

CSE 440: Introduction to HCI

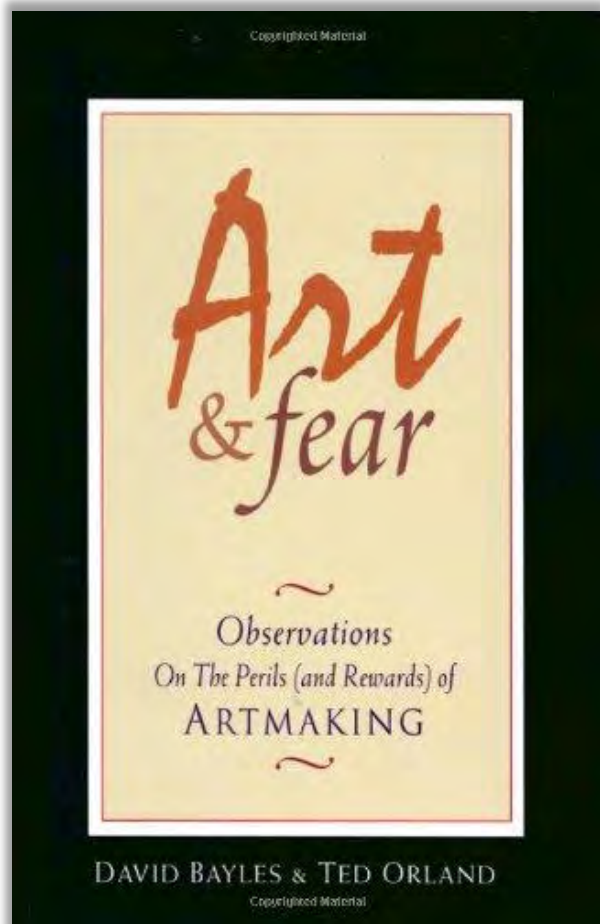
User Interface Design, Prototyping, and Evaluation

Lecture 02:
Design Diamond

Tuesday / Thursday
12:00 to 1:20

James Fogarty
Kailey Chan
Dhruv Jain
Nigini Oliveira
Chris Seeds
Jihoon Suh

Quantity versus Quality



One class told they will be graded on quality, another on quantity



Bayles and Orland, 2001

Quantity versus Quality

The quantity class produces better pots. Why?

Quantity versus Quality

The quantity class produces better pots. Why?

“While the quantity group was busily churning out piles of work—and learning from their mistakes—the quality group had sat theorizing about perfection, and in the end had little more to show for their efforts than grandiose theories and a pile of dead clay”

Today

Administrative

Assignment 0

Assignment 1c: Project Bid

Section Balance and Movement

Denny 303 on Tuesday 10/10

The Design Diamond

Examining a Design Process

Sketching and Prototypes

Assignment 0: Flash Card

Name

formal, preferred, pronouns

Majors/Minors

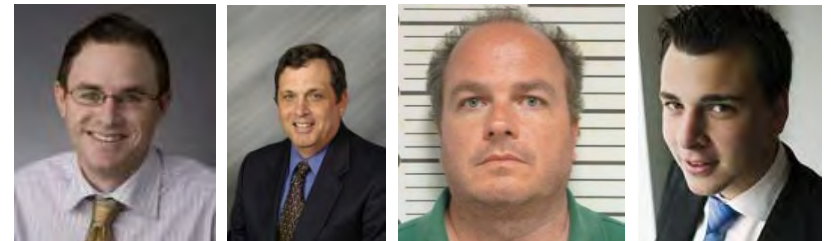
career goals

Year

1,2,3,4,5,6,...

Hometown

Interesting Fact or
“What I did on my ...”



Submit PDF via Canvas

Project Status and Assignments

Proposals to be “Funded” and Posted for Bidding

Bidding Tomorrow, Team Formation Thursday

Please Watch Your Email During This Process

Looking Forward

Ideation on Friday in Section

2b: Design Research Plan due Tuesday 1/17

2c: Design Research Check-In due Friday 1/20

2d: Design Research Review due Tuesday 1/24

Other Assignments

Assignment 0 Due Thursday

Reading 1 Posted, Due Thursday

Section Balance and Movement

9:30 Section: 12 people

10:30 Section: 15 people

11:30 Section: 14 people

12:30 Section: 13 people

Project bidding will include “bid with section” and “bid in another section”, to allow moving

A “switch section” bid dominates your other bids

Most of you will bid “No Desire to Switch”

Denny 303 on Tuesday 10/10



Today

Administrative

Assignment 0

Assignment 1c: Project Bid

Section Balance and Movement

Denny 303 on Tuesday 10/10

The Design Diamond

Examining a Design Process

Sketching and Prototypes

Objectives

Be able to:

Describe an iterative design process

Describe the design diamond model of design, its implications, and how it can break down

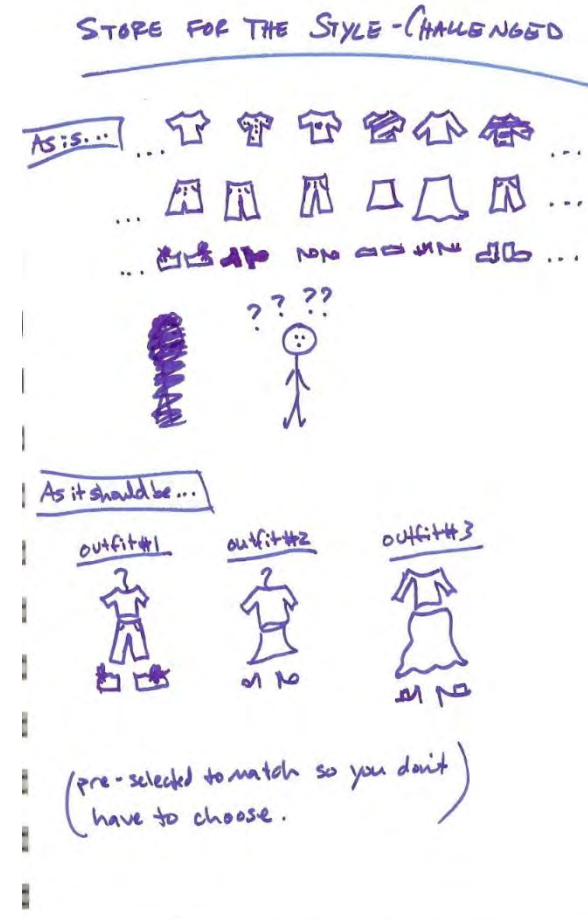
Describe properties of a sketch versus a prototype

Differentiate examples of sketches from prototypes

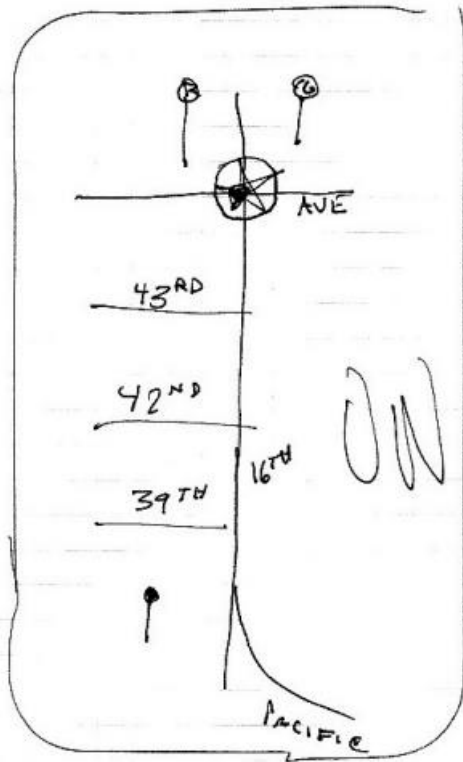
Sketching User Experiences



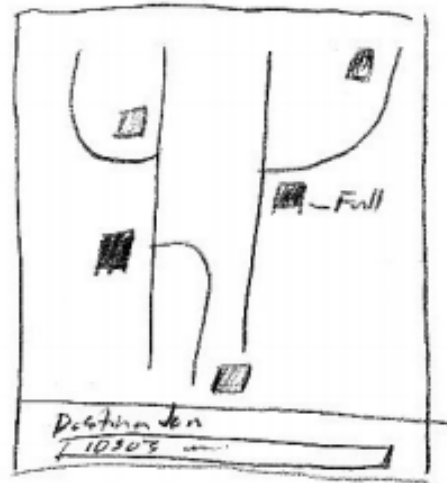
Sketching



Sketching

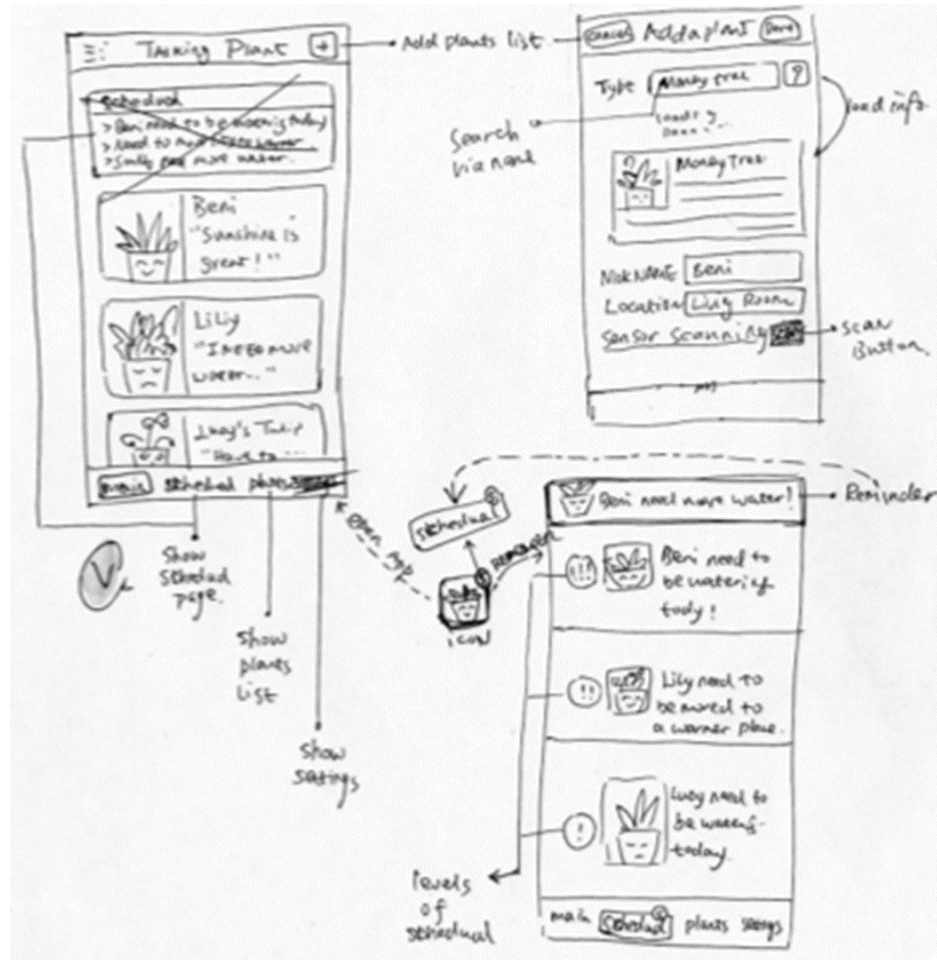


MAP SHOWING PARKING AVAILABILITY BASED ON INPUTTED DATA, INPUTTED ON MAP



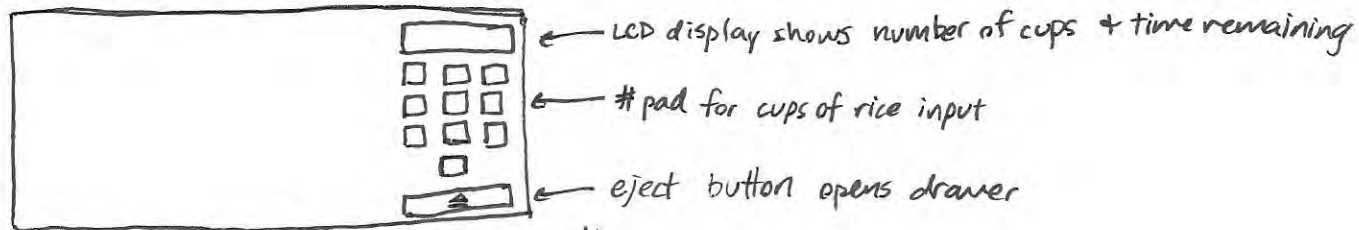
- Different colors
- highlights availability
-

Sketching

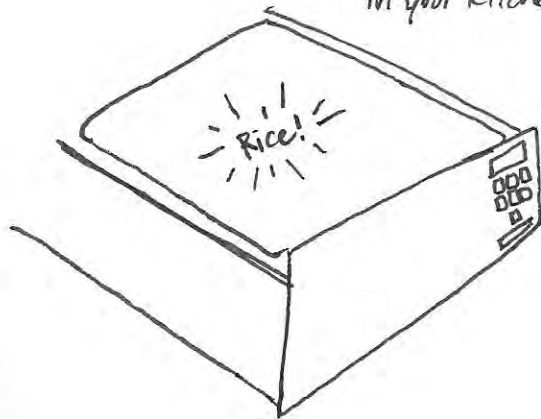


Sketching

UBIQUITOUS RICE COOKER



"Just another drawer"
in your kitchen



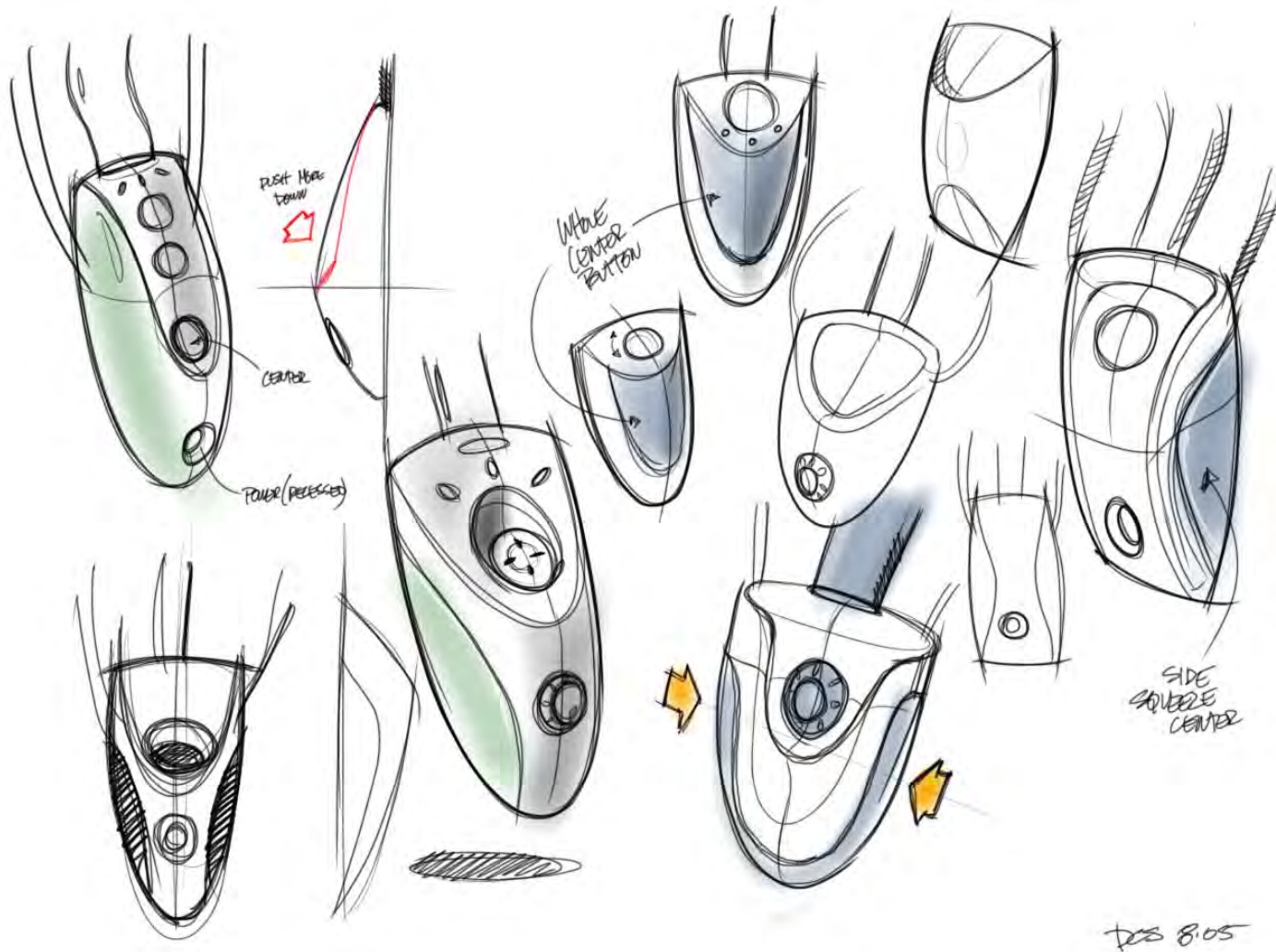
The uncooked rice is stored in a hidden reservoir.
Water is acquired through a hose attached to
your water source (similar to an espresso machine).



