

CRITICAL **MAKING** 2018

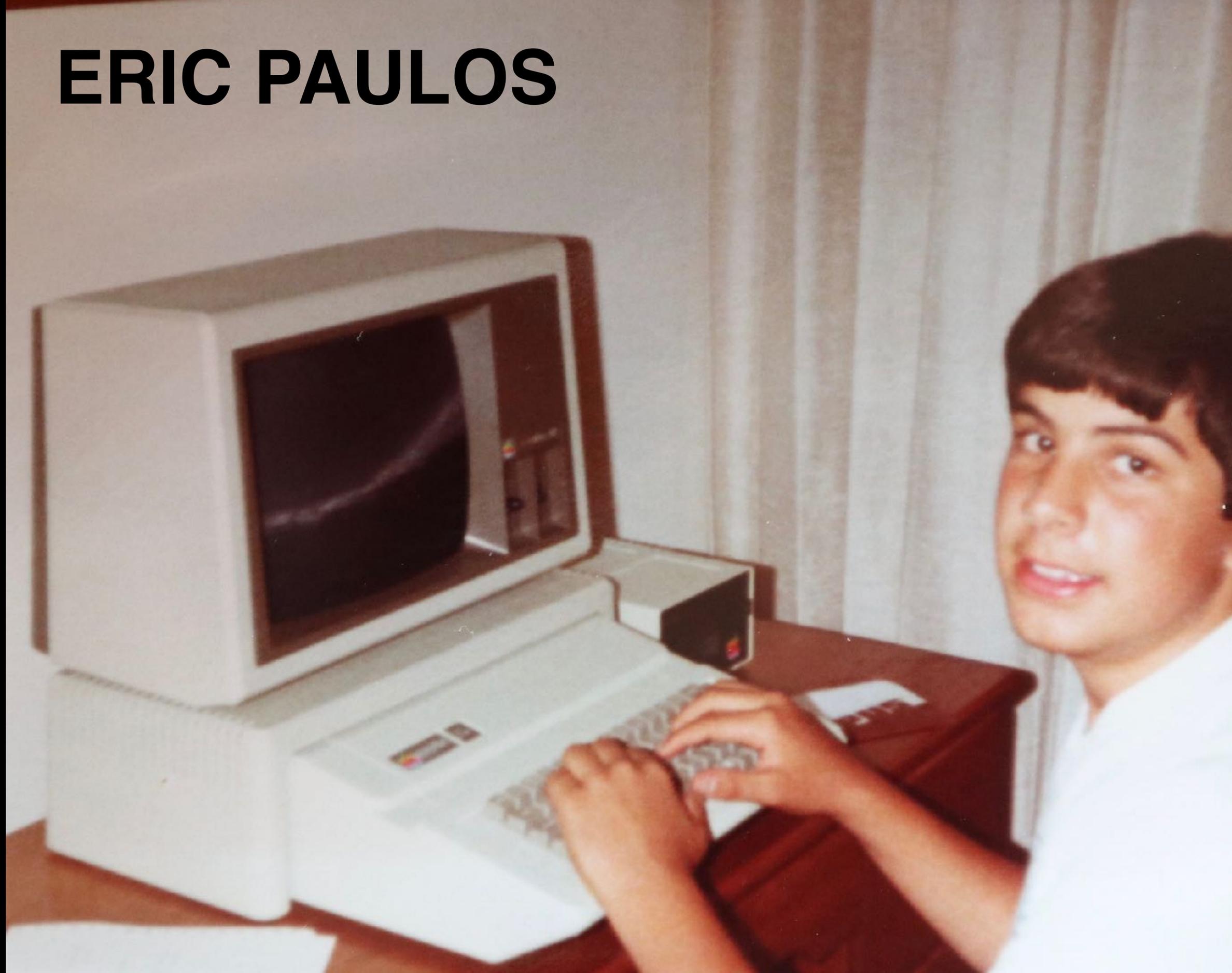


QUIZ





ERIC PAULOS







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UNIVERSITY OF
CALIFORNIA
BERKELEY

1014577

PAULOS

PAULOS ERIC J

10045772

Eric Paulos

NON TRANSFERABLE - REPLACEMENT CHARGE

VAL-DINE SYSTEM GRIFFIN TECHNOLOGY





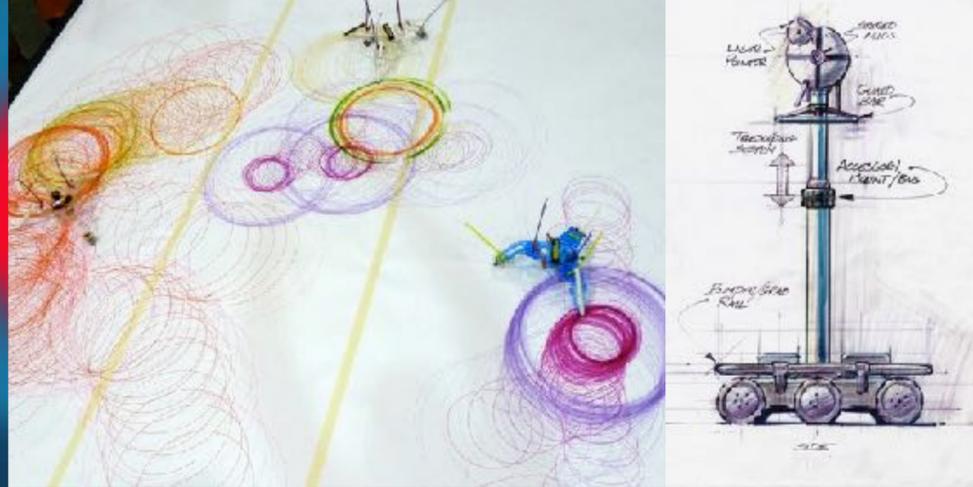
PROFESSOR

ERIC PAULOS

GSI

CHRISTINE DIERK





CHRIS MYERS

INVENTON LAB MANAGER





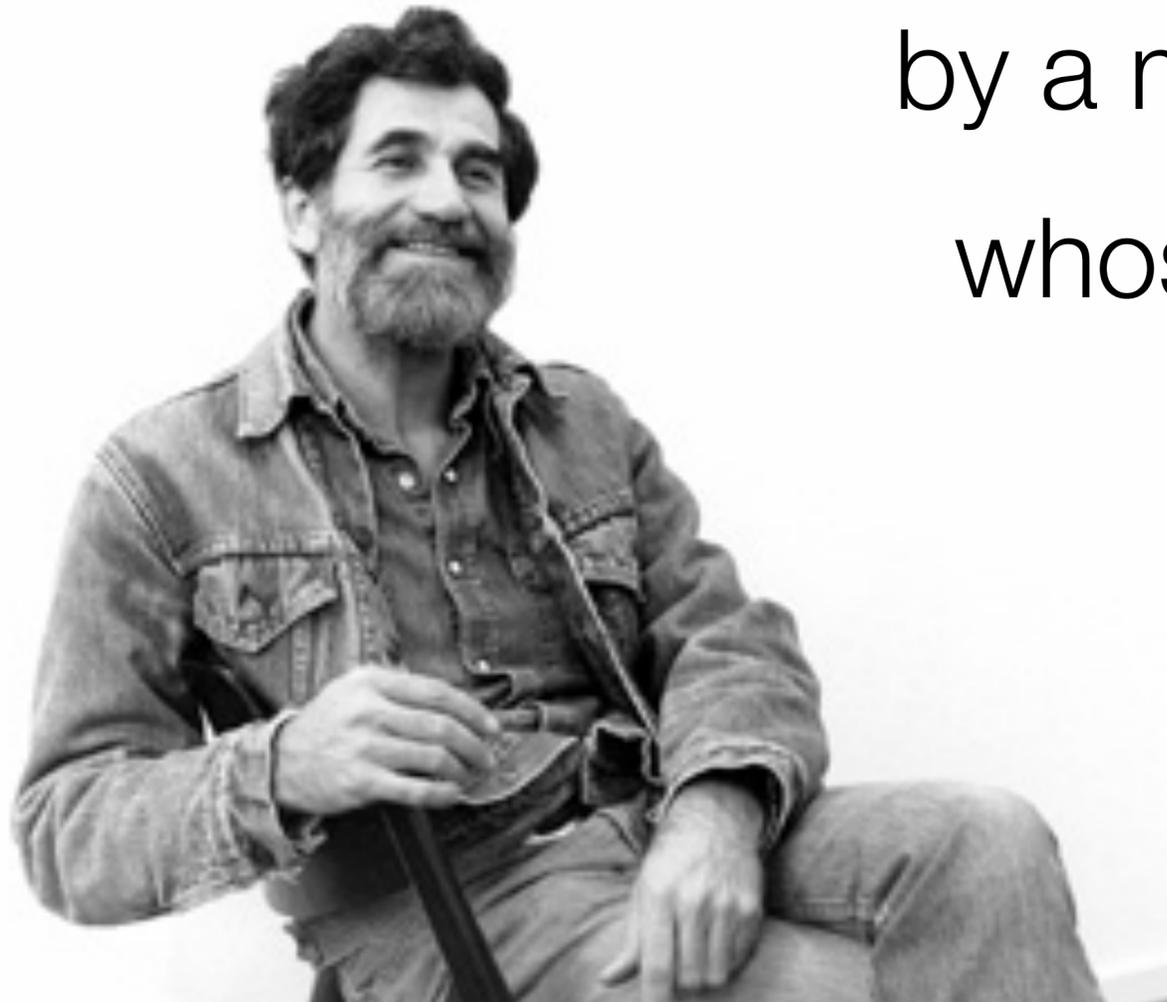


HELLO



Imagine something never done before
by a method never before used
whose outcome is unforeseen

