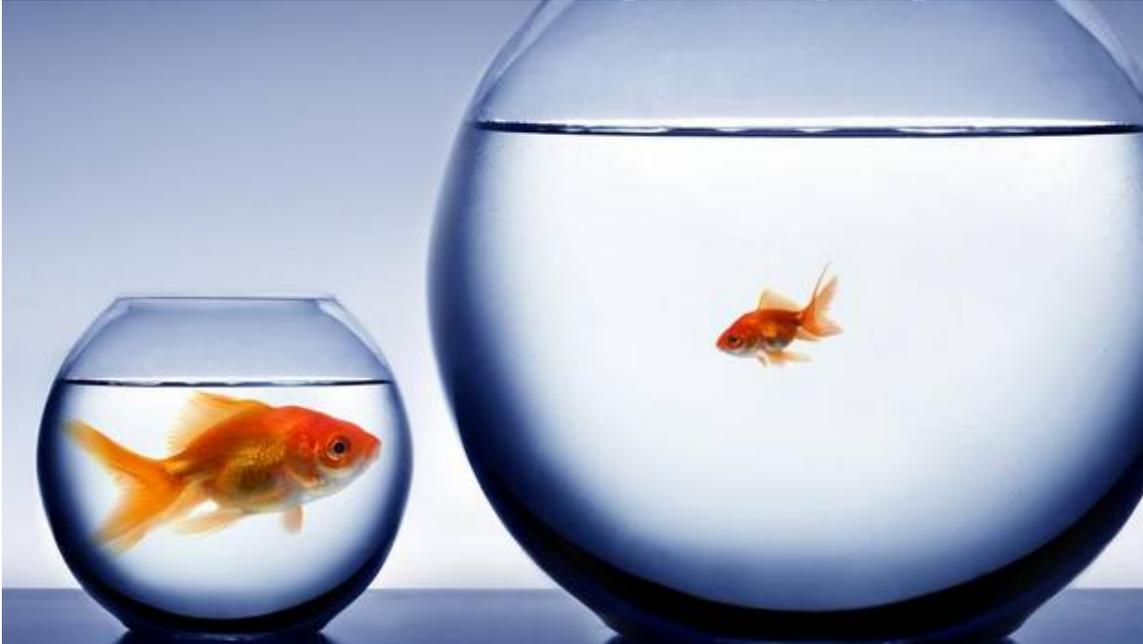


SHRIVEL AND SHRINK: Downscaling Size and Upsizing Scale



INTRODUCTION

When building 1:1, traditional methods of evaluating scale and size seem to no longer apply. Typical architectural elements of human scale are often absent (such as windows, stairs and doors), eliminating any visual or spatial cues to provide an overall sense of scale. More often than not, the tessellation of materials are the only clues, but when made with newer materials, size and scale can still be a mystery. Perhaps, the mere fact that the installation was built by humans (and, therefore, is assumed that the size of the details must have been scaled to the human hand), or that the overall installation is small enough in size to be considered human-scaled, may be enough to consider scale differently, or not at all. Void of program or recognizable furniture elements often used to establish scale in architecture, these installations, a fast-growing type of architectural inquiry, bring new value to the discussion of architecture. They offer what Ben van Berkel¹ describes as “the possibility to test the non-existence of proper scale or to create a kind of ‘scalelessness’ where numerous elements are combined in such a way as to experiment with the notion of scale.” These small-sized architectural inquiries may simply be a snippet of something much larger and, therefore, the criteria for scale is pointless. The same argument can possibly made for site, permanence and purpose of these constructs.

Moreover, the recent popularity of biomimicry in architecture further complicates the discussion of scale. Biomimicry, as framed by Janine Beynus, supports a holistic method of designing “natural” systems. Scientists have studied elements of biology to develop into new materials and innovative systems with some very interesting results. However, many critics would argue that some processes fall more into the category of bio-inspired, rather than truly bio-mimicked, because the change in materials, application and scale have been altered too drastically to make the two comparable. Agreeably, a structure that was originally designed by mother nature to trap micro-organisms for nourishment that is then abstractly translated by scientists and designers to open and close windows can, at best, be qualified as the inspiration for the final man-made design. The differential in scale widens the gap between the highly complex structural principles or the micro-scale make-up of the molecular structure of the original source and that of the final design. This divergence in application and scale may be of little consequence for others, but is significant in the discussion of architecture and its histories. Regardless, we can agree that the inspiration from biology is refreshing and can lead to new ways of thinking—something much needed in architectural design.