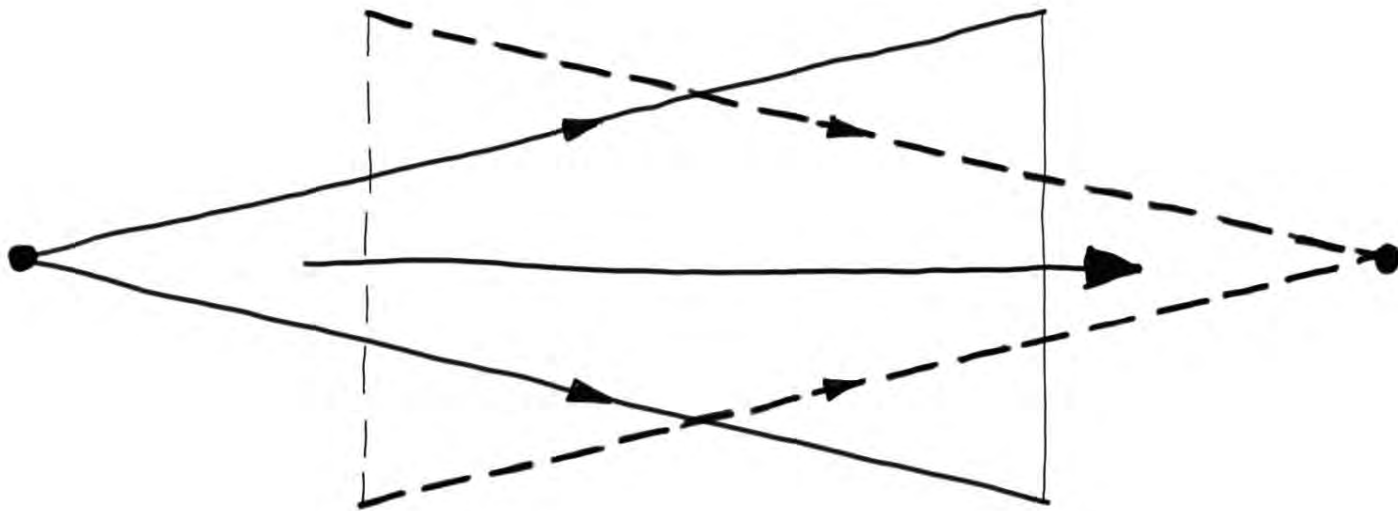
Sketching

A **process** that enables you to think through ideas and convey design ideas to others very early in the design phase

Quintessential Activity of Design



Design as Choice



IDEO's Deep Dive (ABC News, 1999)



<http://courses.cs.washington.edu/courses/cse440/videos/design/IDEO-DeepDive.mp4>

ABC News and IDEO's Deep Dive

Things to see in this video:

brainstorming

design research

sketching

critique

Why build a shopping
cart with no bottom?

A highly iterative design process
with a variety of intermediate artifacts

IDEO's Deep Dive (ABC News, 1999)



<http://courses.cs.washington.edu/courses/cse440/videos/design/IDEO-DeepDive.mp4>

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IDEO's Deep Dive (ABC News, 1999)



IDEO's Deep Dive (ABC News, 1999)



Perfect Shopping Cart?

Perfect Shopping Cart?

Several design flaws

Kids will slide and fall out of that seat

Where to put bags of dog food, cases of beer?

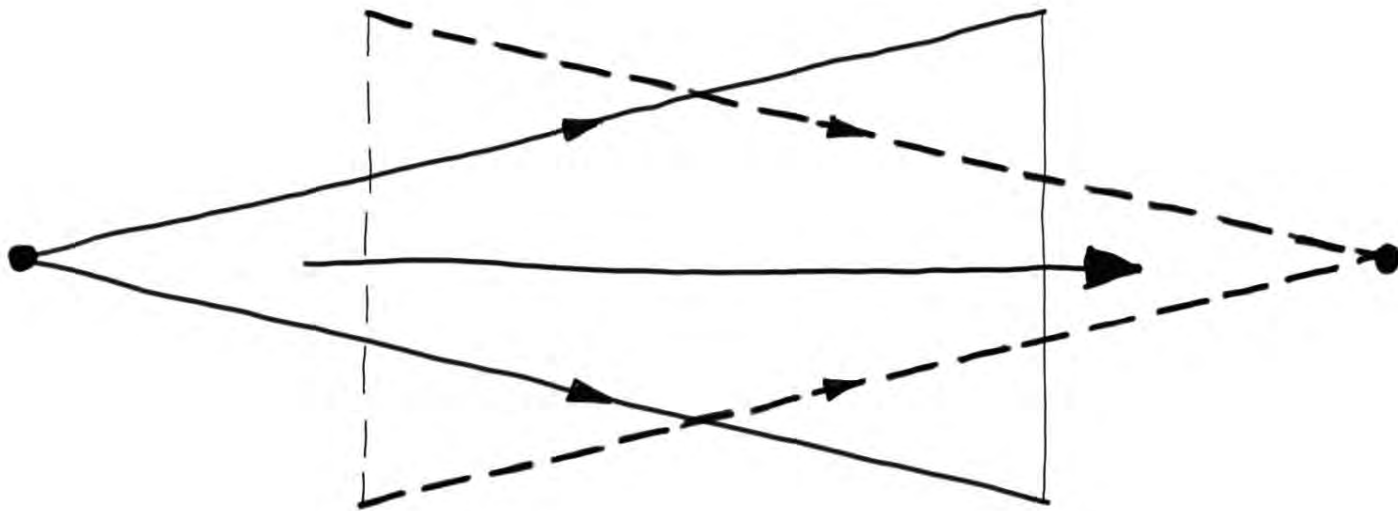
Hook design with reusable bags

Self-scanning challenges with theft

Focus on the design process

Designs always have limitations and tradeoffs

Design as Choice



Design as Choice

In the diamond, what are two openings for creativity?

Why is your design research so important?

Sketching in Design (2007)

“Design as Choice”

“the creativity that you bring to enumerating meaningfully distinct options from which to choose”



Sketching in Design (2007)

“Design as Choice”

“the creativity that you bring to defining the criteria, or heuristics, according to which you make your choices”



Design as Choice

In the diamond, what are two openings for creativity?

Palette of choices

Heuristics to choose

Why is your design research so important?

What you learn directly informs both of these, shaping everything you do this entire quarter