— Allan Kaprow



CRITICALMAKING

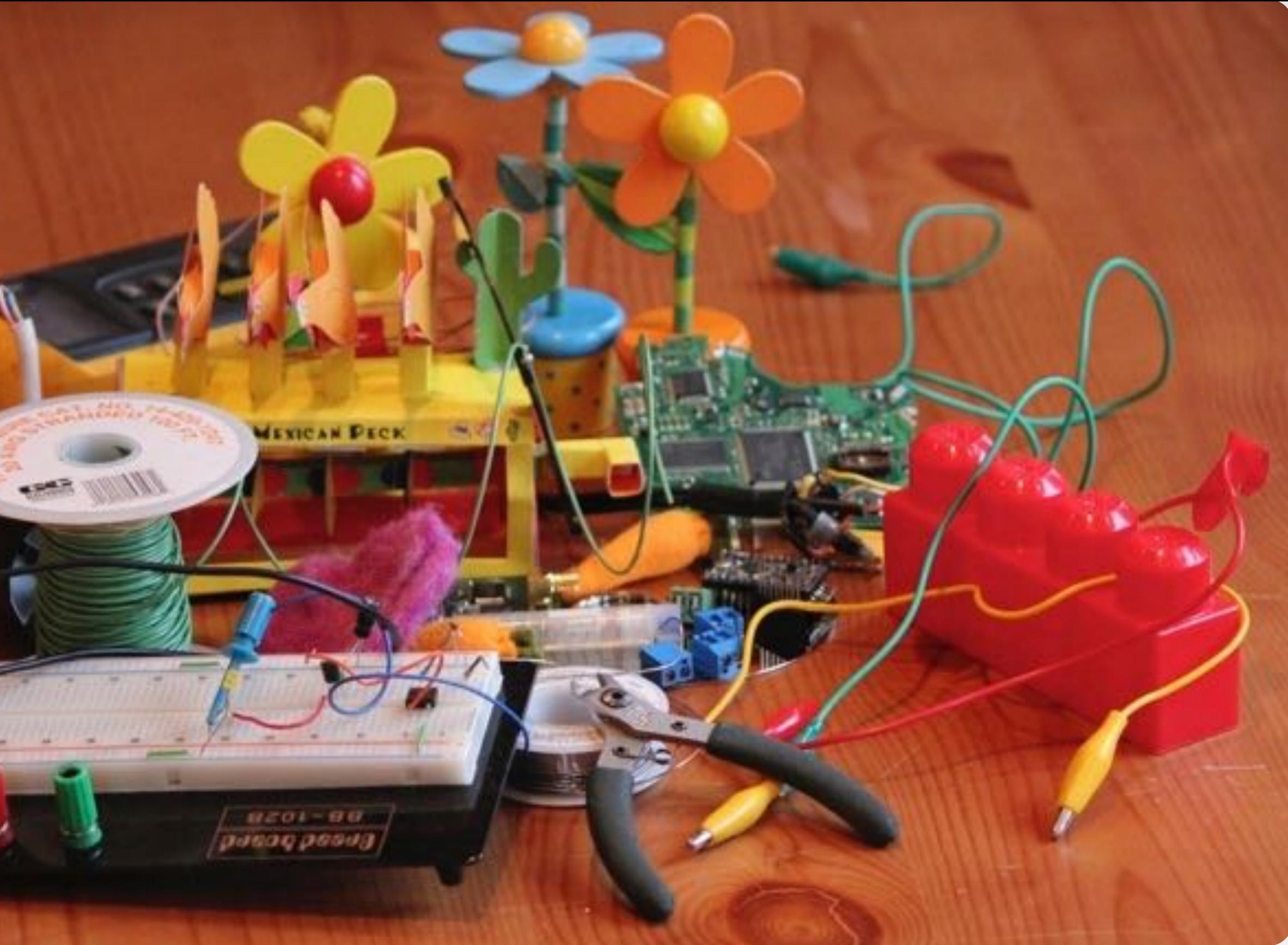


PHYSICAL LEARNING



Without the opportunity to learn through the hands, the world remains abstract, and distant, and the passions for learning will not be engaged

FUTURE PLAY



the future favors
the flexible

PLAY ON



play is the
greatest natural
resource in a
creative
economy

PLAY SUPERPOWERS



manipulate

deconstruct and hack

morph

think flexibly and be tolerant of change

move

think with our hands and play productively

FOREGROUNDING CREATIVITY

The world doesn't need more people with good grades. The world needs people who see the really tough problems as puzzles, and have the tenacity and creative capacity to solve them

- Gever Tulley, TEDxKids, 2011

BECOMING AN AMATEUR

Innovation happens when individuals go beyond their standard disciplines to learn new skills on their own

Breakthroughs often require us to become **amateurs** in a new field

BECOMING AN AMATEUR

In almost all the varied walks of life, amateurs have more freedom to experiment and innovate. The fraction of the population who are amateurs is a good measure of the freedom of a society

– Freeman Dyson

AMATEUR

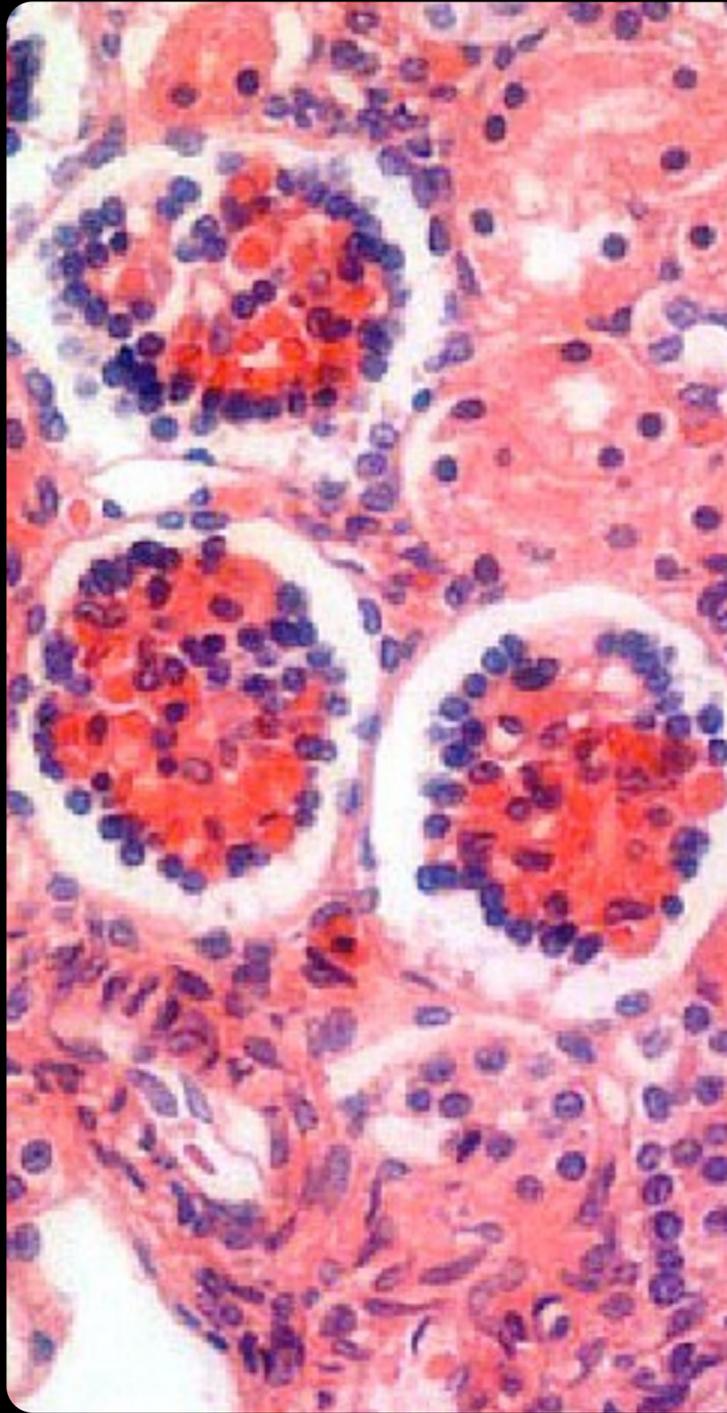
from amāre - to love

amātor - lover



....And most important, we need not only the folks at [UC Berkeley or] MIT or Stanford or the NIH but also the mom in West Virginia tinkering with a 3-D printer, the girl on the South Side of Chicago learning to code, the dreamer in San Antonio seeking investors for his new app, the dad in North Dakota learning new skills so he can help lead the green revolution.

