Virtual Frictions

Louisiana State University School of Architecture

FEB 13 FEB 14 FEB 15

OPEN TO PUBLIC
KICK-OFF LECTURE
BRANDON CLIFFORD

7 WORKSHOPS

OPEN TO PUBLIC
ROUND TABLE &
RECEPTION

"Virtual craft still seems like an oxymoron; any fool can tell you that a craftsperson needs to touch [their] work. This touch can be indirect —indeed no glassblower lays a hand on molten material—but it must be physical and continual, and it must provide control of whole processes ... more abstract endeavors such as conducting an orchestra or composing elegant software have often been referred to as craft, this has always been in a more distant sense of the word ... Our digital practices seem more akin to traditional handicrafts, where a master continuously coaxes a material."[1]

Digital technologies have provided watershed moments for innovation and progress (promised and realized). Innovations in computation have offered exciting new possibilities for the construction, consideration, and design of the built world. Architects tackling this new area of expertise have long grappled with the challenge of reconciling the new languages of scripting, software, and virtual environments with the established traditions of material craft, physical drafting and measure, and tactile response.

At the same time that the discipline has seen digital fabrication shift from niche specialization towards a new status quo, some architects and designers have shifted their investigations from exploring the potentials new computational and fabrication technologies present towards possible reciprocities between computational processes and traditional crafts or insights.

How can digital technologies learn from physical craft? This is the sincere and challenging question which Virtual Frictions proposes as a launching point for a series of investigations exploring the reciprocities between digital craft and physical materials and tools. Seven invited workshop instructors will lead investigations into timely questions in digital fabrication. Through their work, students will learn new skills, explore new aspects of technologies, and be introduced to making in new and exciting ways. The three-day event will be kicked-off with a lecture by Brandon Clifford, of MIT and Matter Design, and will culminate in a round-table and reception to share the results of the workshops.

1 McCullough, Malcolm. Abstracting Craft: the Practiced Digital Hand. Cambridge (Massachusetts): MIT Press, 1998.

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[CROP CIRCLES]

analog algorithms

Brandon Clifford

Massachusetts Institute of Technology

Mystery and speculation surround the nocturnal creations of geometries in the landscape: Crop Circles. As cryptic as their creation stories are, the geometries that describe them are universally rule-based. Students will begin by establishing their rule-based geometries at the desk, then translate them into a computation method that constructs a code to deploy a drawing at a geological scale.

[ZIP FORM]

digital curved forms

Emily Baker

University of Arkansas

The mathematical concept of parallel transport will be physicalized as students design and create curving steel forms that "zip" together from flat parts. Students will digitally model unique forms using a provided parametric strategy. Simple analog jigs will enable the fabrication of these complex forms at large scale. This workshop aims to reveal how analog fabrication techniques paired with computational design strategies can make fabrication of complex geometries easy, efficient, and fun.

[REFLATE]

digitally designing inflatables

Jonathan Desi-Olive

Kansas State University

In teams, workshop participants will design and build their own inflatable environments under a very simple premise: the structures must be made of HDPE plastic sheeting and must fit within a volume of 5m x 5m x 5m with the whole team inside. Upon completion, the "village" of inflatable pavilion-like structures will be exhibited across the LSU campus.

[CONSTRUCTING TEXTILES]

parametric knit forms

Shelby Doyle

Iowa State University

In groups of five to six people, students will design and construct textile installations that explore the friction between digital simulations of textiles and their physical construction. This will include modeling proposals in Kangaroo Physics for Grasshopper then fabricating large peg looms, knitting panels, and installing the knits to reflect the initial design proposal.

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[INTER-DIMENSIONAL NARRATIVES]

VR designed 3D forms

Olga Mesa

Roger Williams University

In pairs, students will respond to prompts to construct a spatial inter-dimensional narrative within a virtual environment. They will examine the frictions and reciprocities inherent in traveling between physical and digital space, and the spatial perception and physical sensations triggered by visual stimuli. Participants are encouraged to test the connection between the body and its movements to measure, model, and control phenomena. A portion of their scenes will be translated into 3D printed objects that embody their spatial constructs and appeal to our imagination.

[ROBOTIC "AUGMENTED" VISION]

robotically captured AR videos

Ebrahim Poustinchi

Kent State University

RAV investigates a possible medium to establish a workflow between a custom-made AR application and a curated robotic motion. Enhanced through the lens of the existing contemporary discourse about representation, students use RAV workflow to develop a hybrid actual/virtual video, that is half digital and half physical. As an outcome of the workshop, students will develop a robotic videography path for the UR5 robot arm to capture a curated video of the AR scene.

[GRAVITY-ASSISTED CASTING]

variable parametric casting molds

Lavender Tessmer

Massachusetts Institute of Technology

The workshop will focus on casting as a scalable form of production, examining the trade-offs between geometric complexity, variation, and timing. Projects will investigate a "gravity-assisted" casting technique, using multiple possible orientations of a partially filled casting mold to generate different geometric permutations. Each team will produce a mold that is capable of producing more than one geometry using gravity-assisted variation—a casting "machine" for producing an array of unique geometries. Using digital modeling to maximize the potential of geometric relationships in the mold design, students will explore the interior and exterior mold geometries along with different volumes of casting material and number of separate material deposits.

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Poster Design: Zachary Angles