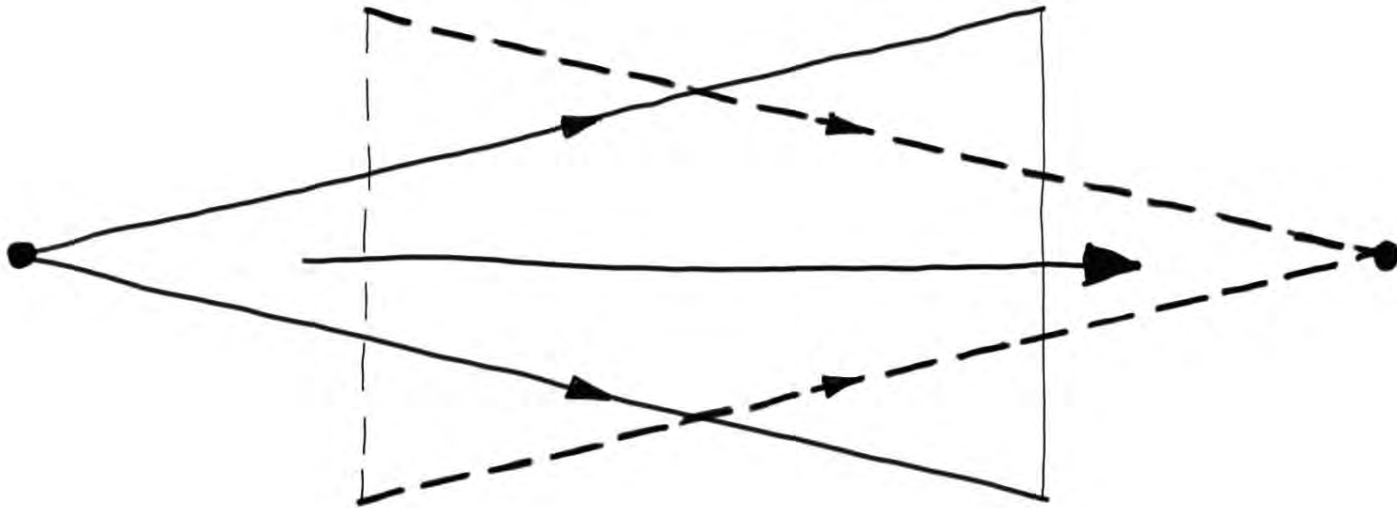
Design as Choice

Elaboration

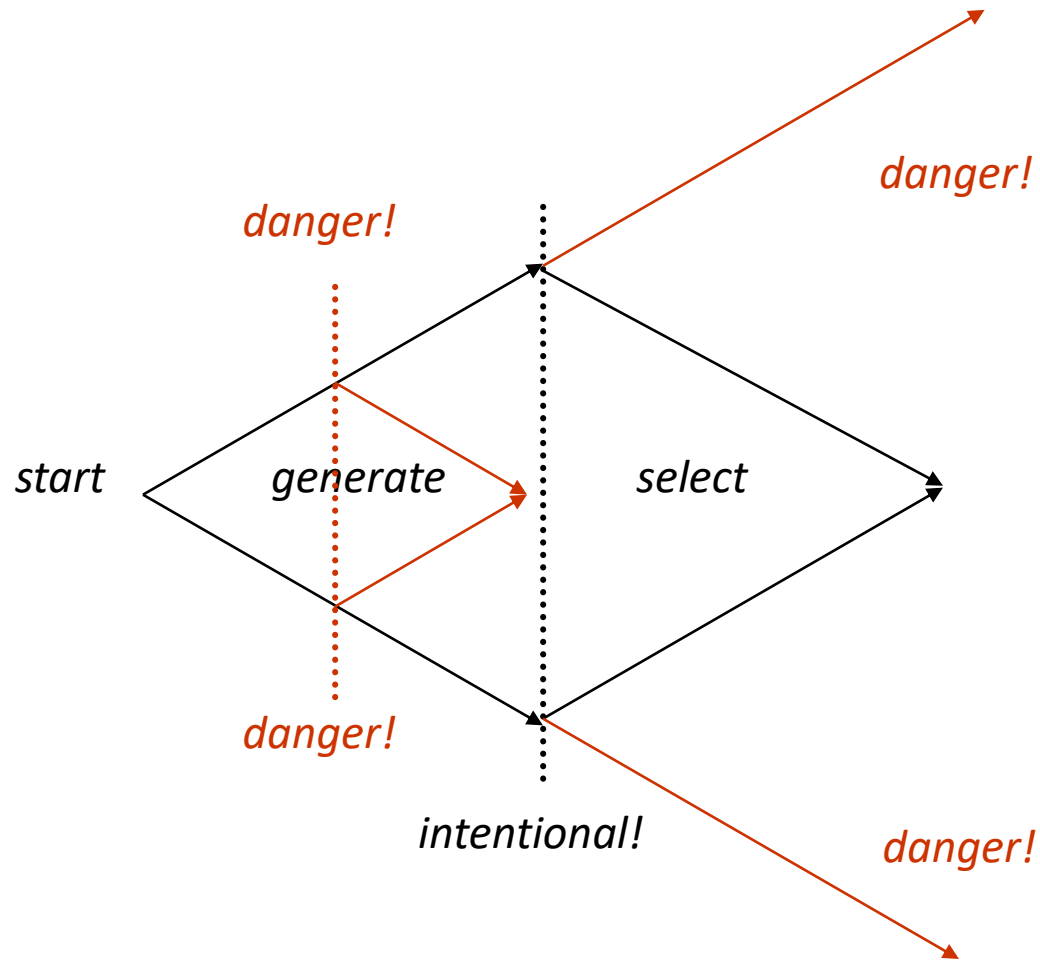
palette of choices

Reduction

heuristics to choose



The Design Diamond



Properties of Sketches

Quick

Timely

Inexpensive

Disposable

Plentiful

Clear Vocabulary

Distinct Gesture

Minimal Detail

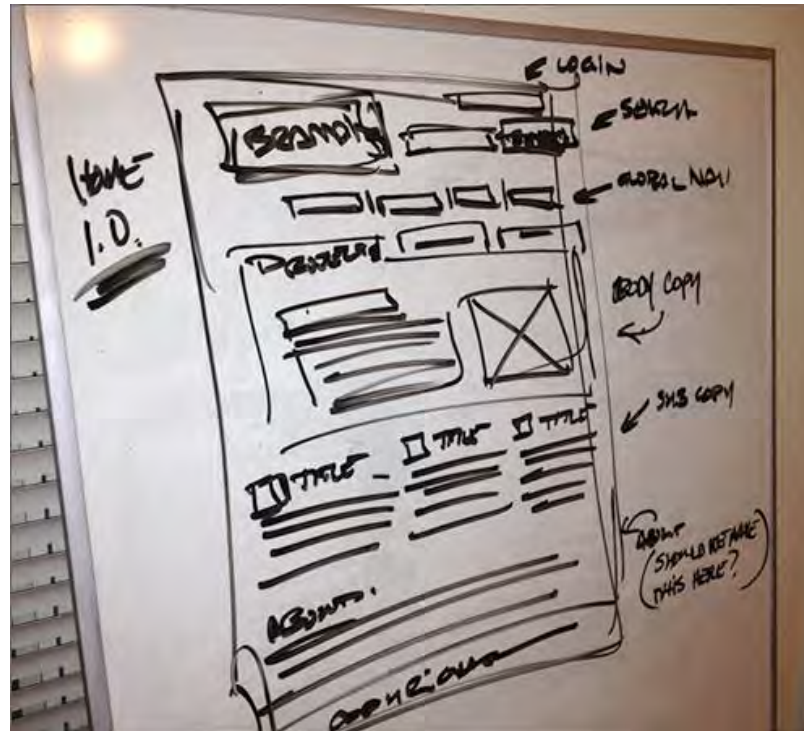
Appropriate Refinement

Suggest and Explore

Ambiguous

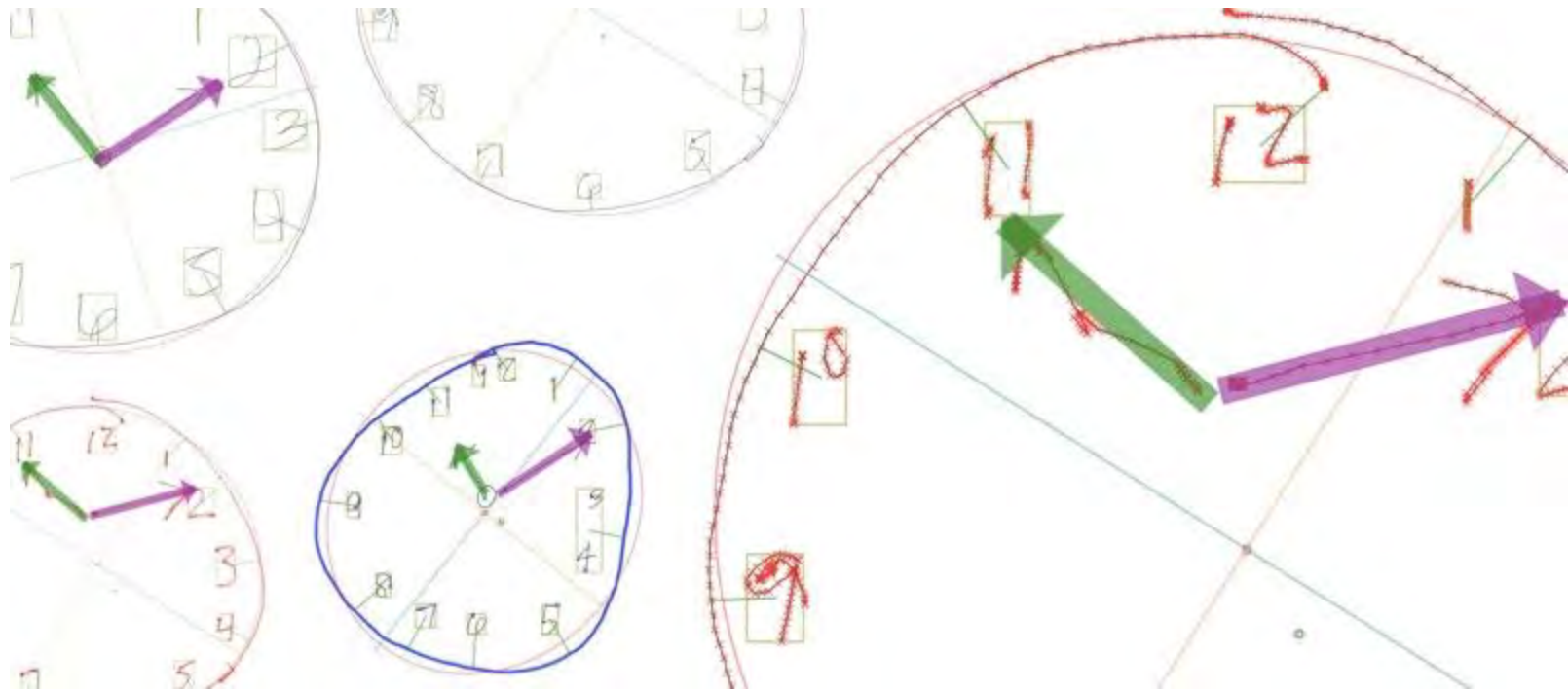
Quick

A sketch is quick to make,
or at least gives that impression



Timely

A sketch can be provided when needed



Inexpensive

Cost must not inhibit the ability to explore a concept, especially early in design



Disposable

If you cannot afford to throw it away,
then it is not a sketch

Investment is in the process,
not the physical sketch

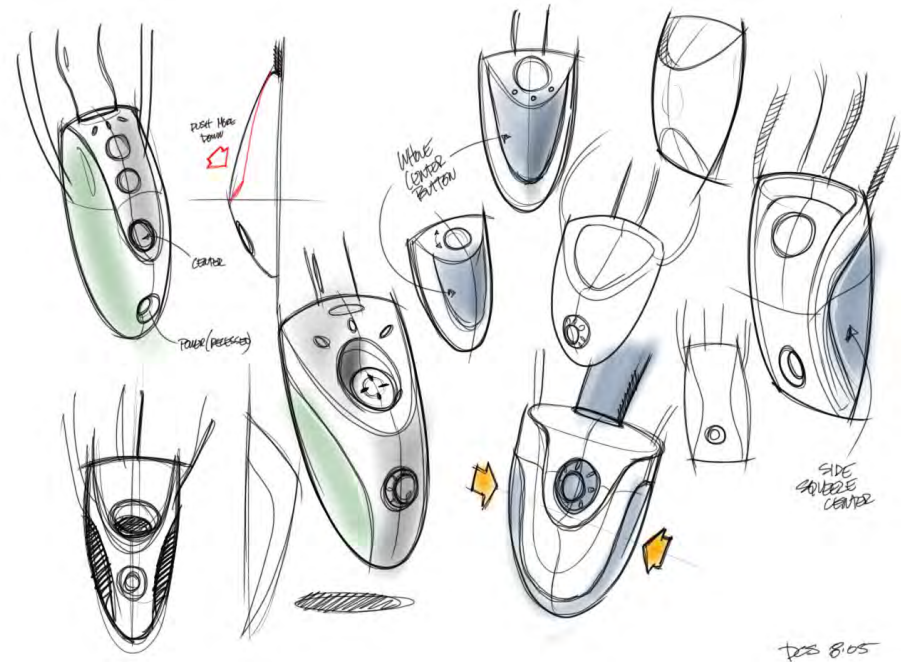
But they are not "worthless"



Plentiful

Sketches do not exist in isolation

Meaning and relevance is in the context of a collection or series

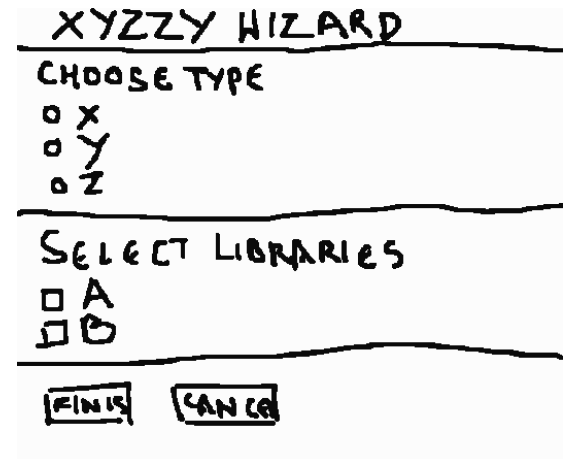


Clear Vocabulary

The way it is rendered makes it distinctive that it is a sketch (e.g., style, form, signals)

Could be how a line extends through endpoints

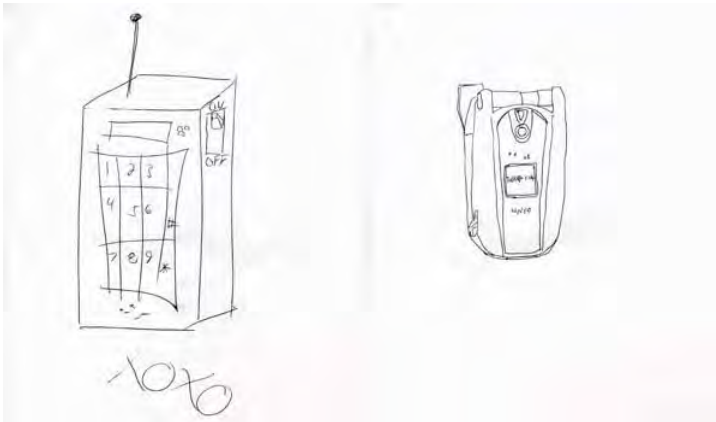
Physical sketches have their own vocabulary



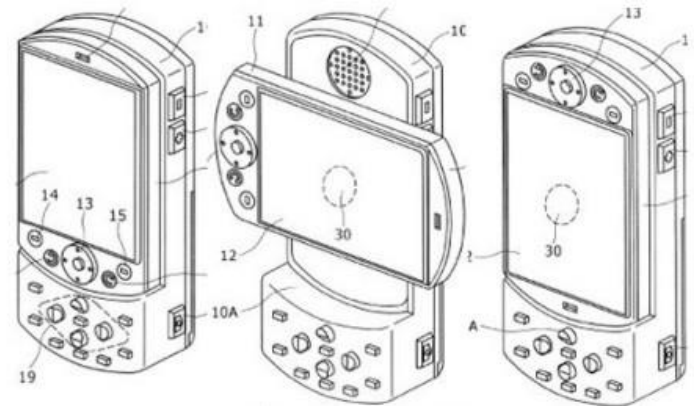
Distinct Gesture

Fluidity of sketches gives them
a sense of openness and freedom

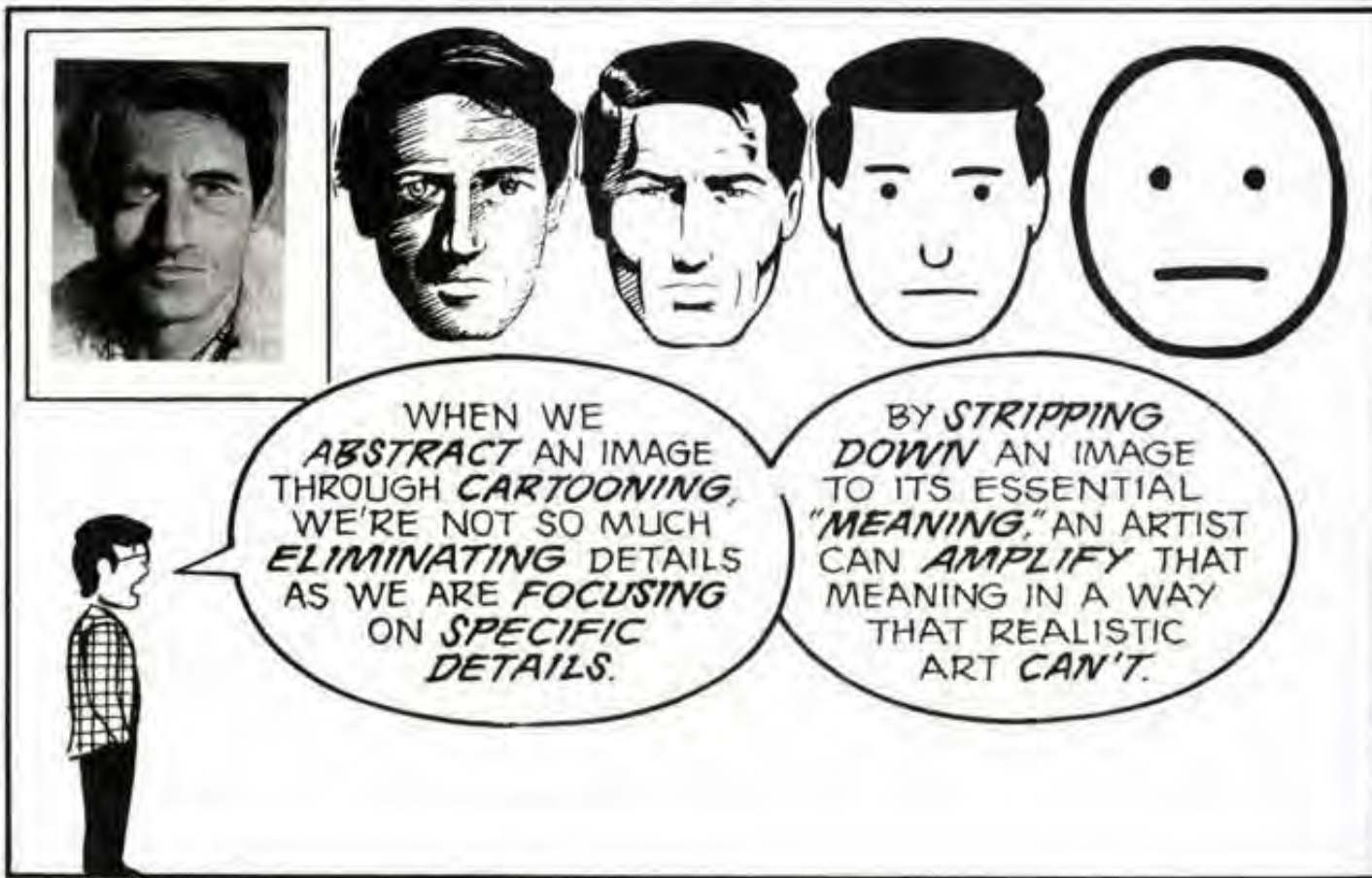
Opposite of engineering drawing,
which is tight and precise



vs.



Minimal Detail

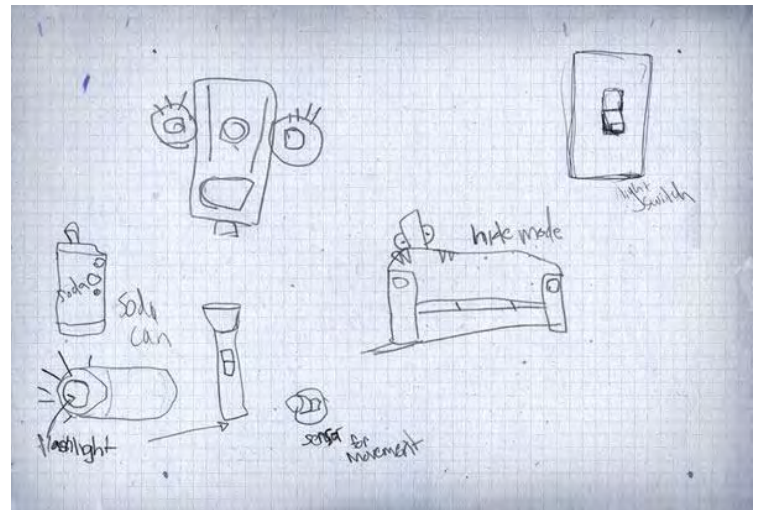


Appropriate Degree of Refinement

Make the sketch as refined as the idea

If you have a solid idea,
make the sketch look
more defined

If you have a hazy idea,
make the sketch look
rougher and less defined



Suggest and Explore Rather than Confirm

Sketch should act as a catalyst
to the desired and appropriate behaviors,
conversations, and interactions