That's how we will overcome the challenges we face: **by unleashing the power of all of us for all of us.** Not just for those of us who are fortunate, but for everybody. That means creating not just a quicker way to deliver takeout downtown but also a system that distributes excess produce to communities where too many kids go to bed hungry. Not just inventing a service that fills your car with gas but also creating cars that don't need fossil fuels at all.



Dilemmas in a General Theory of Planning, 1973
Horst Rittel and Melvin Webber

Policy Sciences 4 (1973), 155-169
© Elsevier Scientific Publishing Company, Amsterdam—Printed in Scotland

Dilemmas in a General Theory of Planning*

HORST W. J. RITTEL

Professor of the Science of Design, University of California, Berkeley

MELVIN M. WEBBER

Professor of City Planning, University of California, Berkeley

ABSTRACT

The search for scientific bases for confronting problems of social policy is bound to fail, because of the nature of these problems. They are "wicked" problems, whereas science has developed to deal with "tame" problems. Policy problems cannot be definitively described. Moreover, in a pluralistic society there is nothing like the undisputable public good; there is no objective definition of equity; policies that respond to social problems cannot be meaningfully correct or false; and it makes no sense to talk about "optimal solutions" to social problems unless severe qualifications are imposed first. Even worse, there are no "solutions" in the sense of definitive and objective answers.

George Bernard Shaw diagnosed the case several years ago; in more recent times popular protest may have already become a social movement. Shaw averred that "every profession is a conspiracy against the laity." The contemporary publics are leading as though they have made the same discovery. Modern professionals seem to be immune from the popular attack—social workers, educators, housers, public health officials, policemen, engineers or physicians. Our restive clients have been telling national programs that schoolmen have been offering, and agencies have been proposing, the law-abiding behavior of the welfare agencies, the streets, and the political professions' against the governmental in

WICKED PROBLEMS



Dilemmas in a General Theory of Planning,
1973
Horst Rittel and Melvin Webber

There can be no agreed-upon definition of a wicked problem

For wicked problems, there is no stopping rule

There is no immediate nor ultimate test of a “solution” to a wicked problem

Every wicked problem is unique

Every wicked problem can be considered as a symptom of another problem

Wicked problems are discrepancies between a present state and a future one

wicked problems



street crime

disarm police?

repeal laws that define crime?

substitute ethical self-control for police and courts?

shoot criminals and thus reduce the numbers
who commit crimes?

give away free loot to would-be-thieves to
reduce incentive?

affirmative

problem solving

provides answers

in the service of industry

for how the world is

science-fiction

futures

fictional functions

change the world to suit us

anti-art

research for design

applications

design for production

fun

consumer

user

makes us buy

critical

problem making

asks questions

in the service of society

for how the world could be

social-fiction

parallel worlds

functional fictions

change us to suit the world

applied art

research through design

implications

design for debate

satire

citizen

person

makes us think

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implications

design for debate

satire

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person

makes us think

DESIGN RESEARCH

The process of knowledge
production that occurs
through the act of design



critical design

speculative design

reflective design

disruptive design

critical making

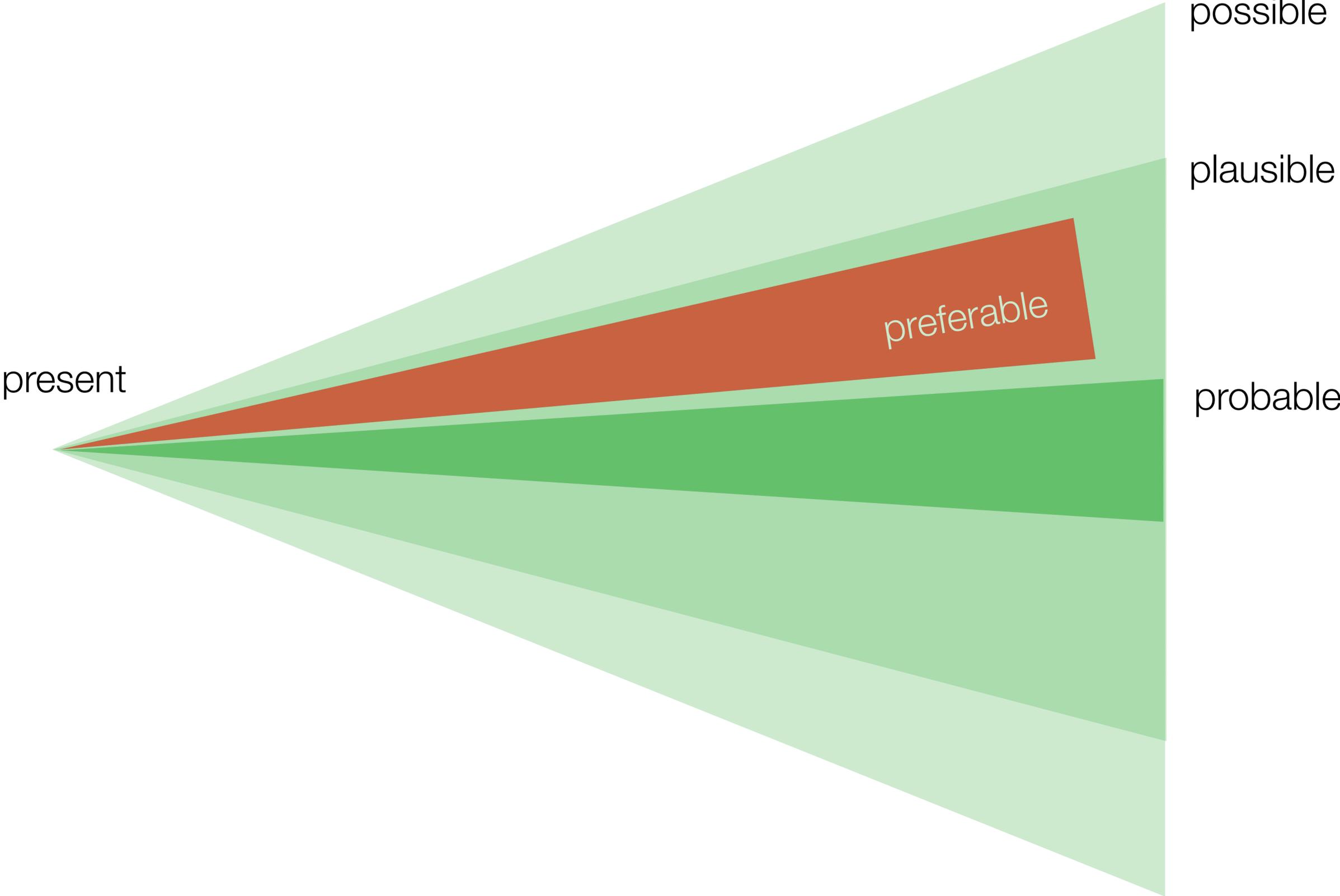
adversarial design

new media art

tactical media

design **noir**

CRITICAL DESIGN





WHAT
IS
DESIGN?

I believe design is an intention, purpose, plan: and that good design is therefore by inference, where such plan has been well conceived, well executed, and of benefit to someone

- Milner Gray, Designer



WHAT
IS
DESIGN?

Design is all around us -
either we control it - or it controls us
- Wally Olins



WHAT
IS
DESIGN?

Design is the difference between doing
it, and doing it right.

- Mark Fisher



WHAT
IS
DESIGN?

