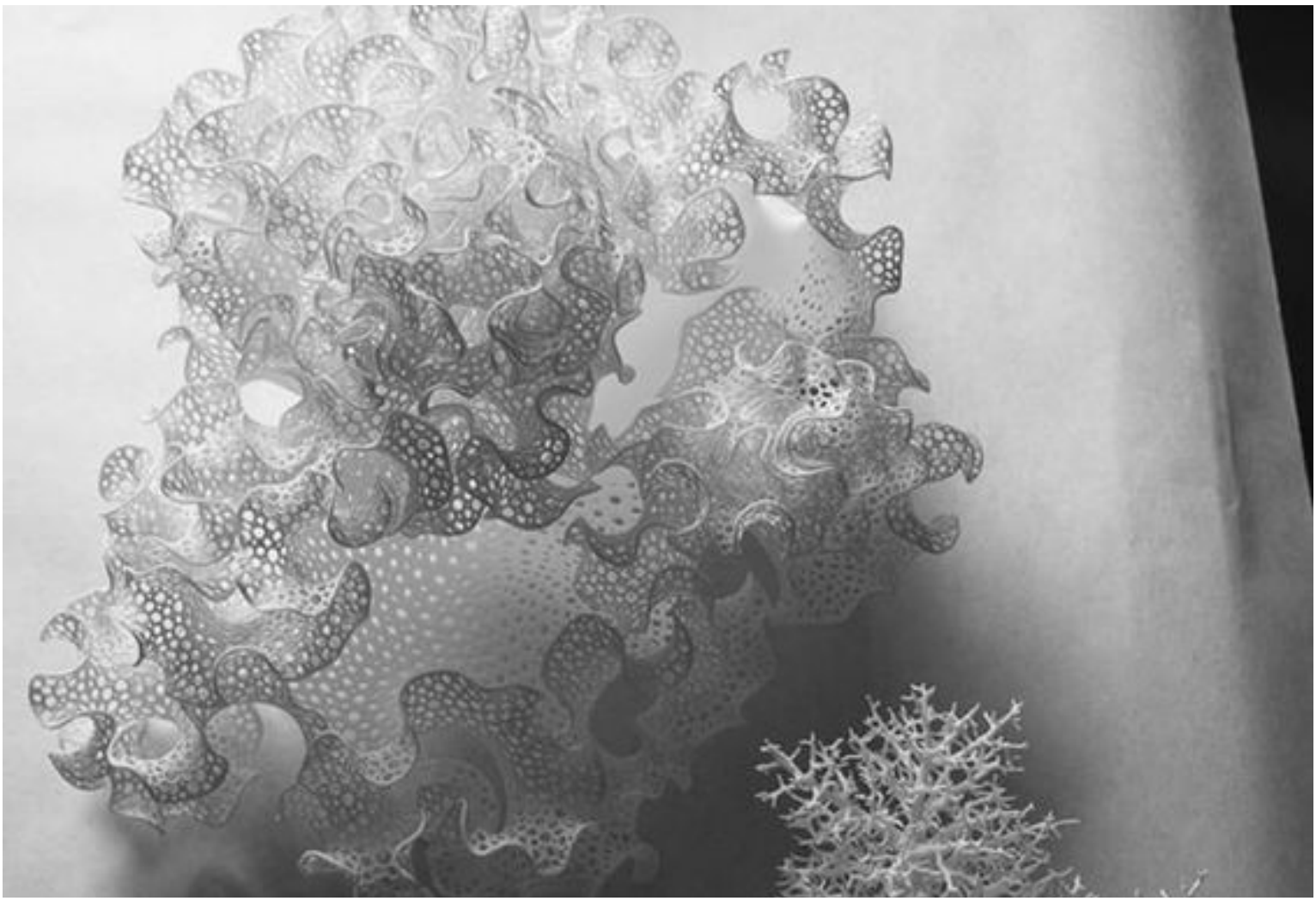
CRITICAL MAKING
SEMINAR & PROJECTS



E/88 SPRING 2017

Critical Making. 9 units (3-0-6)

Create, explore and analyze 3D printing, textile circuits, balloon mapping and bicycle technologies and fabrication methods in masterclasses lead by design and art experts. Make maker culture at Caltech while studying its origins and ethos in DIY culture, design and citizen science.