Ambiguity

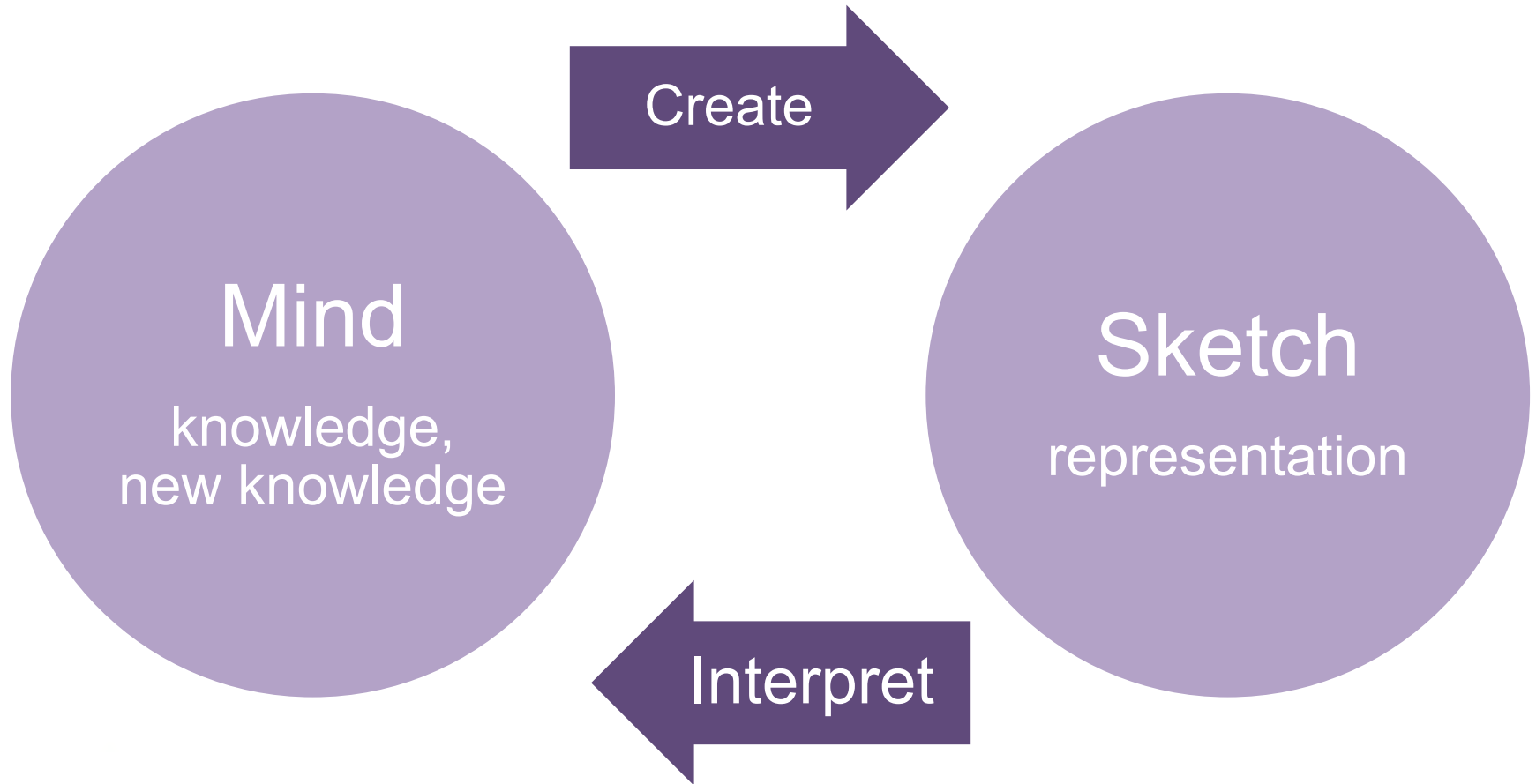
Intentionally ambiguous

Value comes from being able to be interpreted in different ways, even by the person who created them

Sketches have holes



Sketching as Conversation



Requires
ambiguity

Sketch vs. Prototype

Sketch	Prototype
Invite	Attend
Suggest	Describe
Explore	Refine
Question	Answer
Propose	Test
Provoke	Resolve
Tentative, non committal	Specific Depiction

The primary differences are in the intent

ABC News and IDEO's Deep Dive



Sketching is Not Defined by Ink

Although sketching can often be done in ink, these properties can be found in other forms

Those other forms are therefore sketches

Sketching the Mouse



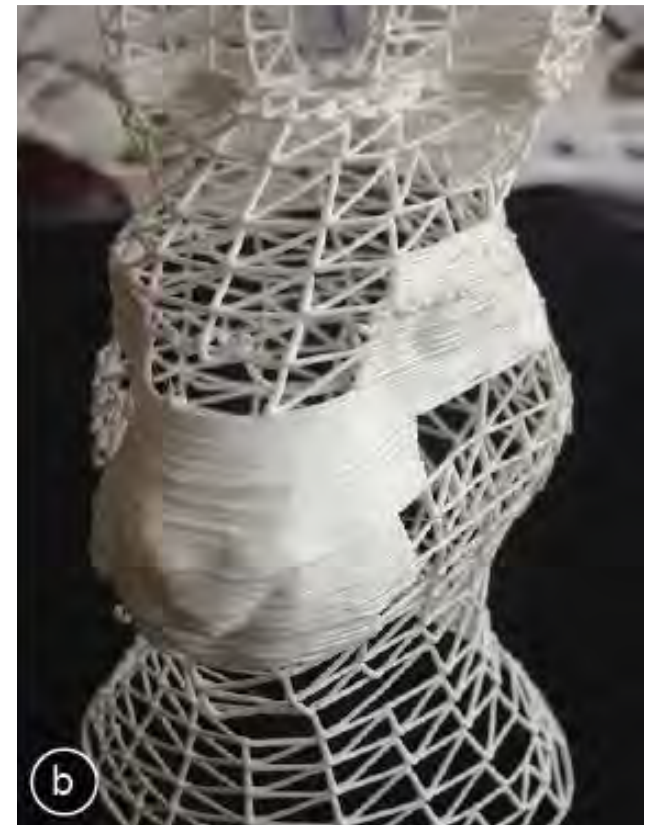
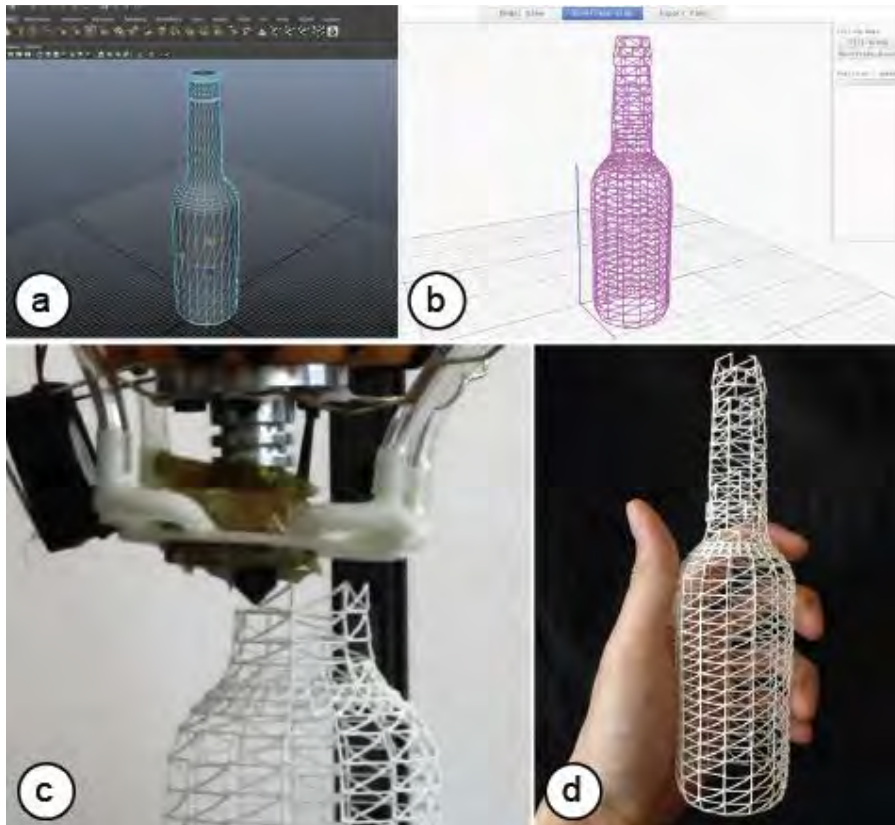
Sketching the Mouse