With art - if you like, you can be really weird. But in design you have to think about what other people will like.

- Ghisli, age 10



WHAT
IS
DESIGN?

Design is in everything we make,
but it is also between those things.
It's a mix of craft, science, storytelling,
propaganda, and philosophy.

- Erik Adigard

What is your definition of design?

A plan for arranging elements in
such a way as to best
accomplish a particular
purpose



Is design an expression of art an art form?

The design is an expression of the purpose. It may ... if it is good enough ... later be judged as art.



Is design a craft for industrial purposes?

No - but design may be a
solution to some industrial
problems



What are the boundaries of design?

What are the boundaries of
problems?



Does the creation of design admit constraint?

Design depends largely on
constraints



What constraints?

The sum of all constraints.

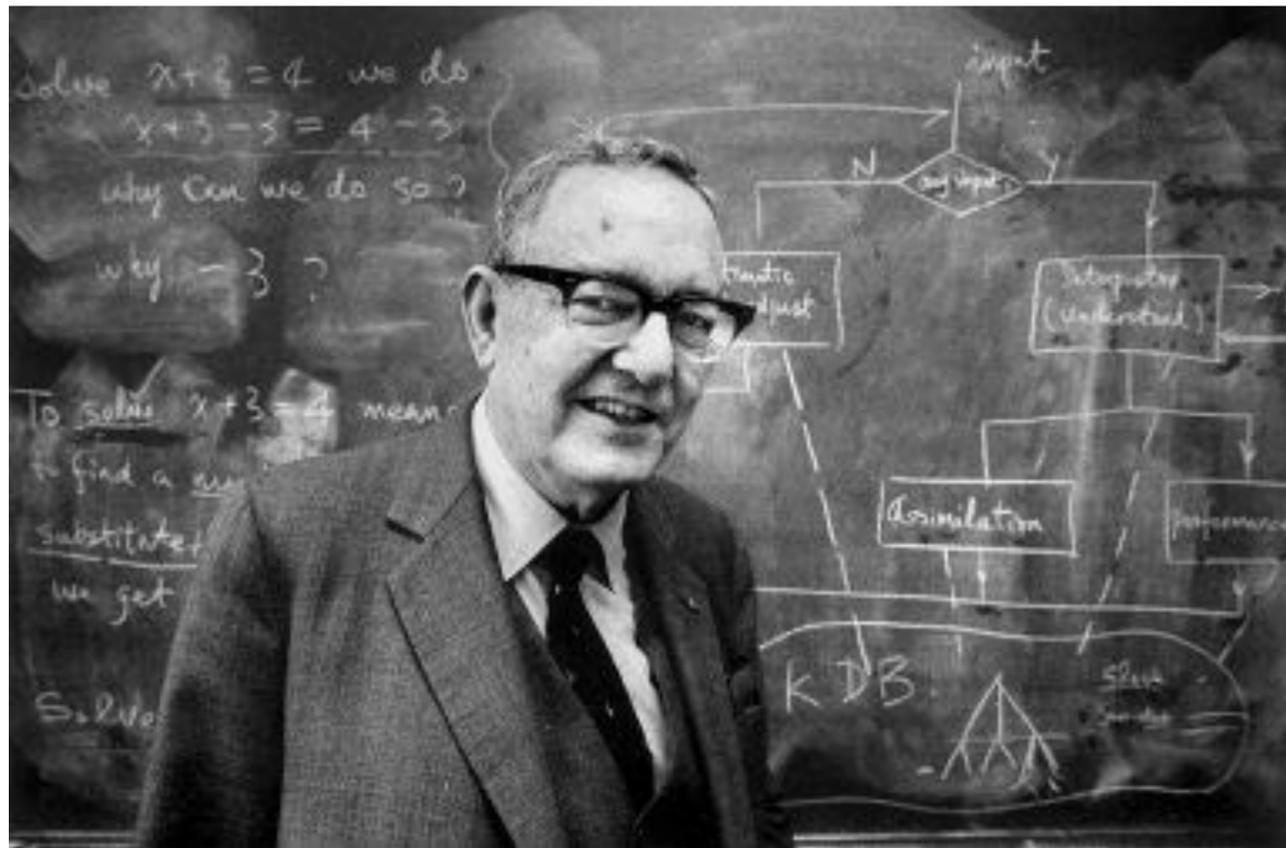
Here is one of the few effective keys to the design problem - the ability of the designer to recognize as many of the constraints as possible - his/her willingness and enthusiasm for working within these constraints - the constraints of price, of size, of strength, of balance, of surface, of time, etc ... each problem has its own peculiar list



Does design obey laws?

Aren't constraints enough?





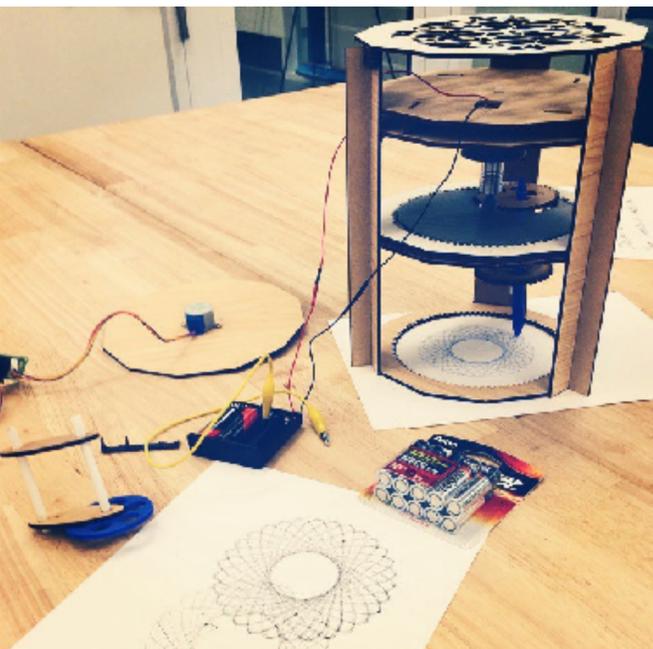
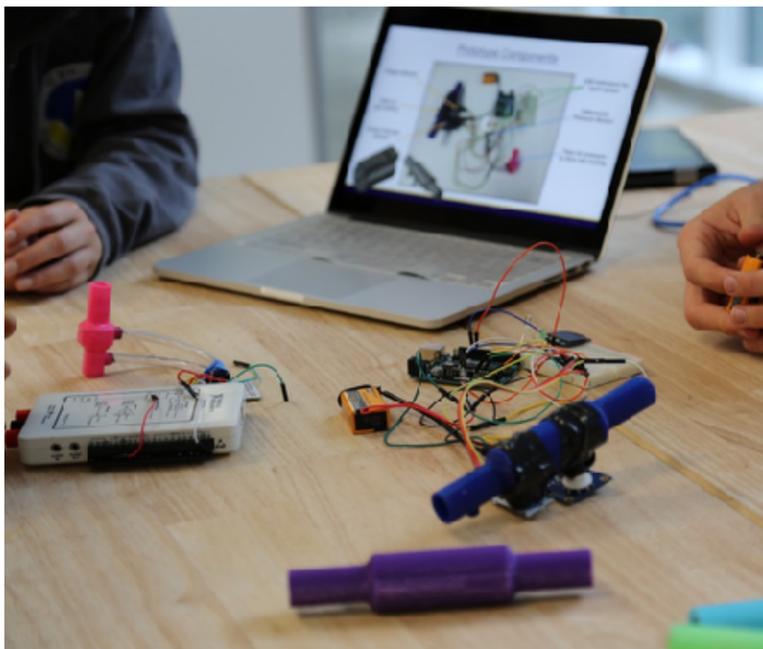
Everyone designs who
devises courses of action
aimed at changing
existing situations into
preferred ones

- Herb Simon



JACOBS INSTITUTE FOR DESIGN INNOVATION

Educating leading innovators at the intersection of design and technology





Man in light blue shirt

Woman in yellow cardigan soldering

Man walking in background

Group of people working at a table with a wooden structure



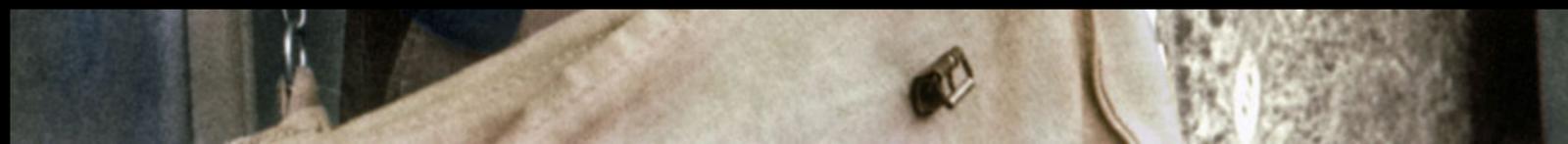








Maker Pass





berkeley
certificate
in
design
innovation



College of Engineering • College of Environmental Design • Haas School of Business
• College of Letters and Science – Arts and Humanities Division