¹ Bergdoll, p. 81.

Smart materials, commonly used in bio-inspired work, complicate the notion of “scalelessness” even further, especially when considering scale-changing materials such as Shrinky Dinks, or polystyrene plastic (#6) sheets. This originally flexible material, when heated, shrinks in proportion frontally, but thickens in depth. The result is a diminutive, hardened plate. This material has never been used for architecture, but has many properties that might make it useful. For one, it shrinks to 25%+ its original size and can eventually fit into positions and places where fingers and tools cannot reach. It can also help in increasing structural tension, controlling porosity, and revealing new spaces or forms. Other challenges arise when considering micro or nano-materials. If the material is not visible, does it make the discussion of scale pointless? Because these materials and their changes/motion can only be seen under the microscope, there may be no relationship to human scale whatsoever. As these materials become more and more available for architecture application, a more refined discussion of the already debatable topic of “scale” in architecture is required.

This 5-day workshop will produce a design-build installation that challenges and embodies various notions of scalelessness (or scalefulness) by combining purposeless program, shrinking details, manual assembly, digital zooming and minimal tools. Students should be willing to be inspired by biological sources, to understand changing geometries, and to use their hands to build scaleless AND human-scaled artifacts. The installation will be fast, furious and temporary, because as Peter Cachola Schmal eloquently stated in his forward for *The Pavilion: Pleasure and Polemics in Architecture* the “lack of permanence [in installation architecture] has often been the trampoline for invention.”²

LEARNING OBJECTIVES

Students will be expected to continuously seek, research and share inspiration from biology, art, physics, math, material research and other venues. The body of precedents will be sources for formal studies in both two and three dimensions. Various presentations, discussions, readings, reviews, and demonstrations will focus on these aspects to find a holistic installation that challenge traditional concepts of scale. When fully engaged, students will

- actively participate in the discourse of contemporary ideas of scale in architecture,
- unexpectedly appreciate the broad design implications of scale-changing materials,
- critically contemplate new design applications using unconventional materials and techniques,
- cohesively translate their individual and group research into viable design propositions,
- meaningfully develop an independent sense of experimentation and scrutiny,
- efficiently work alone, in small groups and in larger groups,
- and, repeatedly practice effective representation and communication skills.

² Bergdoll, p. 19.

MATERIALS

(750) 8.5x11 sheets of Shrinky Dinks
Mason's Line, Braided Nylon
Bristol Board
Tape
Scissors
Lasercutting machine
4x8 sheet of 3/4" plywood
Heat guns
Miscellaneous Hardware and Tools

SCHEDULE

MONDAY, MARCH 09

09:00am Catalyst kickoff, Rapson Hall Courtyard
09:30am Workshop Introduction and distribution of tasks: **Shrivel and Shrink**, Rapson 71
12:00pm Lecture: Jentery Sayers, Rapson Hall 54
01:00pm Lunch
02:00pm Schematic Design: Small group research and material testing
06:00pm Lecture: Omar Gandhi, Bell Museum Auditorium

TUESDAY, MARCH 10

09:00am SD and DD: Large group pin-up and desk crits/design/testing
12:00pm Lecture: Ian Harris, Rapson 54
01:00pm Lunch
02:00pm Design Development: Desk crits, design, testing and pin-ups
06:00pm Lecture: Doris Kim Sung, Rapson Hall 100

WEDNESDAY, MARCH 11

09:00am Final Design: Assembly strategizing, scheduling and material purchase
12:00pm Lecture: Diane Willow, Rapson Hall 54
01:00pm Lunch
02:00pm Staging of installation, preparation all parts/pieces (lasercutting, etc) and equipment
06:00pm Lecture: Leah Buechley, Bell Museum Auditorium

THURSDAY, MARCH 12

09:00am Fabrication, Assemblage and Installation
12:00pm Lecture: Hideyuki Nakayama, Rapson Hall 54
01:00pm Lunch
02:00pm Fabrication, Assemblage and Installation
06:00pm Keynote Lecture: John McMorrough, Rapson Hall 100
Panel: Catalyst Guests

FRIDAY, MARCH 13

09:00am Final touches, Presentation prep, Performance review
12:00pm Lunch
02:00pm Catalyst Final Show Exhibition and Presentations, Rapson Hall Courtyard

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Adler, Gerald, Timothy Britain-Catlin and Gordana Fontana-Giusti, eds., *Scale: Imagination, Perception and practice in Architecture*, Routledge (London: 2011).

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