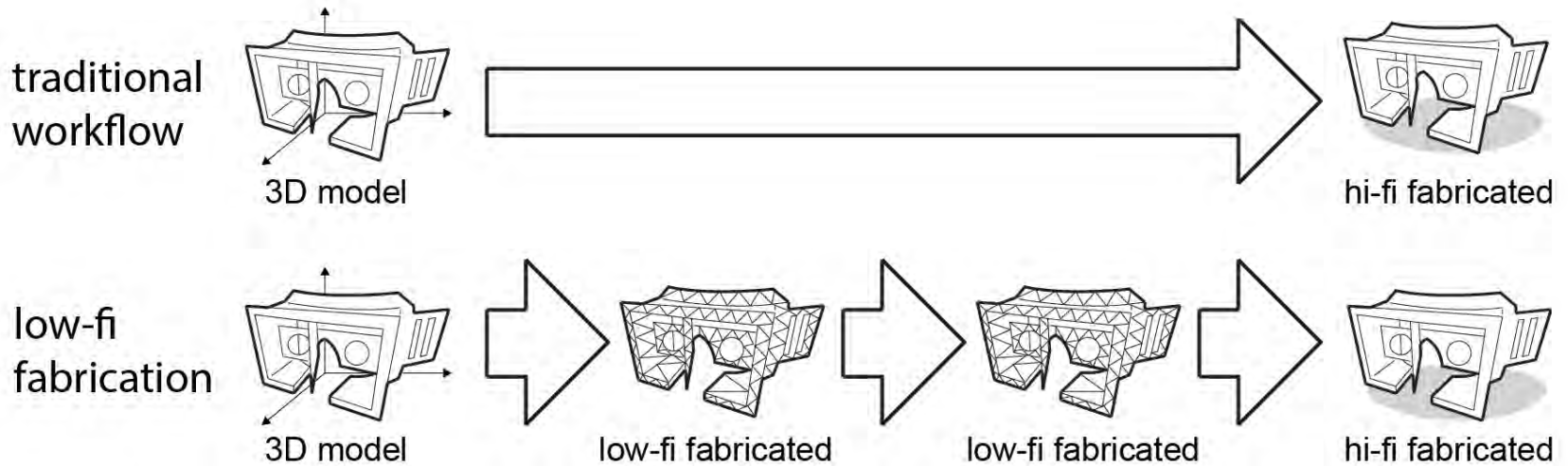
Physical Sketching



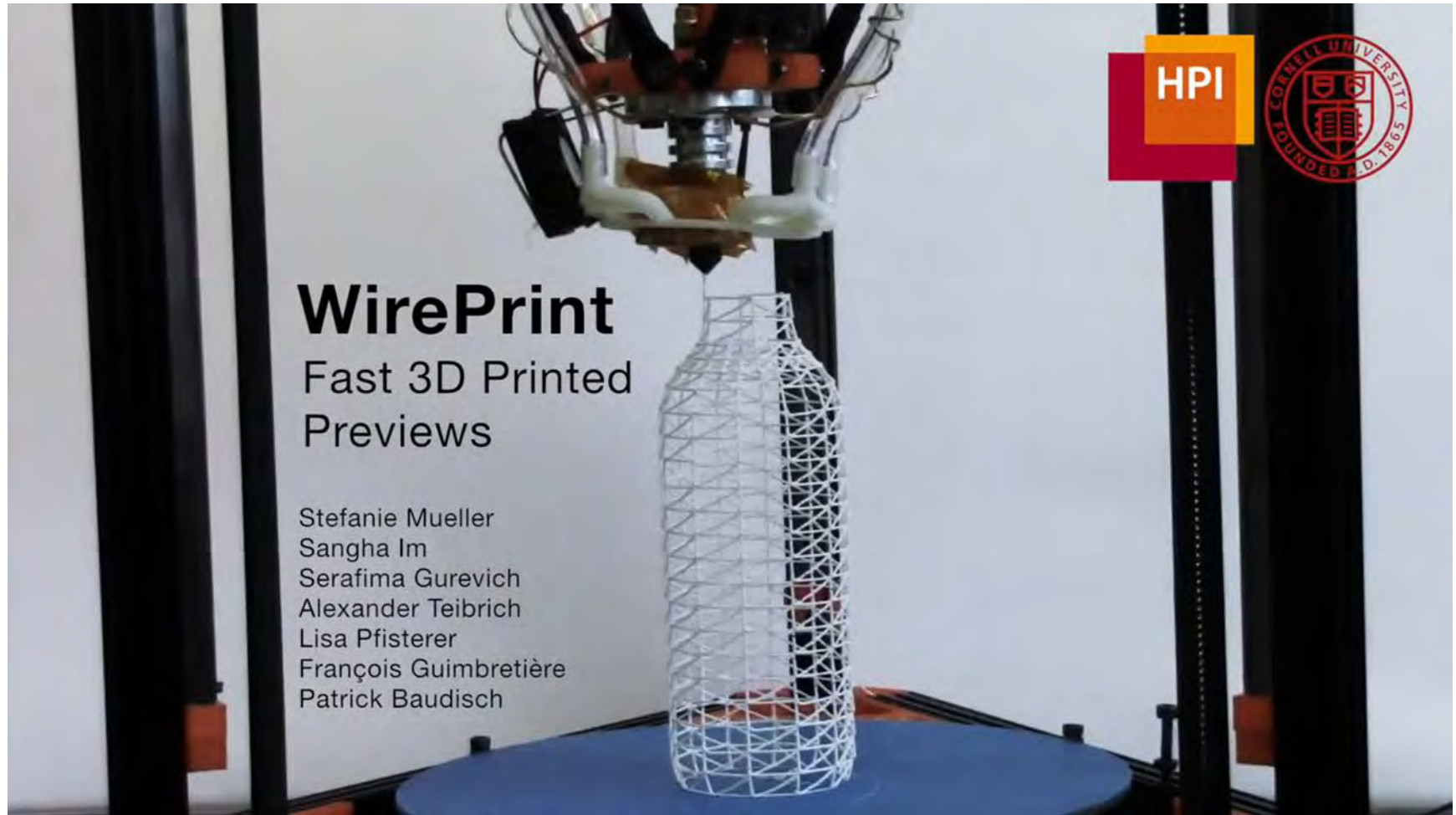
Physical Sketching



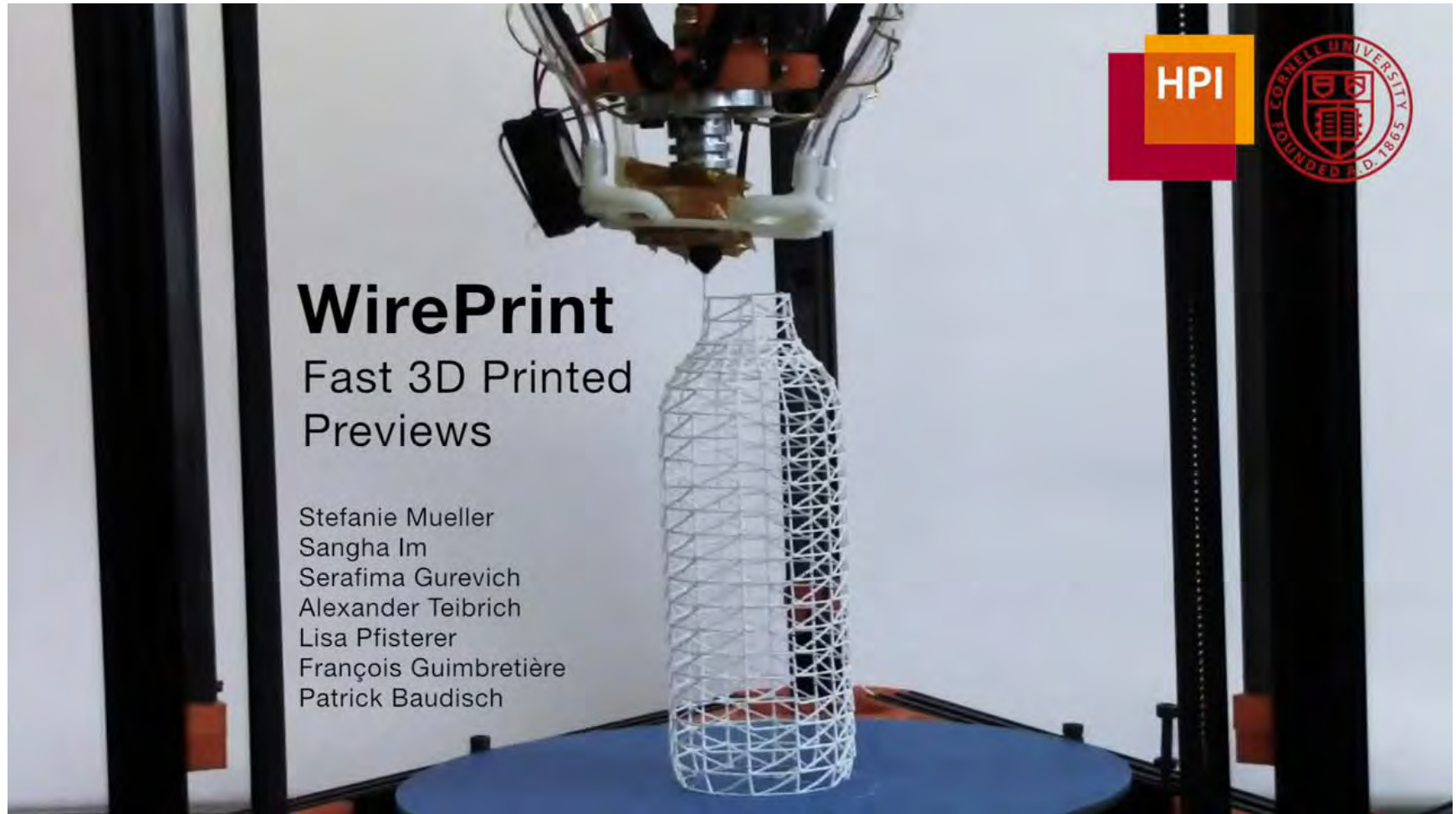
Physical Sketching



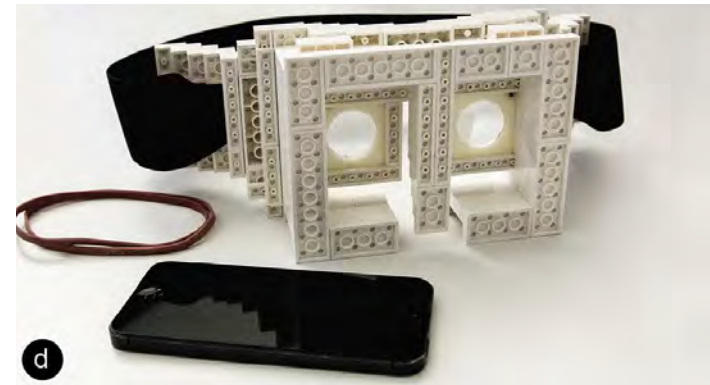
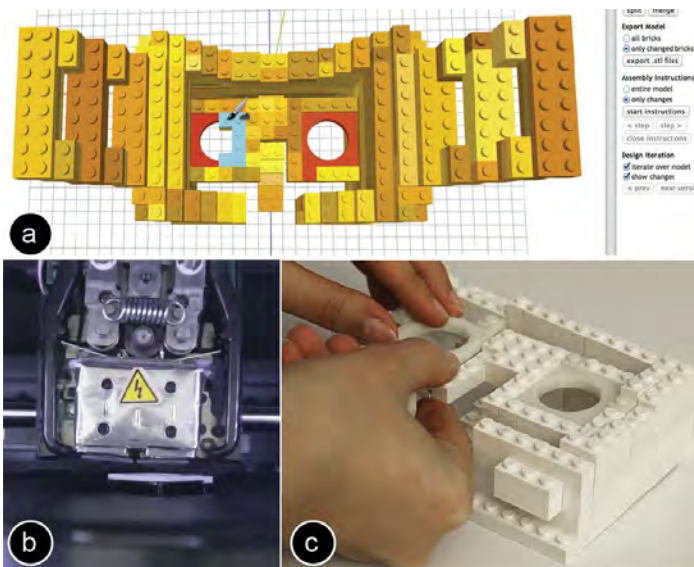
WirePrint (2014)



WirePrint (2014)



Physical Sketching



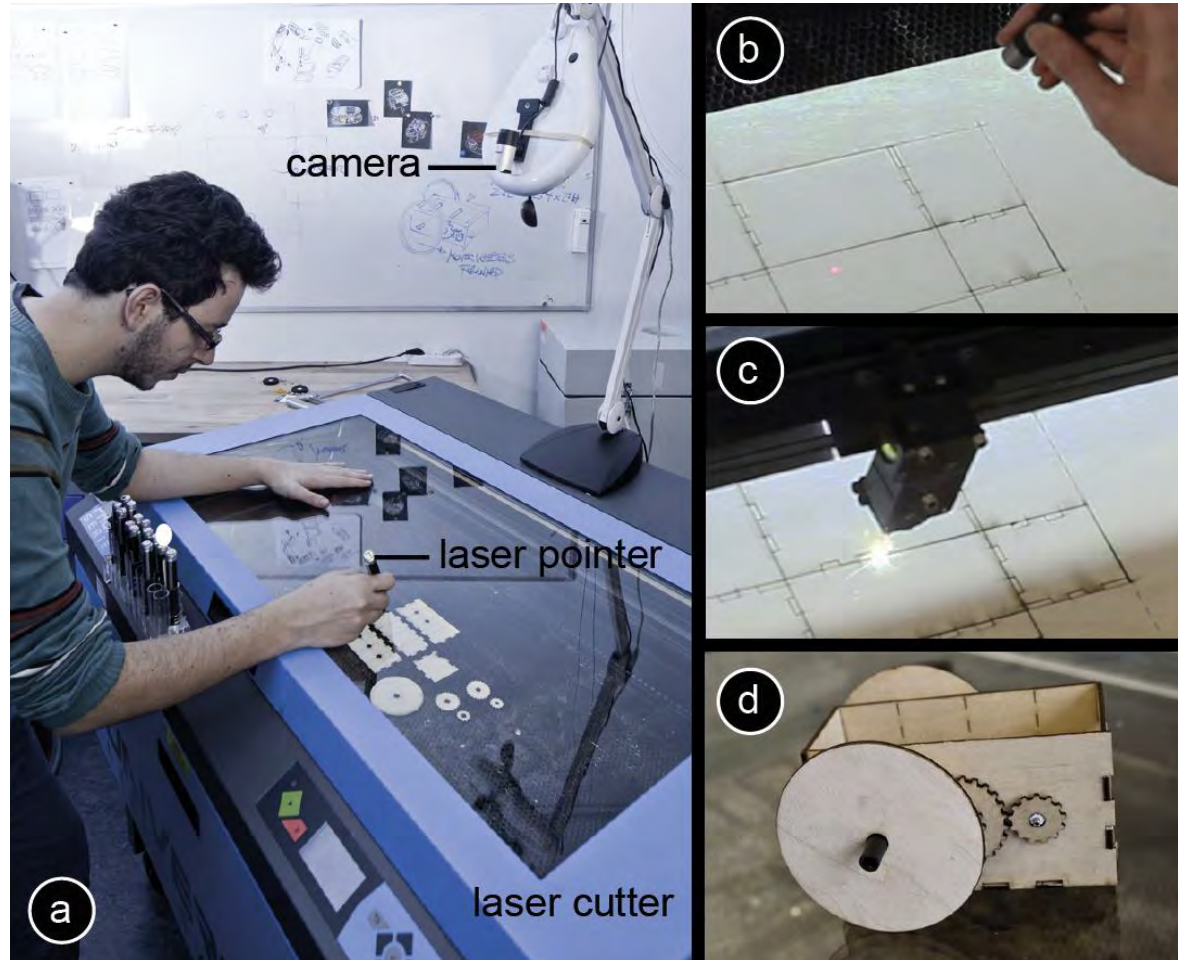
faBrickation (2014)



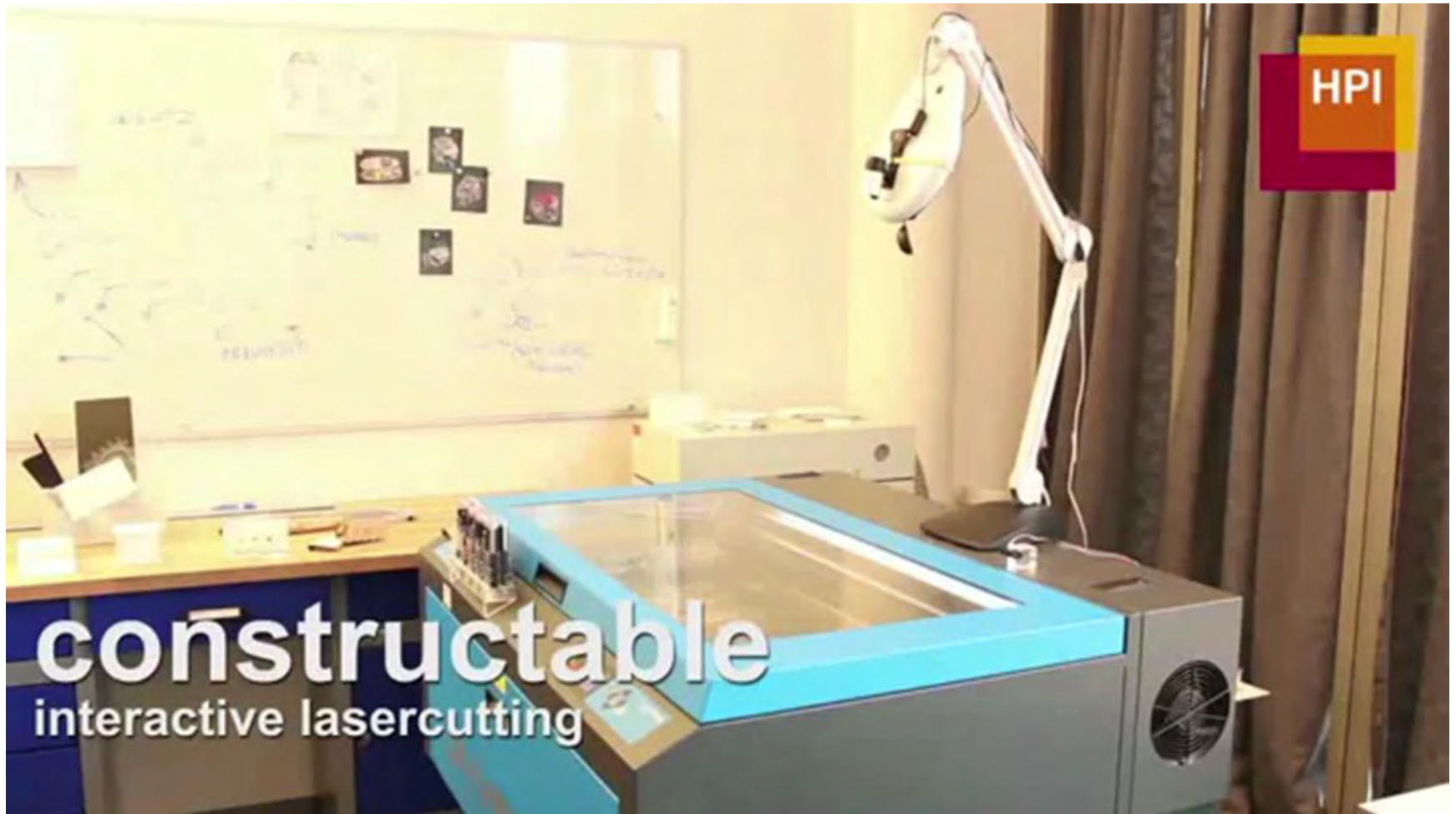
faBrickation (2014)



Physical Sketching



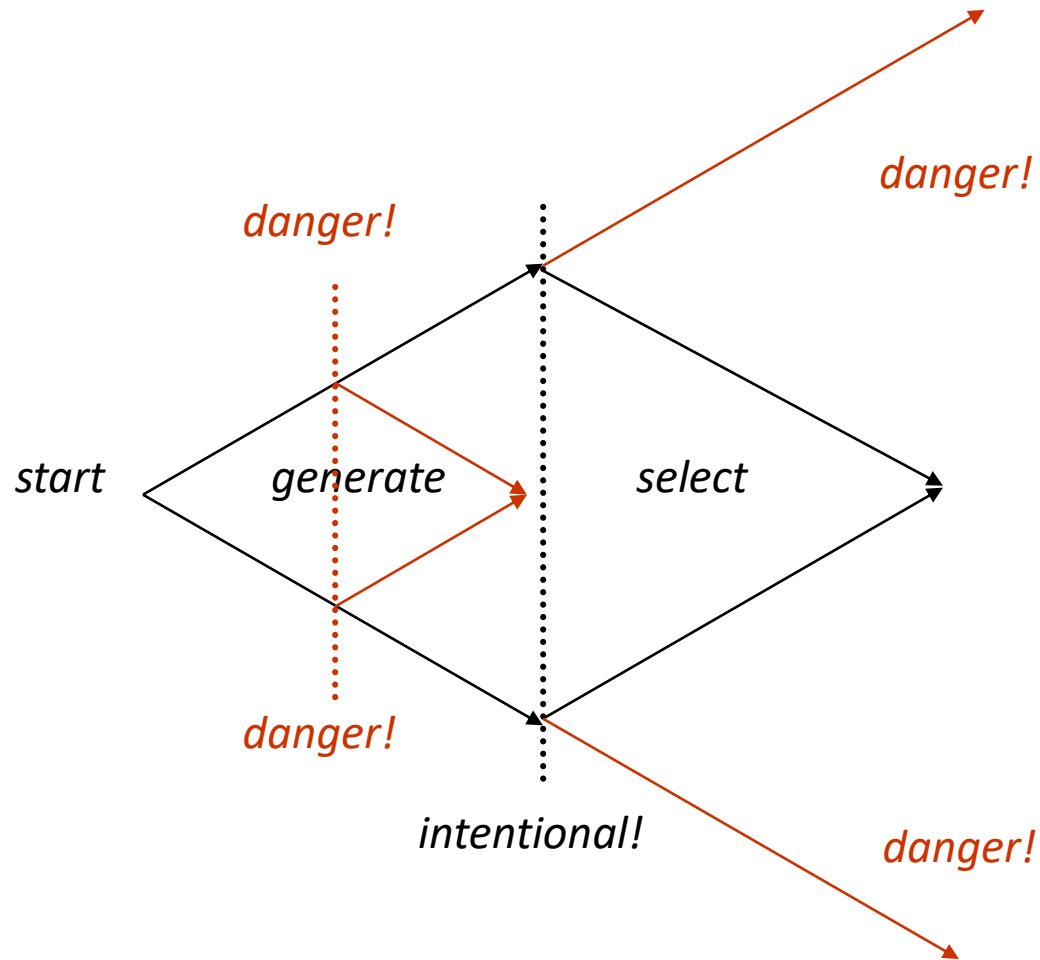
Constructable (2012)