This Certificate introduces design as the creative and critical means to innovate — to define, to imagine, and to advance a globally just future.

designinnovationcertificate.berkeley.edu

APPROVED COURSES FOR THE BERKELEY CERTIFICATE IN DESIGN INNOVATION

BERKELEY CERTIFICATE IN DESIGN INNOVATION		
I lower division course	DESIGN FOUNDATIONS	
must be taken outside of home College or School	ART 8- Intro to Visual Thinking ART W23AC- Data Arts DES INV 10- Discovering Design DES INV 15- Design Methodology	ENV DES 1- People & Environmental Design ENV DES 4A- Design & Activism ENV DES 104- Design Frameworks THEATER 60- Intro to Technical Theater & Production UGBA 190T- Needfinding in the Wild
choose 2 (2+ units)	DESIGN SKILLS	
	ARCH 11A- Intro to Visual Representation & Drawing ARCH 150- Introduction to Structures ARCH 160- Introduction to Construction BCNM 185- Interdisciplinary Drawing Design DES INV 21- Visual Communications & Sketching DES INV 22- Prototyping & Fabrication DES INV 190-001- Methods, Skills & Mindsets DES INV 190-002- User Experience Design ENGIN 25- Visualization for Design ENGIN 26- 3D Modeling for Design ENGIN 27- Intro to Manufacturing & Tolerancing	LD ARCH 1- Drawing a Green Future LD ARCH 189- Contemporary Approaches to Visualization and Communication in Landscape Architecture MUSIC 158A- Musical Applications of Computers and Related Technologies THEATER 173- Scenic Design for the Theatre THEATER 174- Costume Design for the Theatre THEATER 175- Lighting Design for the Theatre THEATER 177- Sound Design & Media Theater THEATER 178- Video Production for Performance UGBA 190T- Innovation and Design Thinking in Business
I upper division (3+ unit course)	ADVANCED DESIGN	
	ART 178- Game Design CIV ENG 186- Design of Cyber-physical Systems COMPSCI 160- User Interface Design & Development COMPSCI 194/ DES Inv 190-001— Interactive Device Design COMPSCI 194/NWMEDIA 203- Critical Making CY PLAN 140- Urban Design- City Building & Place Making DES INV 190/NWMEDIA 19- Critical Practices DES INV 190-3- Reimagining Mobility	IEOR 170- Industrial Design and Human Factors INTEGBI C32- Bioinspired Design LD ARCH 111- Plants in Design ME 150A- Solar Powered Vehicles ME 178- Designing the Human Body MUSIC 158B- Situated Instrument Design for Musical Expression THEATER 175B- Advanced Lighting Design UGBA 190T/ ME 110- Intro to Product Development UGBA 190T/TDPS 100/ ART 100- Collaborative Innovation

SPICE PRINTER

kylan nieh
victor sandberg
hurshal patel



DARK MAZE

brittany cheng
jonathan cotte
hurshal patel
curtis hwang



MOSSED UP

jonathan cotte
noah pitts



MY CITY

karl landin
victor sandberg
kylan nieh
alice lee



FREE SPEAKER

ben ortiz
brandon young
cassie seo
noor al-samarrai



MAX

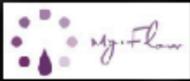




MY.FLOW

tomas vega
madeeha ghor
katie chen
drake myers
amanda brief





HOME & RECOGNITION

MISSION

MY FLOW

BLOG & NEWSLETTERS

ABOUT

Peace of Mind. Period.

my.Flow is a monitor that tells you when your tampon is full.

SIGN UP TO LEARN MORE

Check out my.Flow's Pitch at HAX Demo Day in May!



We've been featured in:





AD SHIRT

Jingyi Li
Michelle Nguyen
Diane Wang
Nick Renda
Joanne Lo

AdShirt

Bidding On

Nick R.
★★★★☆ 1 Review
22 Berkeley, CA
MESSAGE FROM NICK
I'm presenting soon! Tons of smart designer eyes on me. 📧