E/Art 88 Critical Making
Caltech, spring 2017, 9 units (3-0-6)
T/TH, 1pm – 2:30 pm

Instructor: Hillary Mushkin
hmushkin@caltech.edu | (626) 395-4406 | Powell Booth 115

COURSE DESCRIPTION

This course examines the concepts and practices of maker culture through masterclasses, hands-on engagement, lectures, reading, discussions and writing on the relations between technology, culture and society. Classes may include digital fabrication, physical computing, VR, and other DIY technologies as well as traditional making. Major writings and practitioners' work may be covered from the study of maker culture, DIY culture, media, critical theory, histories of science, design and art.

Through hands-on activities and discussion, students construct with maker tools, explain their capabilities and limitations, and compare with alternative forms of production (both contemporary and historical). Furthermore, through reading, writing and discussion, students summarize the origins and manifestations of maker culture in DIY, hobbyist cultures, make magazine and maker labs. As well, we will infer cultural assumptions about the technologies, hypothesize alternative uses and contexts for these approaches, and demonstrate critical thinking in writing.

Masterclasses

The course will be based upon 4 masterclass workshops lead by experts in the field.

3D Printing with Jason Pilarski

April 6-18

3D printers convert digital models to analog materials. These technologies are increasingly affordable and accessible. During the four classes that Jason will facilitate, we will learn how this process works, what possibilities it offers, what are the limitations, and what are the potential challenges to markets and society. We will make an unconventional "3D printer" that enables us to explore tolerance, materiality and open source topics. We will also work with current printers in the Caltech Tech Lab to better understand the seemingly limitless geometries that can be processed by these printers, and focus on code and slicing to delve into the current logic of 3D printing strategies.

Textile Circuits with Elise Co

April 20-May 2

A sampler is an object traditionally sewn to practice and demonstrate the maker's ability to execute various types of stitches. Today, human hand work and automated machine work are increasingly intertwined. The four class sessions facilitated by Elise are based upon the sampler tradition updated to contemporary contexts. We will create an electronic sampler with conductive thread and microcontrollers; develop a prototype and investigate unconventional applications; apply and analyze design methodologies from proposal to proof concept to working prototype; and draw connections and distinctions between the work of humans and machines.

Balloon Mapping with Claudia Martinez Mansell

May 4 -16

Balloon mapping is a low-cost, low-tech technique - a "do-it yourself satellite imagery". The technique involves attaching a digital camera to a kite or a large helium balloon, raising it repeatedly from a variety

of points on the ground, and using a computer program to assemble images to create a composite image and map. During the four classes that Claudia will facilitate, we will go through the technique and will map a number of locations in Pasadena. Claudia will present a community-based initiative to produce aerial imagery of a refugee camp in Lebanon, and discuss some of the challenges and limitations faced, as well as ethical issues involved when using mapping techniques.

Bicycles with Jen Hofer and Rob Ray
May 18-30

The bicycle: historical, contemporary, mobile, stationary, person-powered, kinetic, mechanical, versatile, conceptual, material. Situating the bicycle within the discourse of maker culture, in this workshop we will contemplate, design and implement. Through reading, writing, making and riding, we will analyze diverse objects and interfaces to understand mobility and interoperability; look to past instances of inspiration and edifying failure to recognize potential and limitations; imagine and evaluate contemporary needs; and engage in future rethinking and visionary modification.