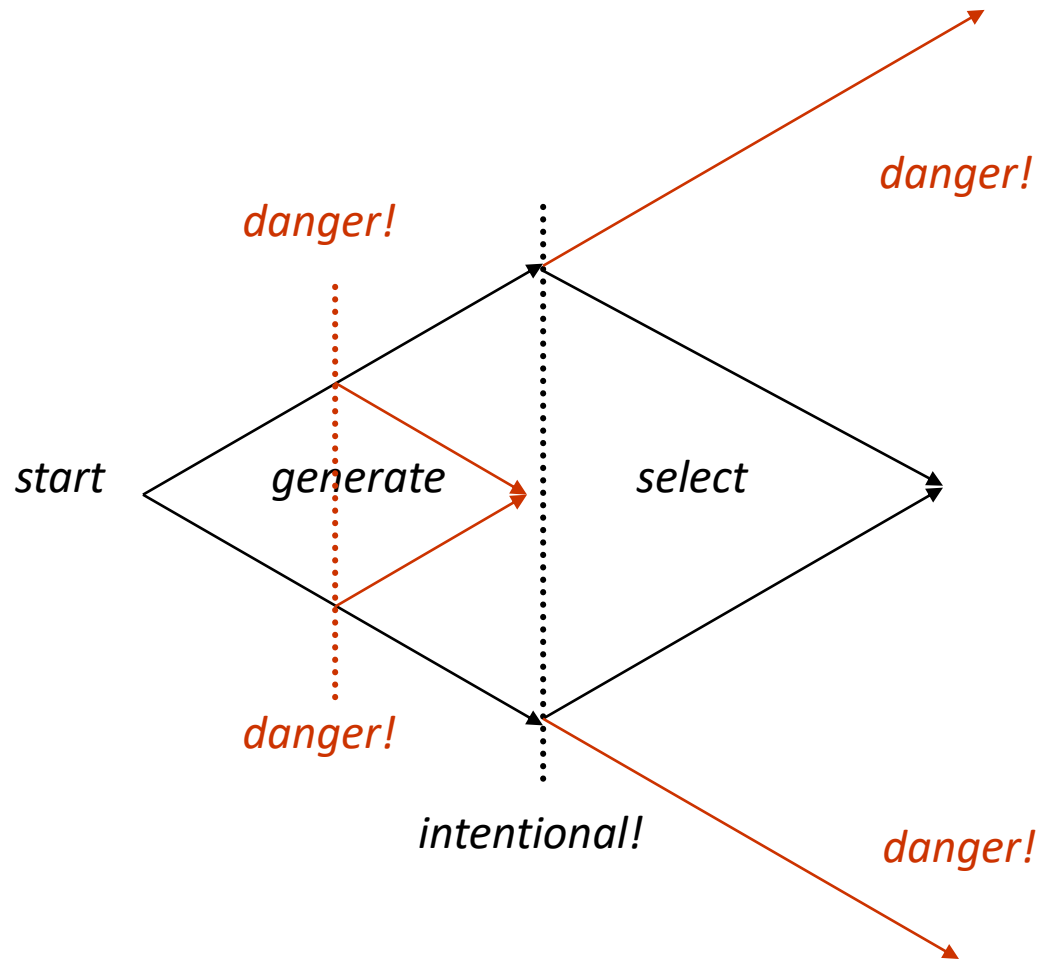
Constructable (2012)



The Design Diamond



Idea Oscillation



Critiquing Sketches is Important

Ideas are both good and bad

Both are useful in design

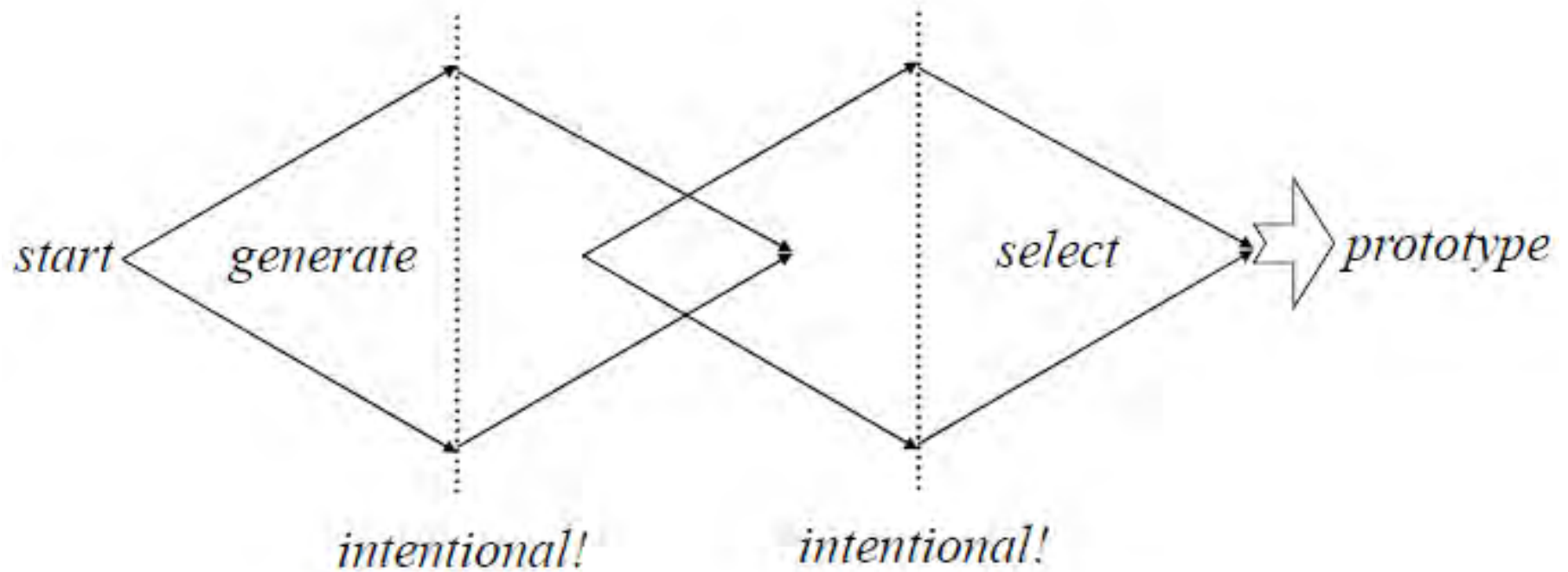
By making clear what is a bad design,
we can avoid actually implementing it

Bad ideas help you justify your good ideas

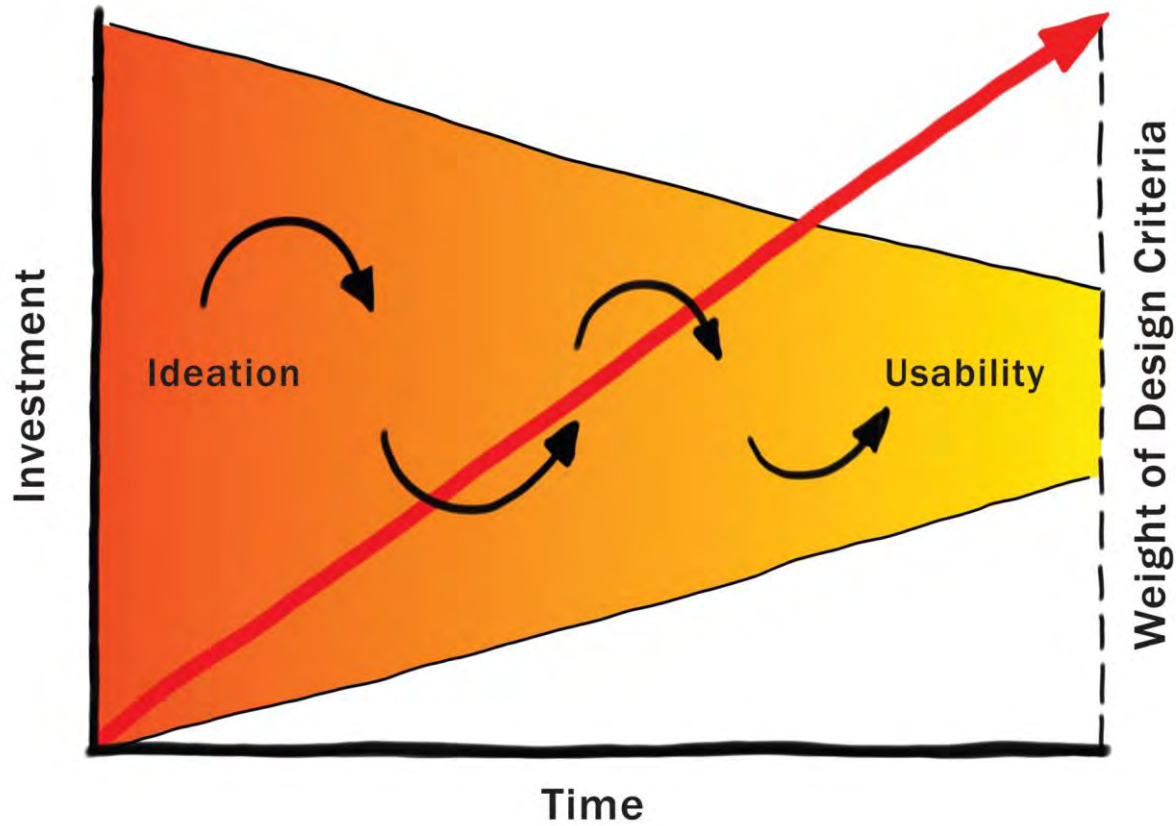
Feedback can turn a good idea into a great idea