Current Round
New round starts every minute.
26s
LEADERBOARD

Signed in as **memex**. You have \$742783

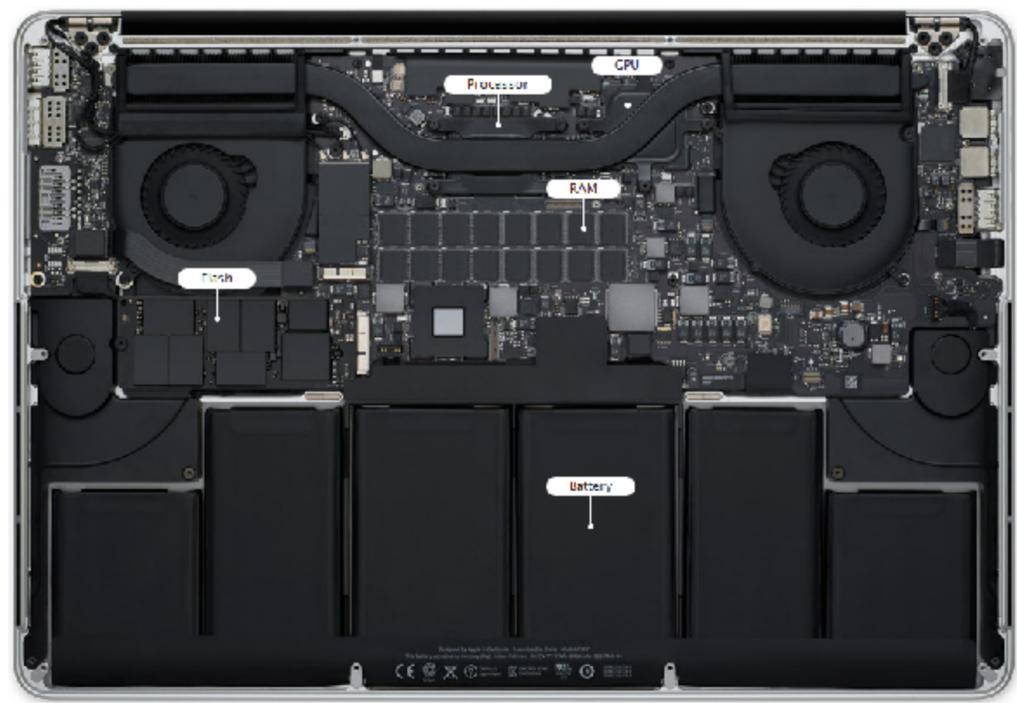
Bid

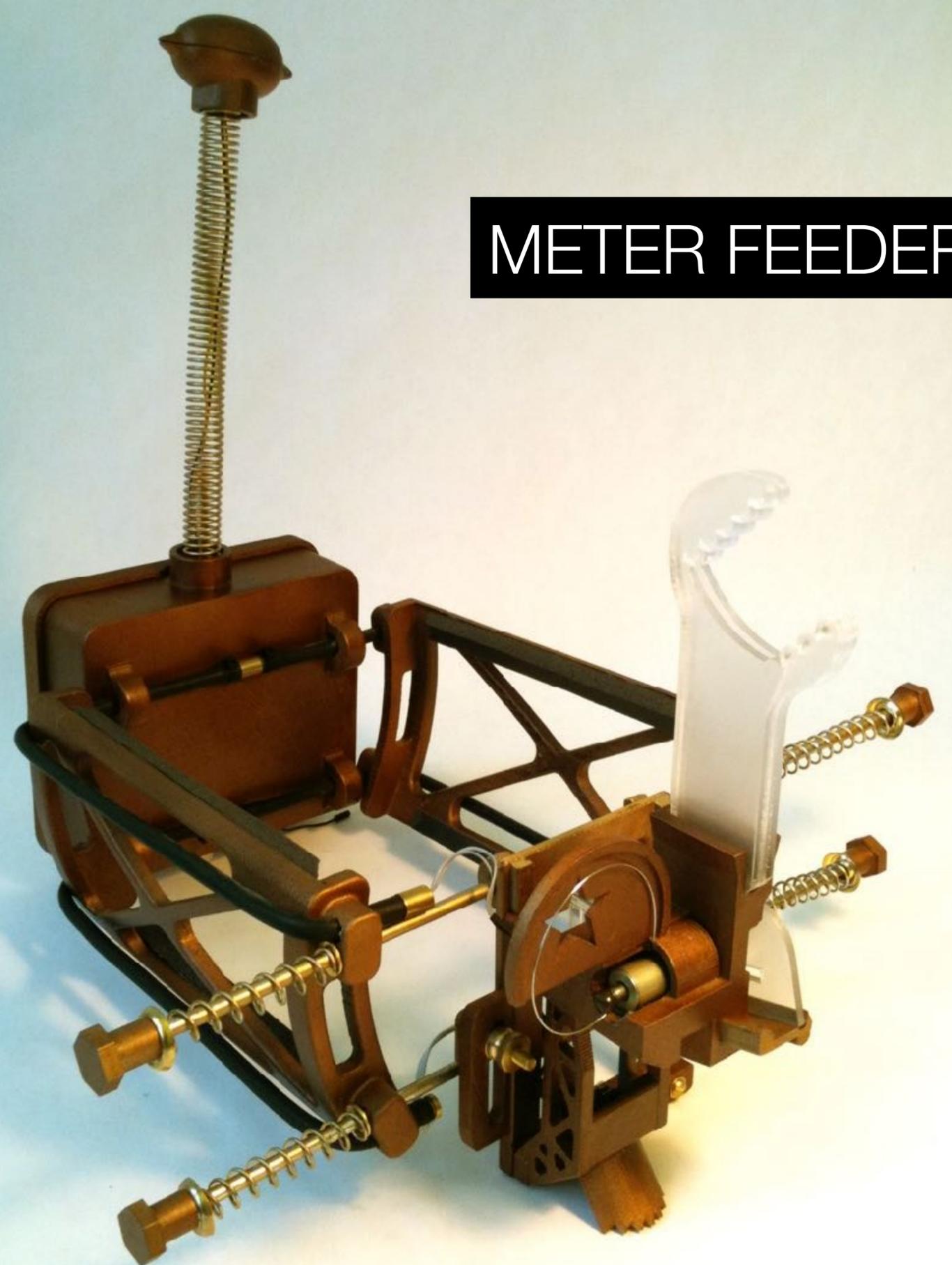
1. Choose an ad
New Text Ad New Image Ad Saved Explore

Your custom message
[Color selection bar]
 Save this ad

2. Enter your best bid (Min: \$0)
\$ 10

3. Ready, set, go





METER FEEDER



SKRT



SPARK







2017

PHOTO-LABEL

MAKING









THEMES

PHYSICAL SKETCHING - learning to give form to ideas using drawing, sketching, cutting, folding, as well as modeling software tools and digital fabrication

MATERIALS - fluid use of new materials for making such as paper, cardboard, foam core, fabrics, textiles, string, wire, moss, etc.

SENSING AND EXPRESSION - skills in electronics from programming simple microcontrollers to attaching sensors and actuators in the design of novel, compelling interactive objects

IN THIS STUDIO COURSE YOU WILL...



get your hands dirty

make real physical objects

cut paper

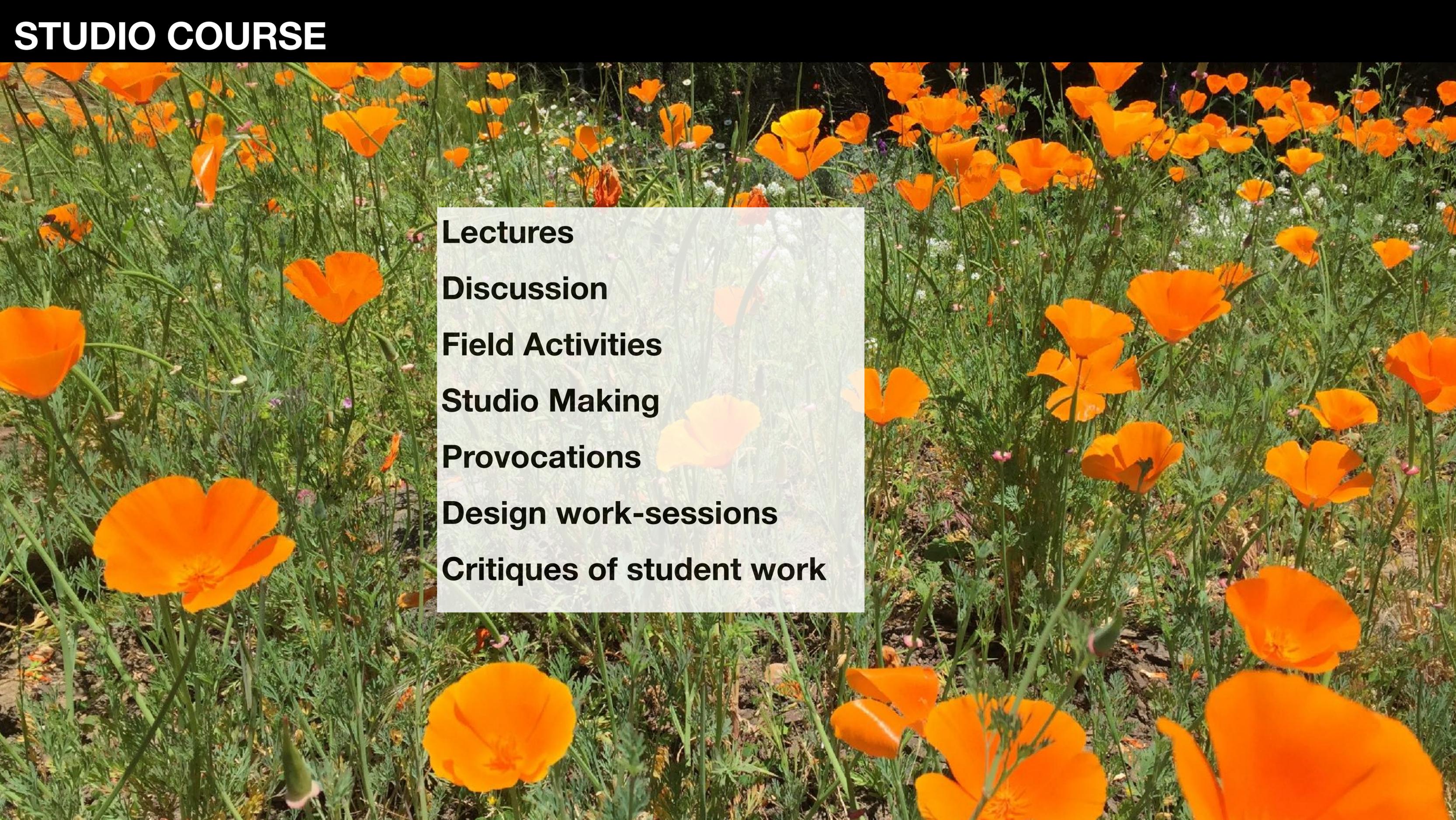
design circuits

cut forms

create 3D forms

program sensors

STUDIO COURSE



Lectures

Discussion

Field Activities

Studio Making

Provocations

Design work-sessions

Critiques of student work

FIELD TRIPS...



American Steel

YOU MUST!

The course will result in a final show of student final prototyped interactive physical technologies

21 Feb Provocation 01 Critique

02 Apr Provocation 02 Critique

01 May Final Provocation Critique

02 May Final Showcase

Maker Field Trips You Must Attend One

Get a Maker Pass \$75 and Safety Training

No overlapping classes — Attendance (classes are not recorded)

Work with your Group in lab outside of class

Maker Faire 18 — 20 May (optional)

MAKER FAIRE 2014



MAKER FAIRE 2016



YOU ARE EXPECTED TO BUY VARIOUS HARDWARE



We will also begin each class with two zip.crits

A zip.crit is a rapid critique of an interface, object, design, etc

You must signup to do at a zip.crit at the start of class

You will select an interface, object, design, artpiece, landscape, kickstarter, toy, etc.