Biographies

Elise Co is a multimedia designer, programmer, and principal of Aeolab, a design+technology consultancy she co-founded with Nikita Pashenkov. At Aeolab, the two specialize in crossing boundaries, from online to in-person, physical to digital, often spanning multiple technologies and always within the context of creating a compelling experience. Prototyping is the core of Aeolab's design process. Co has helped design LED display visualizations, hand-powered electronic prototypes, robotic appliances, and multi-screen kinetic installations for clients such as Honda, BMW, Sony, Samsung, and Disney. Co holds an MS degree in Media Arts and Sciences and a BS degree in architecture from the Massachusetts Institute of Technology. During her time at the MIT Media lab, Co explored the synthesis of fashion and technology. Her work has been featured at the Museum of Modern Art in New York, SIGGRAPH conferences, the International Media Research Foundation in Tokyo, and the New York Art Directors Club. Elise is a member of the Graduate Media Design Program and Interaction Design faculties at Art Center College of Design.

Jen Hofer is a Los Angeles-based poet, translator, social justice interpreter, teacher, knitter, DIY/DIT book-maker, public letter-writer, urban cyclist, and co-founder of the language justice and language experimentation collaborative Antena and the multilingual organizing collective Antena Los Ángeles, which does ongoing work to create bilingual and multilingual spaces for social justice struggle with Defend Boyle Heights, the Los Angeles Tenants Union, the National Day Laborers Organizing Network, and many other groups. Antena has exhibited, published, performed, organized, advocated, translated, curated, interpreted, and/or instigated with many groups and institutions, including the Armory Center for the Arts, Blaffer Art Museum, the LA Public Library and Project Row Houses. Jen publishes poems, translations, and visual-textual works with numerous small presses, including Action Books, Atelos, belladonna, Counterpath Press, Kenning Editions, Litmus Press, LRL Textile Editions, NewLights Press, Ugly Duckling Presse, Writ Large Press, and in various DIY/DIT incarnations. She teaches at CalArts, Otis College, and Occidental College, and organizes with the decolonial pedagogical platform *at land's edge*.

Claudia Martinez Mansell is a humanitarian worker and independent researcher whose work is concerned with protracted crises and humanitarian landscapes. She has worked for over ten years with the United Nations in international development and humanitarian assistance, and has lived for extended periods in Kosovo, Lebanon, the occupied Palestinian territories, Sudan, and Yemen. Her research and creative interests center on protracted crises, urbanization, and critical examinations of the landscapes

created by humanitarian crises and interventions. Claudia is currently working on a project supporting the greening efforts of the local community at Bourj Al Shamali in south Lebanon, a theoretically temporary Palestinian refugee camp that is now a 60-year-old informal urban environment, densely built and without green spaces.

Jason Pilarski is a designer and co-founder of MachineHistories. MachineHistories is a design collaborative that focuses on using the margins of mass production along with locating sentimentality, incorporating difference, involving mistakes and applying technology. The group's designs are derived from the idea of involving a collection of machines and technologies, and factoring in the language, the gesture -- i.e., the history of that said device. Embedding the look of anomaly or error (such as extraneous tool marks and forced programming glitches) on the finished object announces the signature of production becoming the agent of decoration and thus the history of said machine. These embellishments communicate a new story to the observer about the design process. Jason is a member of the Environmental Design faculty at Art Center College of Design.

Rob Ray is a Los Angeles artist examining technology in public/outdoor spaces through installations, interactive public artworks, experimental videos and sound compositions. Rob co-hosts the recently launched Opposable Thumbs podcast with Taylor Hokanson where they tackle a new creative challenge every two weeks and talk about their accomplishments, failures and lessons learned. Rob also runs the EXOSKELETON arts project in Los Angeles, California and collaborates with artists to create enthusiastic and thoughtful events and installations in the EXOSKELETON house and in strange disused places across the earth. Rob was founding curator of the DEADTECH electronic arts center in Chicago, IL, USA. DEADTECH's unique curatorial vision, residency facilities, workshop facilities and exhibition space were custom created to cater to the specific needs of the electronic artist and performer. Rob received his MFA in Electronic Arts from Rensselaer Polytechnic Institute in Troy, NY.
http://robray.net