Sketching generates too many ideas to implement

Idea Oscillation

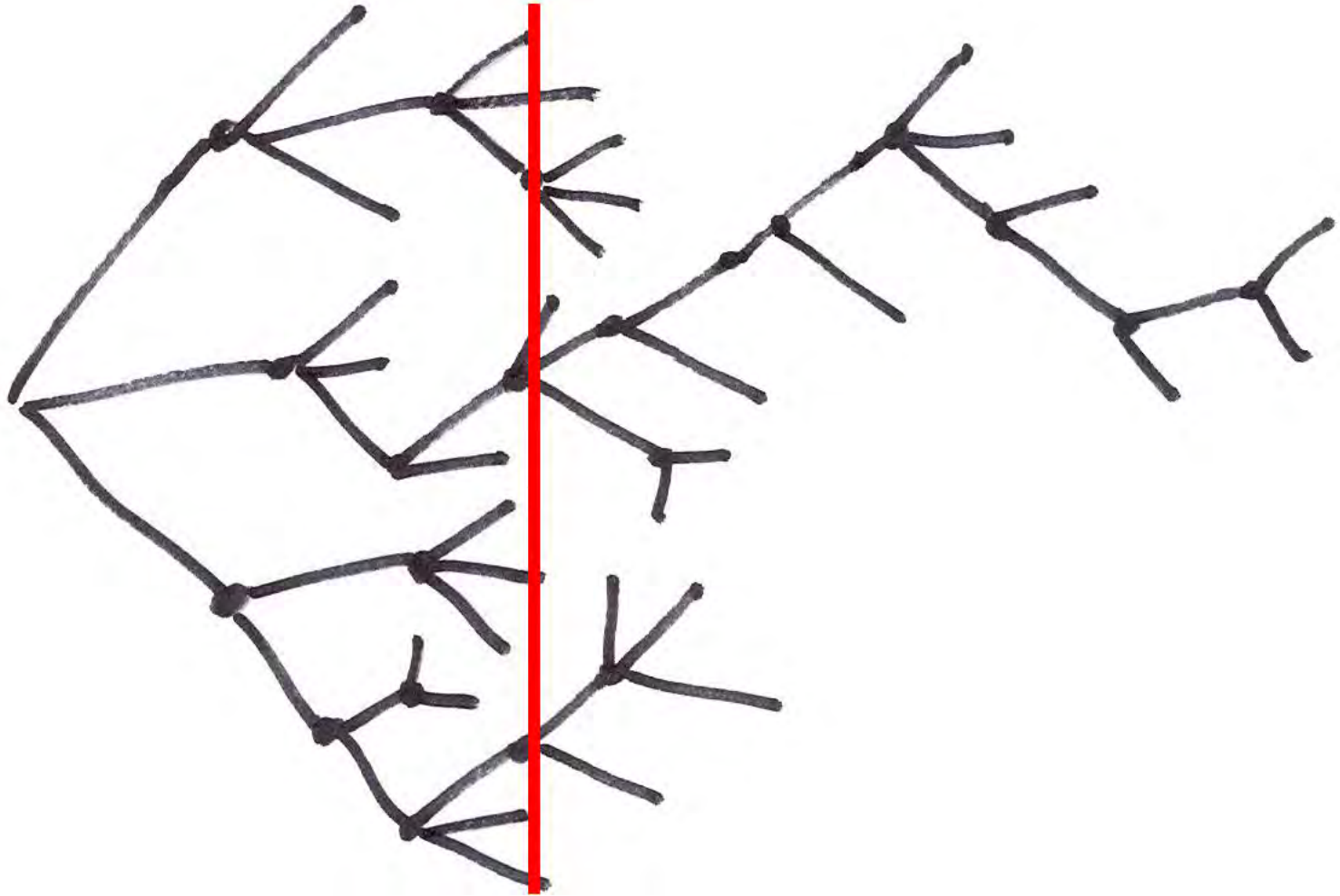


Iteration Toward a Design

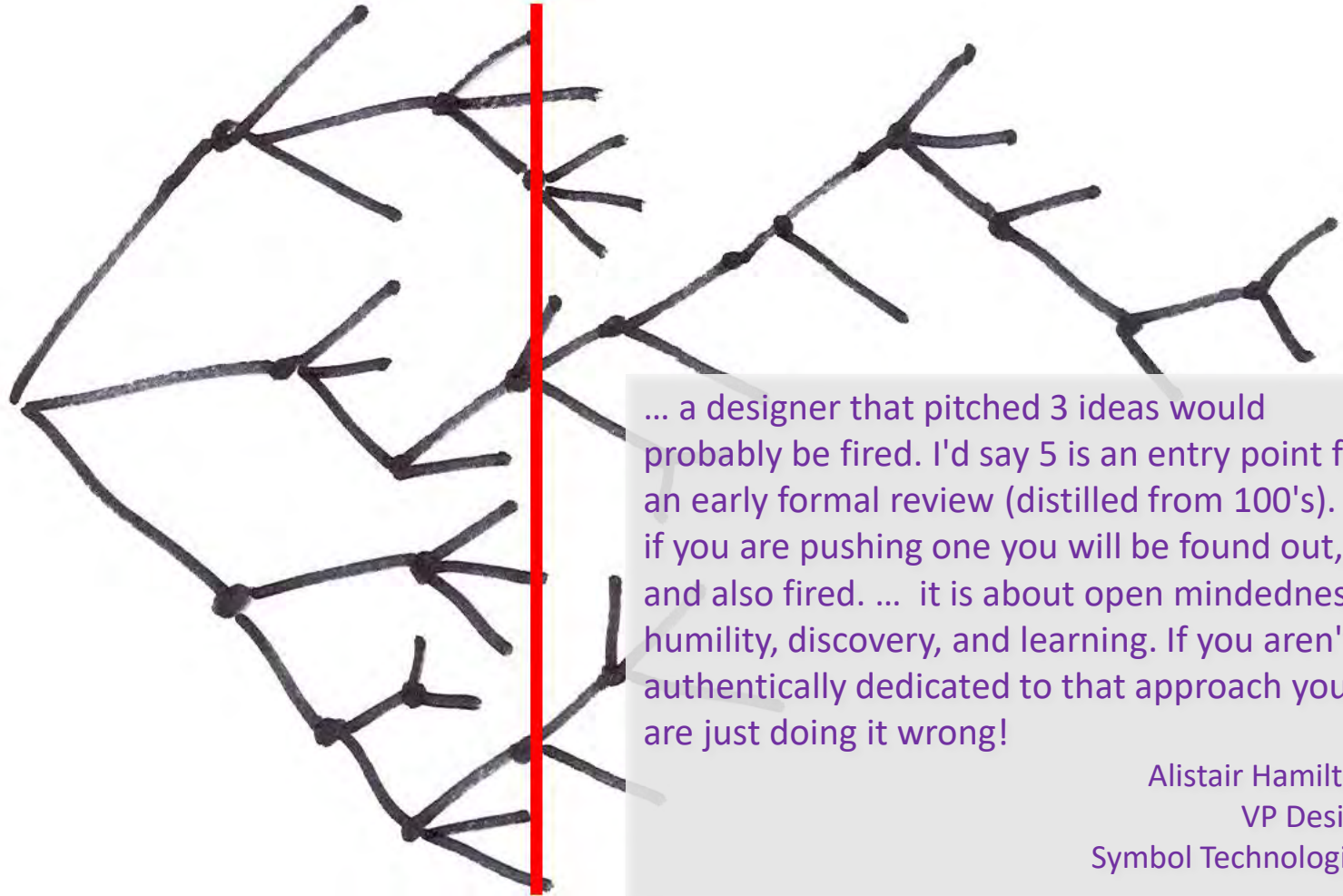


- Sketch
- Prototype

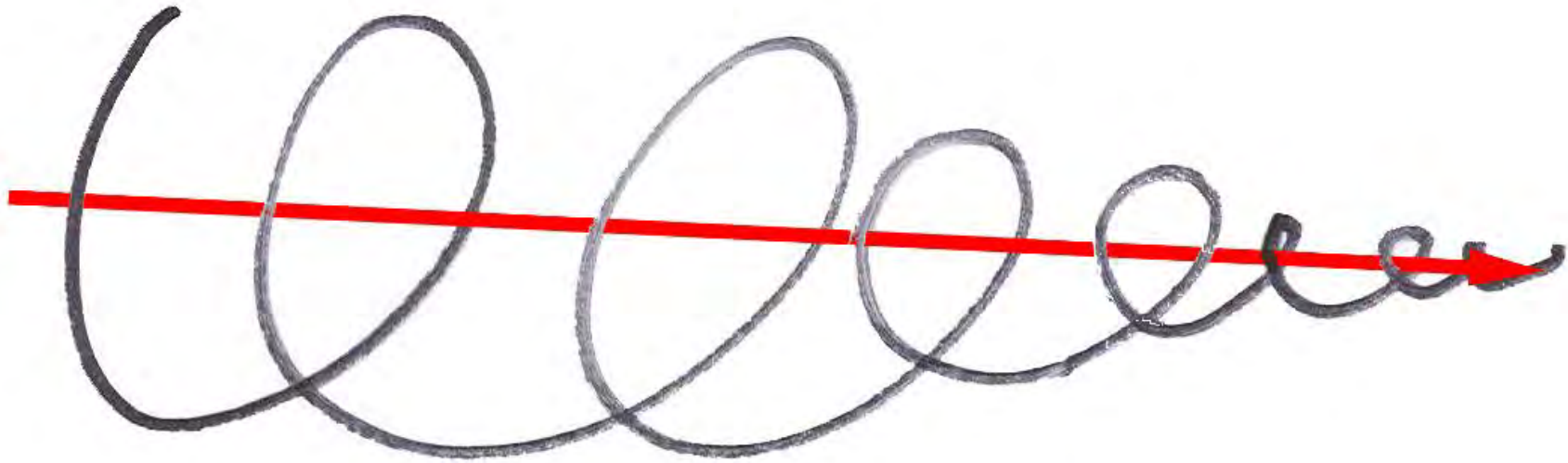
Exploration of Alternatives



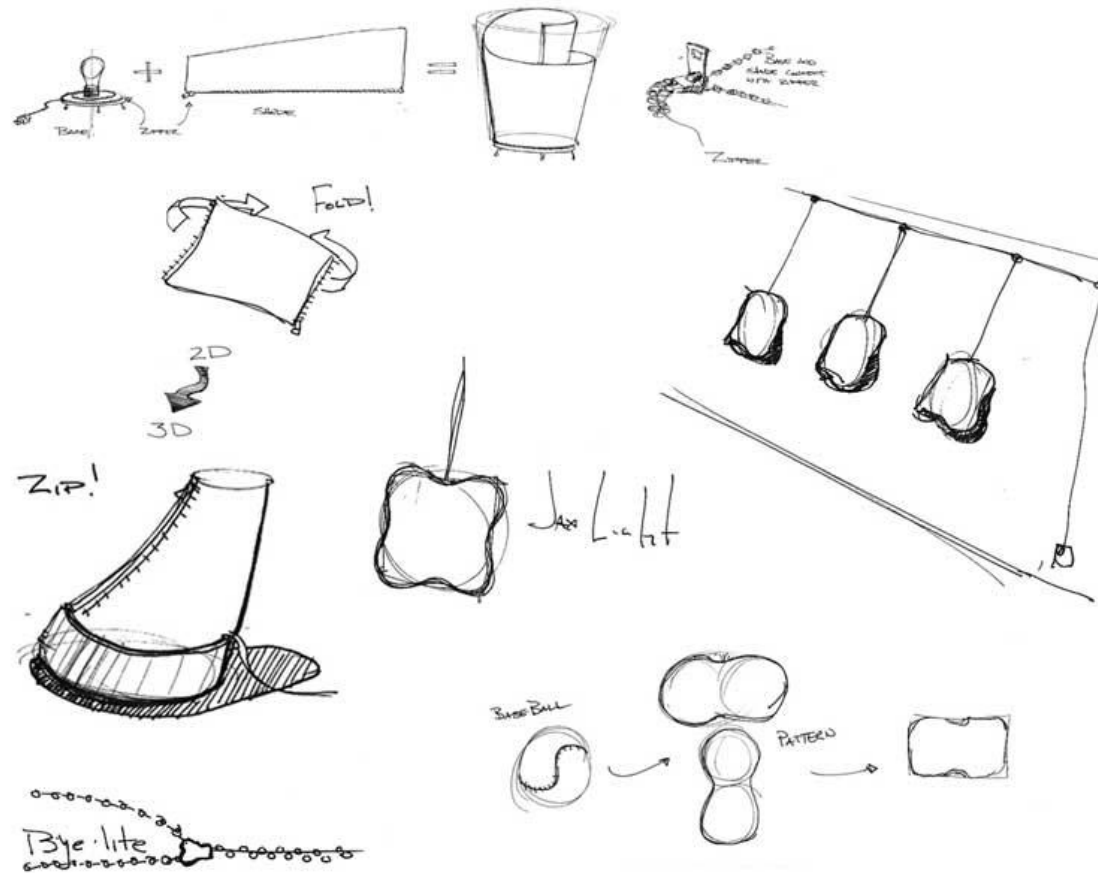
Exploration of Alternatives



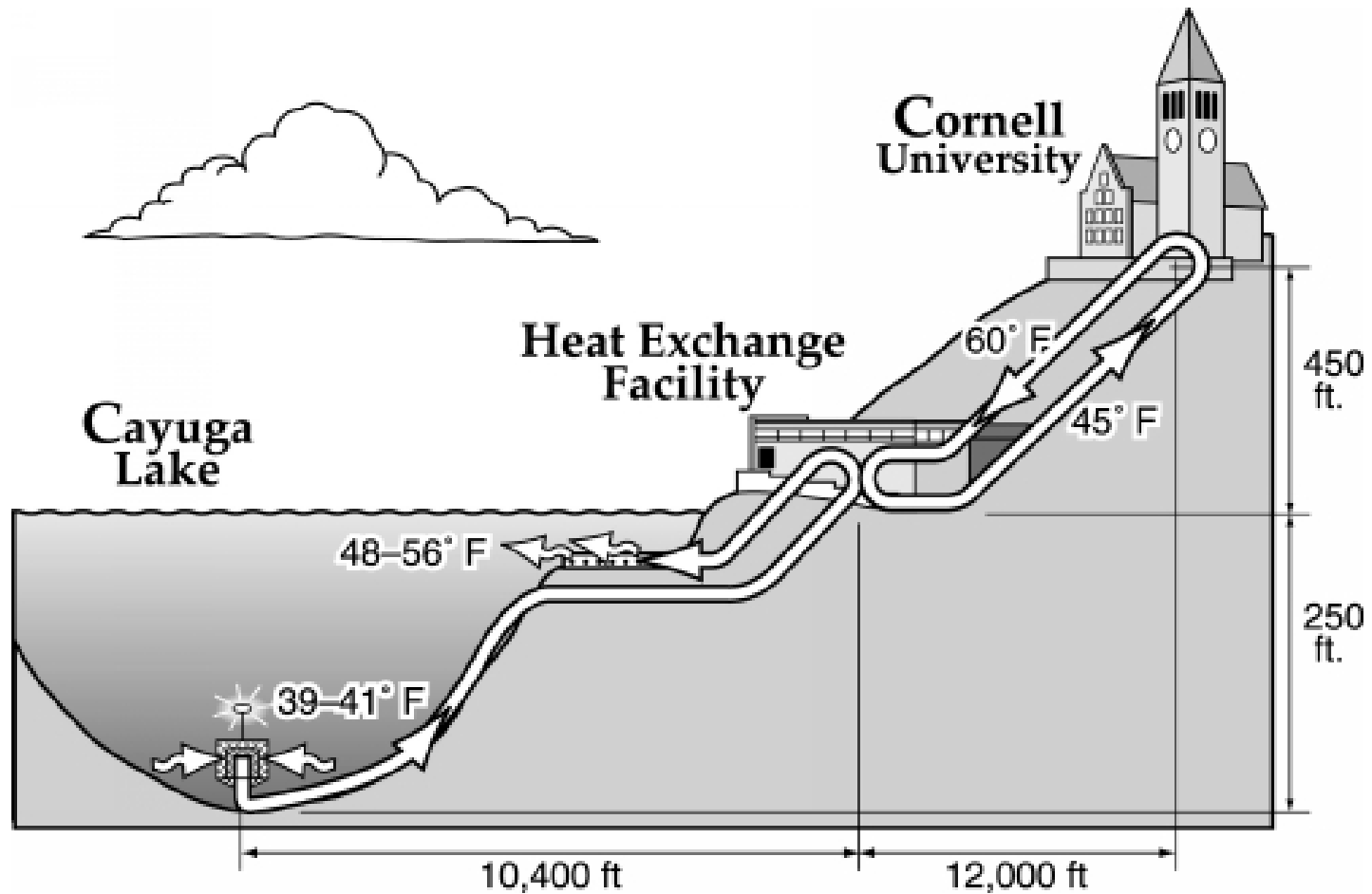
The Converging Path



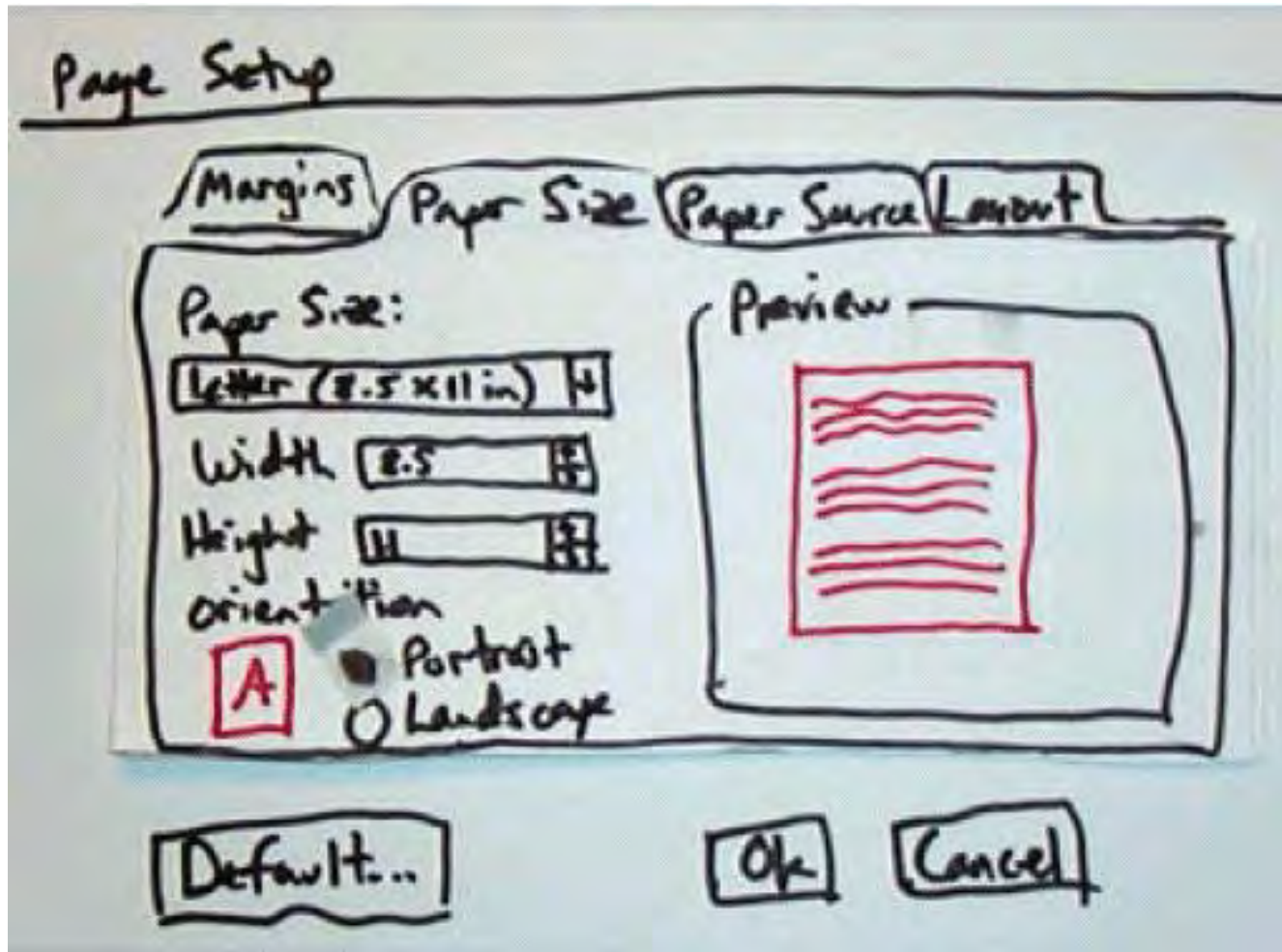
Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



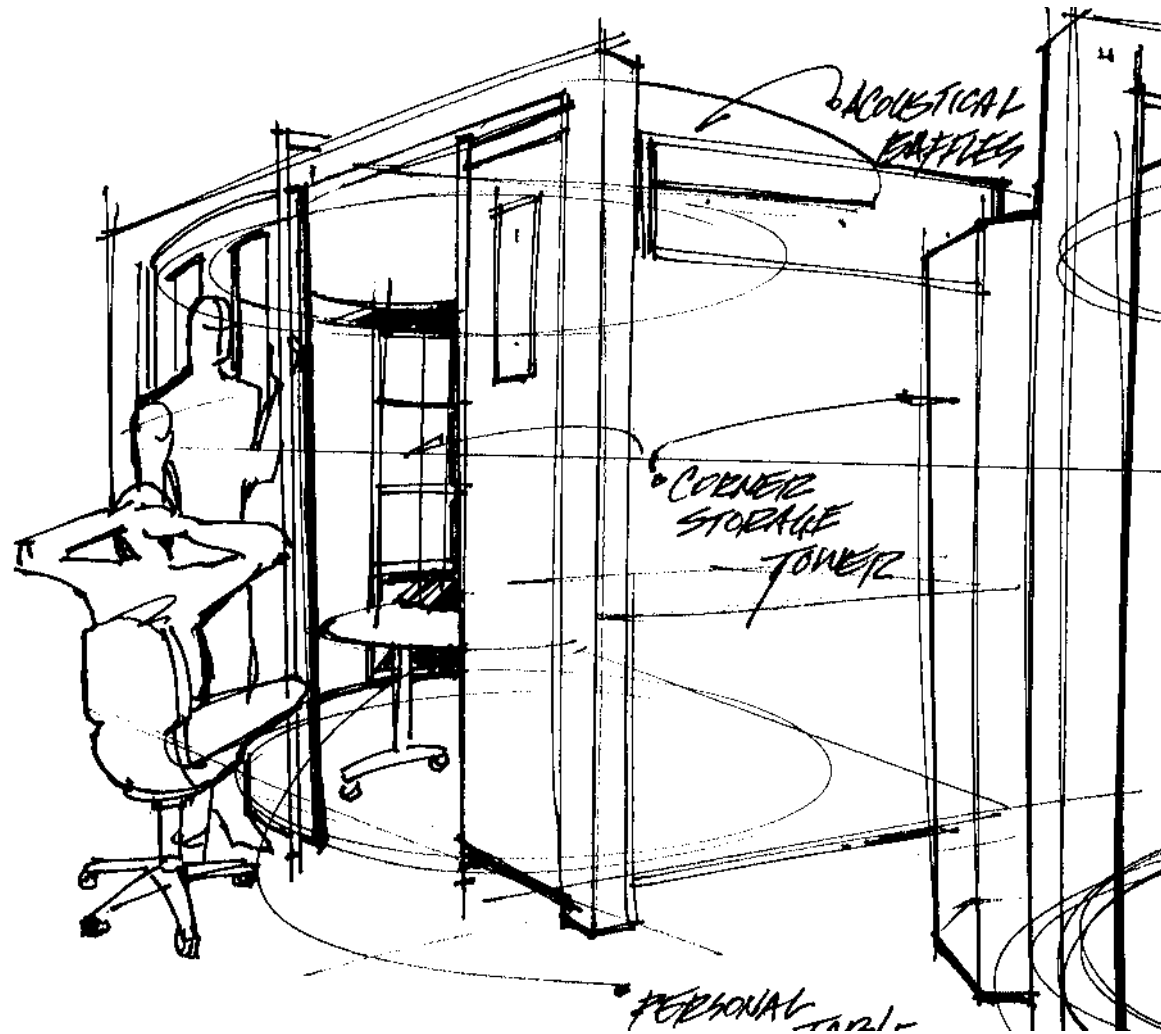
Is this a sketch? Why or why not?