At the beginning of class you will **briefly** introduce the object, interface, design to us

The class will collectively critique the artifact

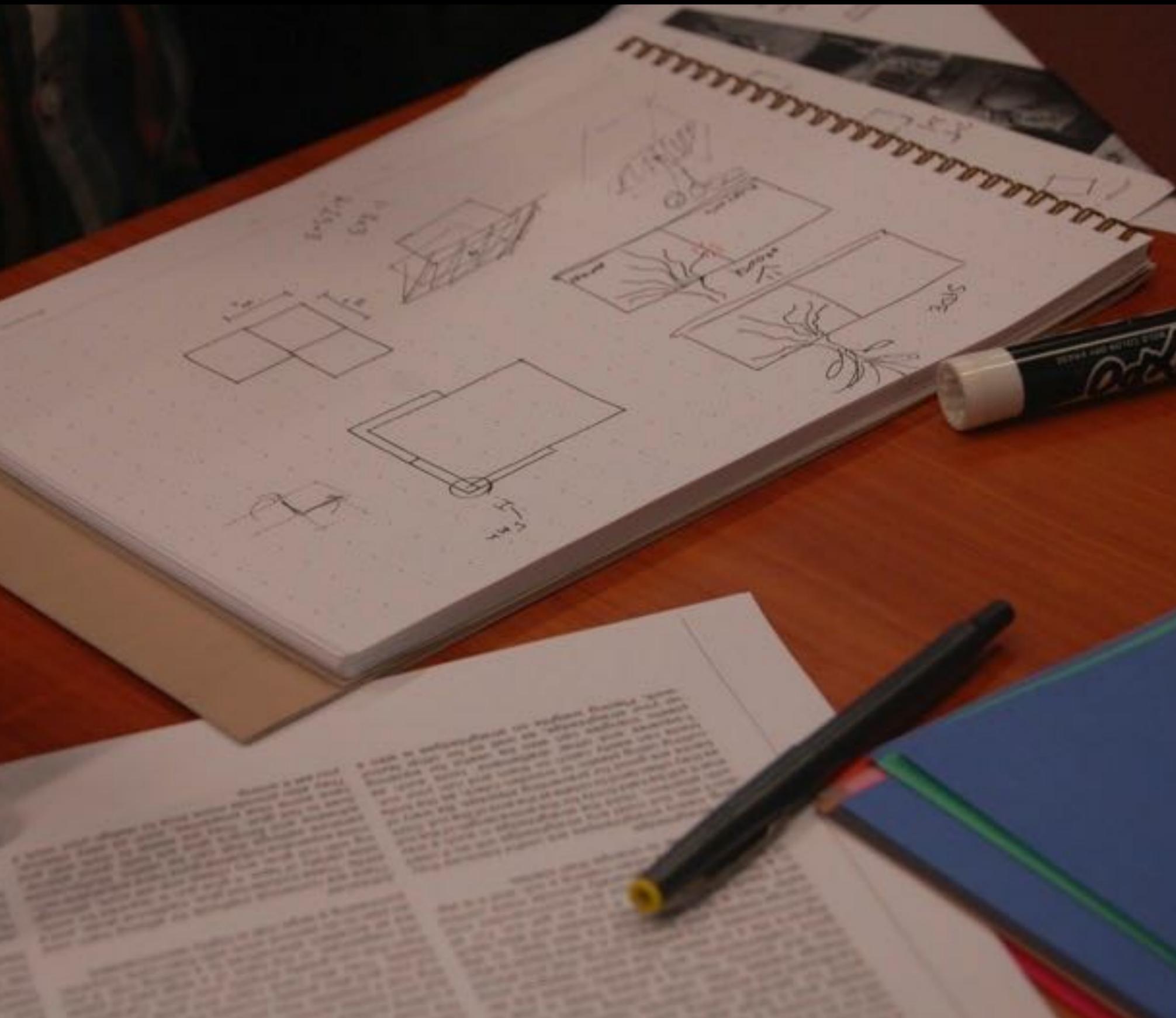
3

SLIDES

5

MINUTES

READINGS



Readings will be assigned throughout the semester. Everyone is expected to read the readings. Two people will be selected for each reading to prepare a class presentation. Each student is expected to engage in class discussions when readings are assigned. You will also need to submit a written reading response the night before the readings are due. **This counts towards your class participation grade.**

CRITIQUE



One of the main learning exercises in this course is the critique

We will be building this skill throughout the semester

Assignments will be critiqued in class

RULES OF ENGAGEMENT



Be there!

Critique days mandatory attendance

If you are not in class or late we will deduct from your attendance grade.

There will be no exceptions

RULES OF ENGAGEMENT



Be active!

During the in class critique **everyone** is expected to be engaged in the discussion

RULES OF ENGAGEMENT



Be attentive!

no laptops, phones, electronics
out or used during critique and
selected other parts of class

RULES OF ENGAGEMENT



RULES OF ENGAGEMENT

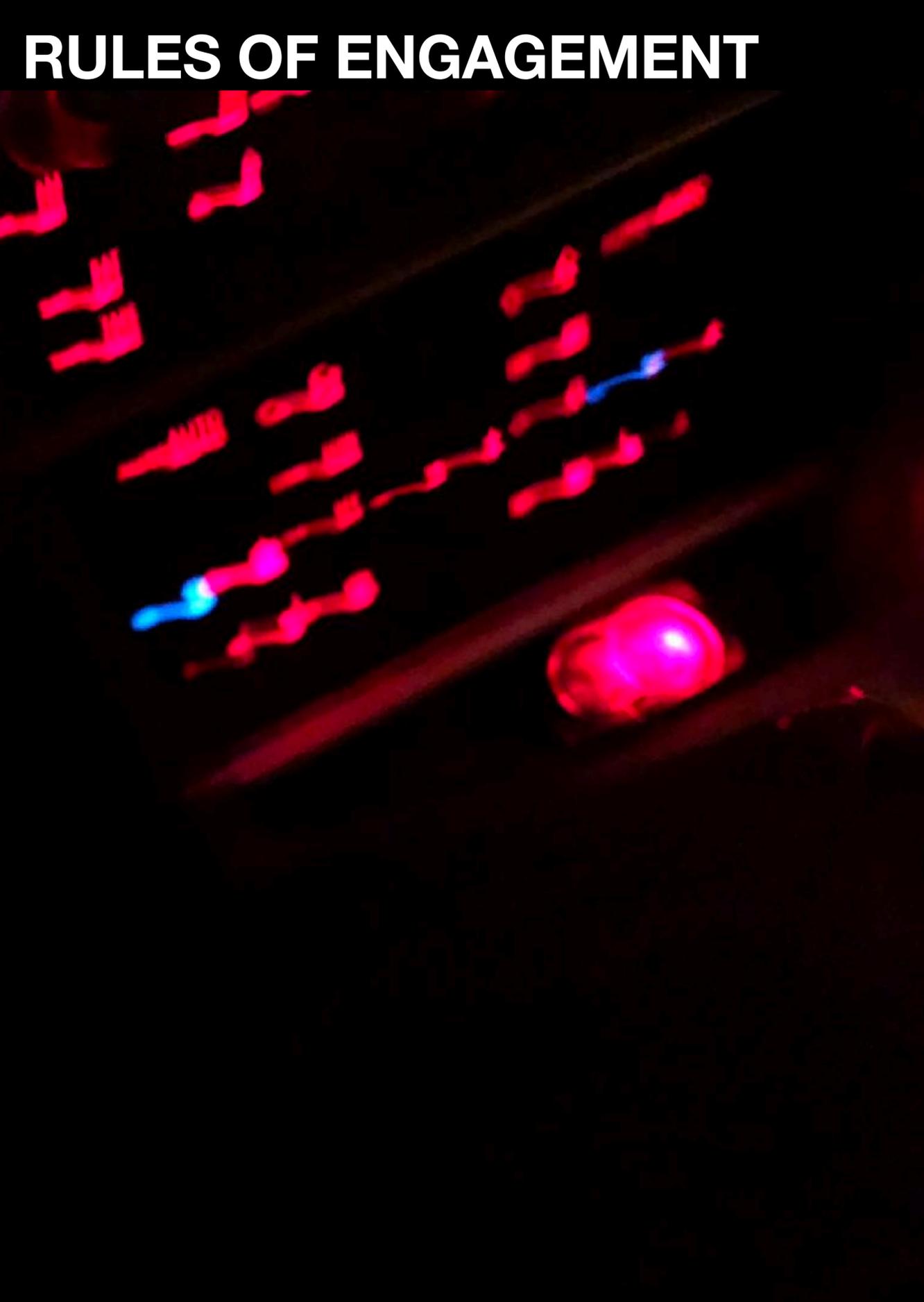


Attendance of all classes is mandatory

You are allowed two absences for the semester without penalty (except critique days); thereafter you will receive zero credit for the missed studio.

To receive an additional excused absence, you must ask in advance, and receive an acknowledgment from the instructor, not the GSI.

RULES OF ENGAGEMENT



Excusable absences include family emergencies, job interviews, and presenting at a conference.

It **does not** include wanting to leave early for long weekend or vacation.

To receive credit for attendance, you must arrive on time.

No late assignments will be accepted

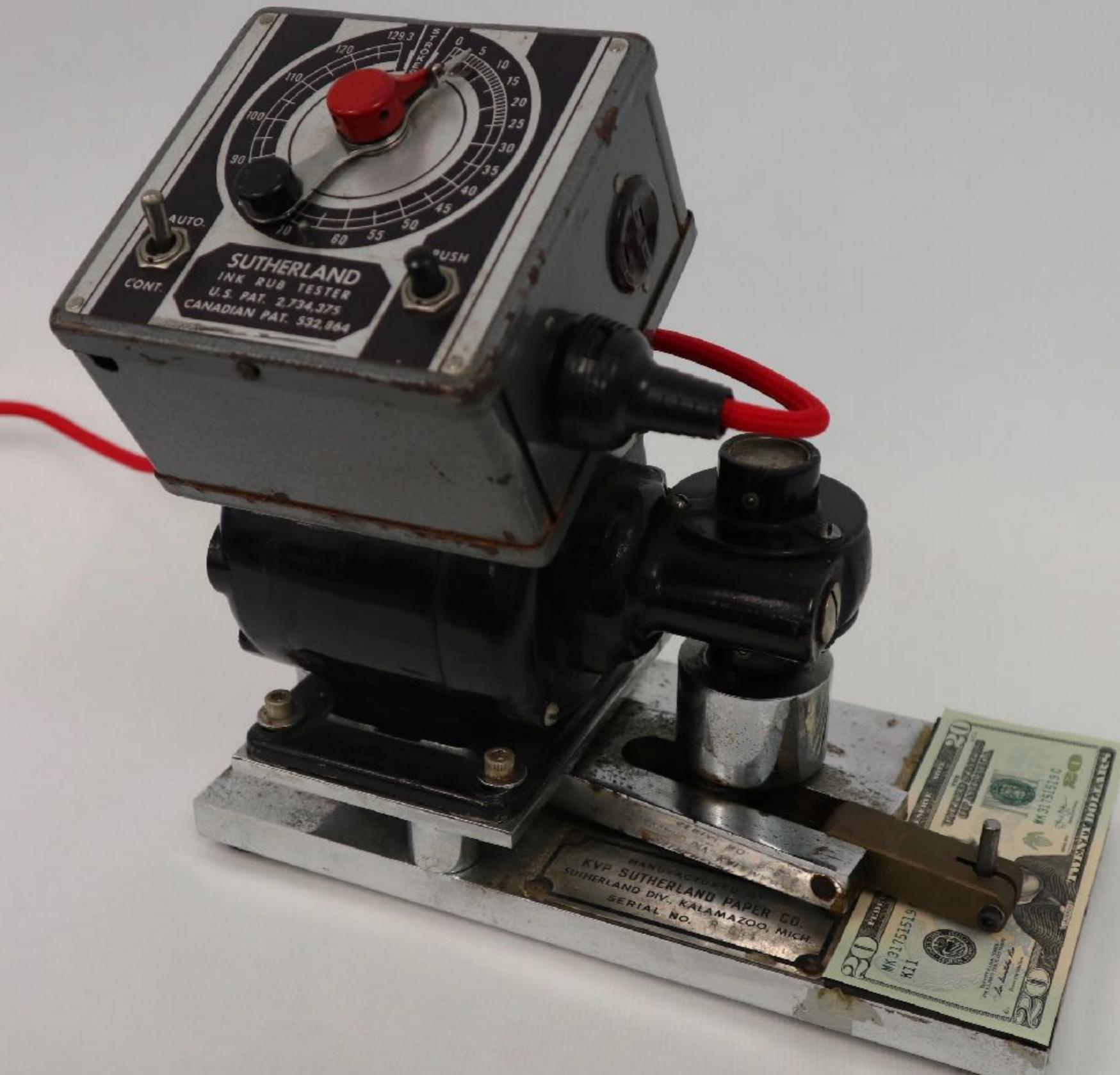
EVALUATION



Assignments, timely attendance, and in-class and team participation are a critical part of the grade

Bringing examples from outside of the class is considered to be an assignment and is also important

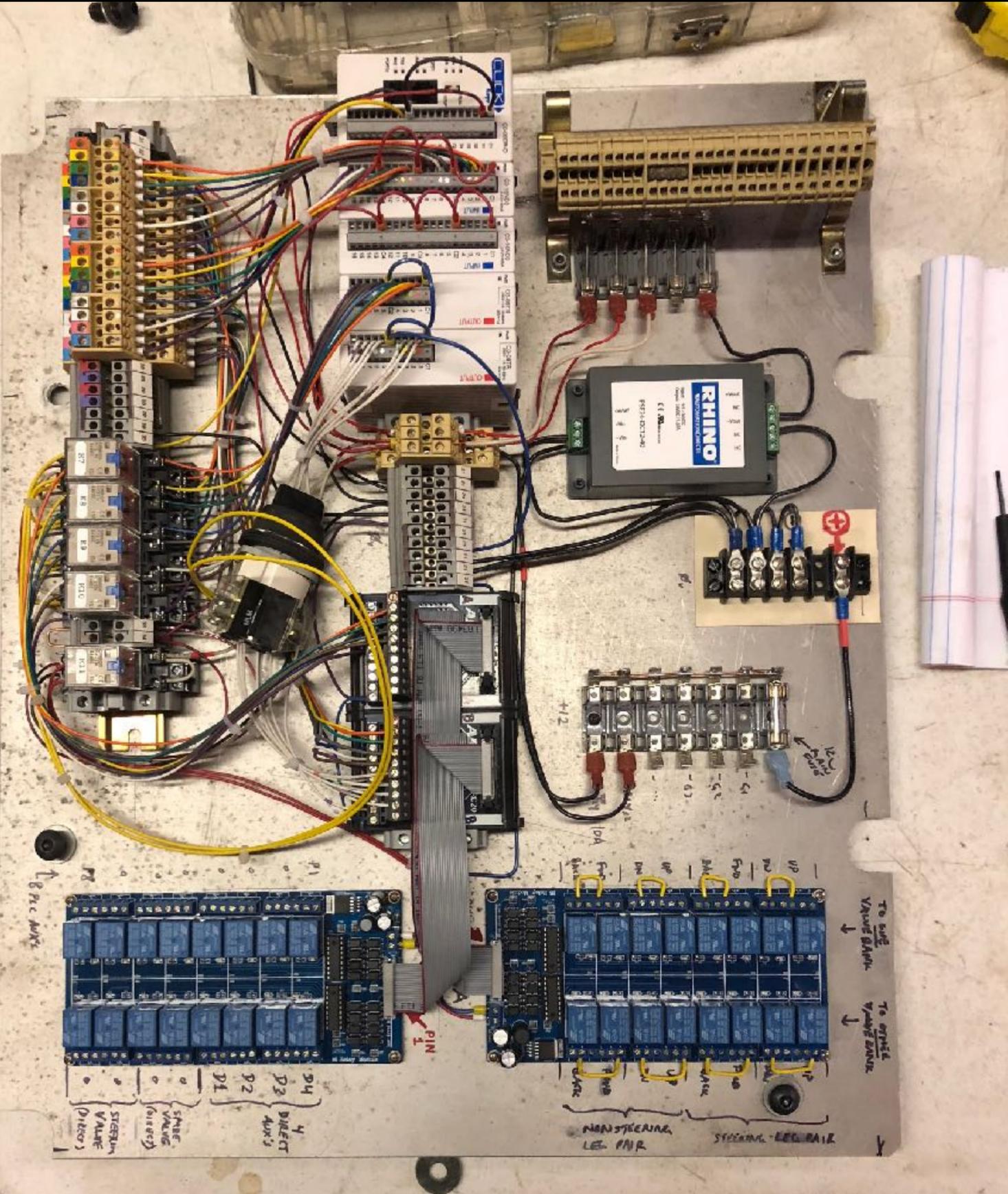
EVALUATION



In addition, the process of exploration is as important as the final product, so it is important that students manage time well and devote time to working on the projects during the course of the week

If class time is given as a worksession and is not put to good use, students' grades will be penalized.

EVALUATION



For projects done in teams, students will be graded on individual contributions as well as synthesis with the team

GRADING



15% PARTICIPATION

15% FIELD ACTIVITIES

10% PROVOCATION 1

20% PROVOCATION 2

40% FINAL PROVOCATION

FIELD ACTIVITIES



RESIST

MATERIALS • PROTOCOLS • CULTURE

CRITICAL MAKING

A COURSE AT UC BERKELEY





CRITICALMAKING