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Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



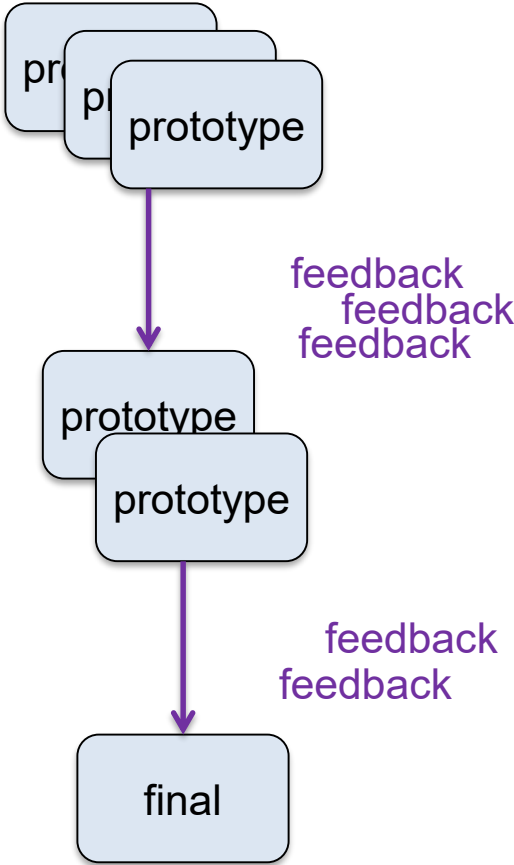
Some Evidence

Task:

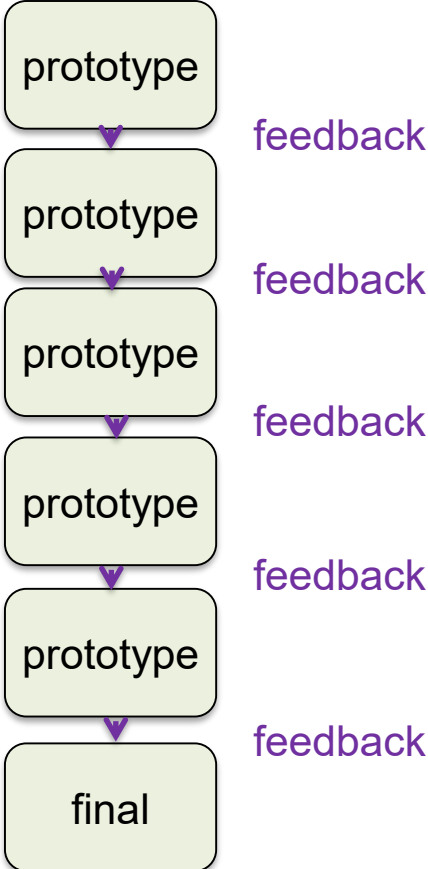
Create a web banner ad for Ambidextrous magazine.



Feedback in Parallel or Serial



Parallel condition



Serial condition

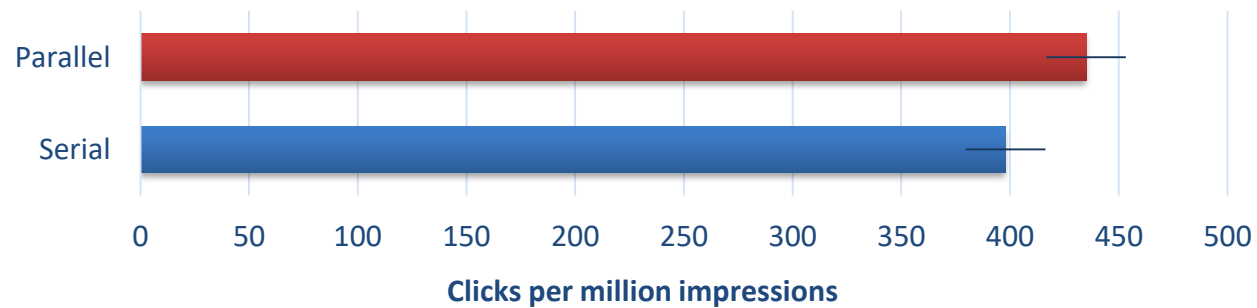
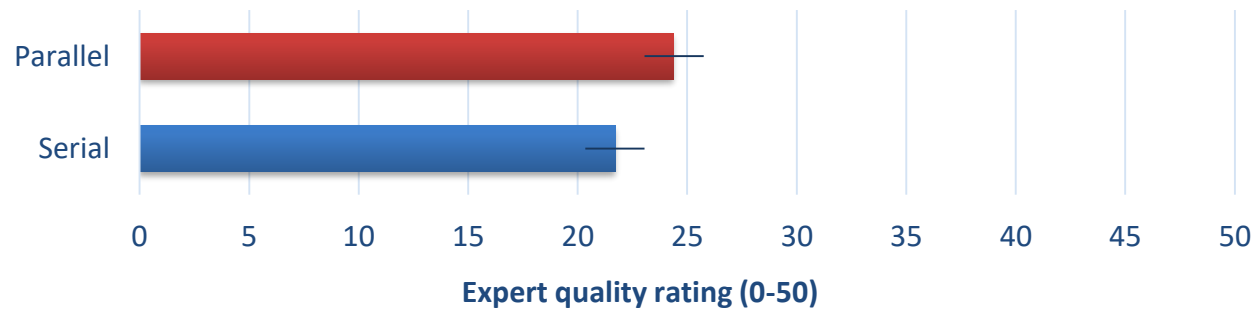
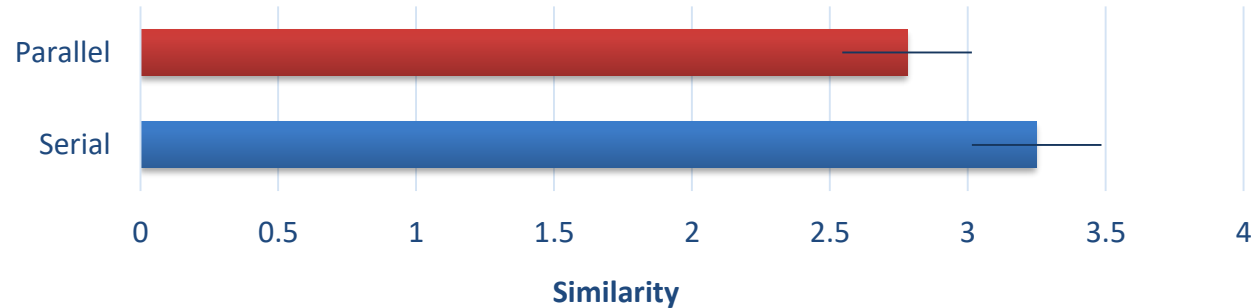
Procedure

serial
prototyping
condition

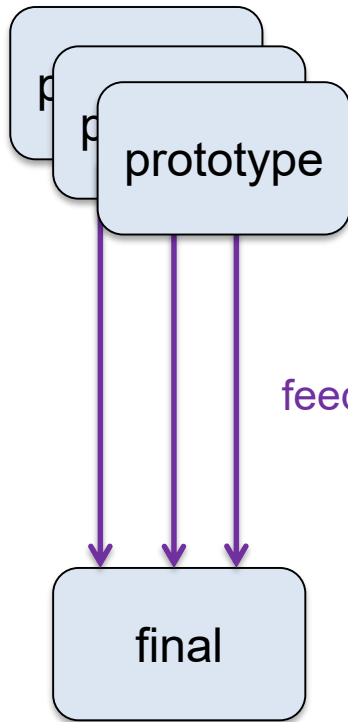
parallel
prototyping
condition



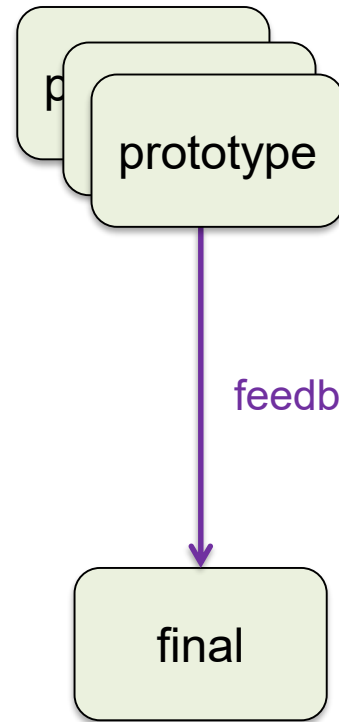
Parallel: more diverse, better, more clicks



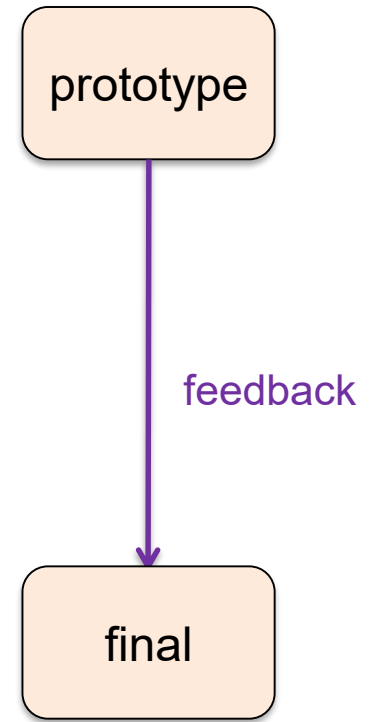
Share one or share your best?



Share multiple
condition

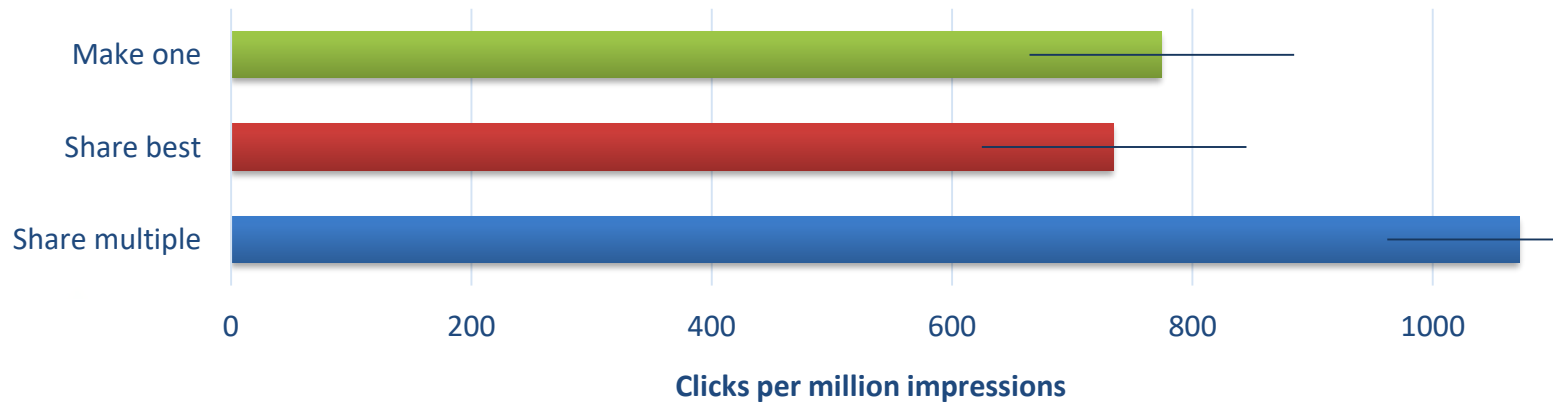
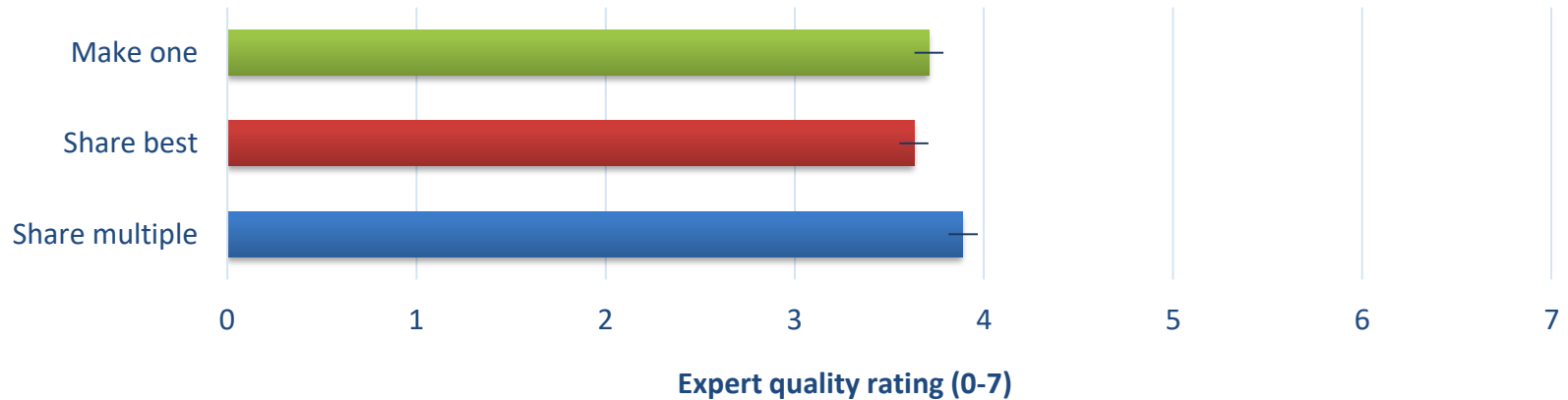


Share best
condition



Make one
condition

Share Multiple: better, more clicks



Some Evidence

Greater divergence in designs

Prevents sticking with the first idea

Allows mashing ideas together

Alternatives facilitate feedback

Enable comparison

Can improve tone of critique

Sketching and the Design Diamond

The design diamond is fundamental to understanding what you are doing here

Much of your education, including in CSE, has taught you to focus on having the right answer

Here it matters what you do long before the end

Most ideas get thrown out, including yours

Better ideas are great criticism, and frequently would never have come about otherwise

CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 02:
Design Diamond

Tuesday / Thursday
12:00 to 1:20

James Fogarty
Kailey Chan
Dhruv Jain
Nigini Oliveira
Chris Seeds
Jihoon Suh