

CSE 440: Introduction to HCI

User Interface Design, Prototyping, and Evaluation

Lecture 07:
Design Diamond

James Fogarty
Daniel Epstein
Brad Jacobson
King Xia

Tuesday/Thursday
10:30 to 11:50
MOR 234



Today

Reminder on Tasks

Reminder on Designs and Page Limit

Reminder on Teams

Design Diamond

Tasks, Personas, and Scenarios

Task: a design-agnostic objective

Persona: a fictional person with a backstory

Scenario: narrative that demonstrates a persona completing a task using a particular design

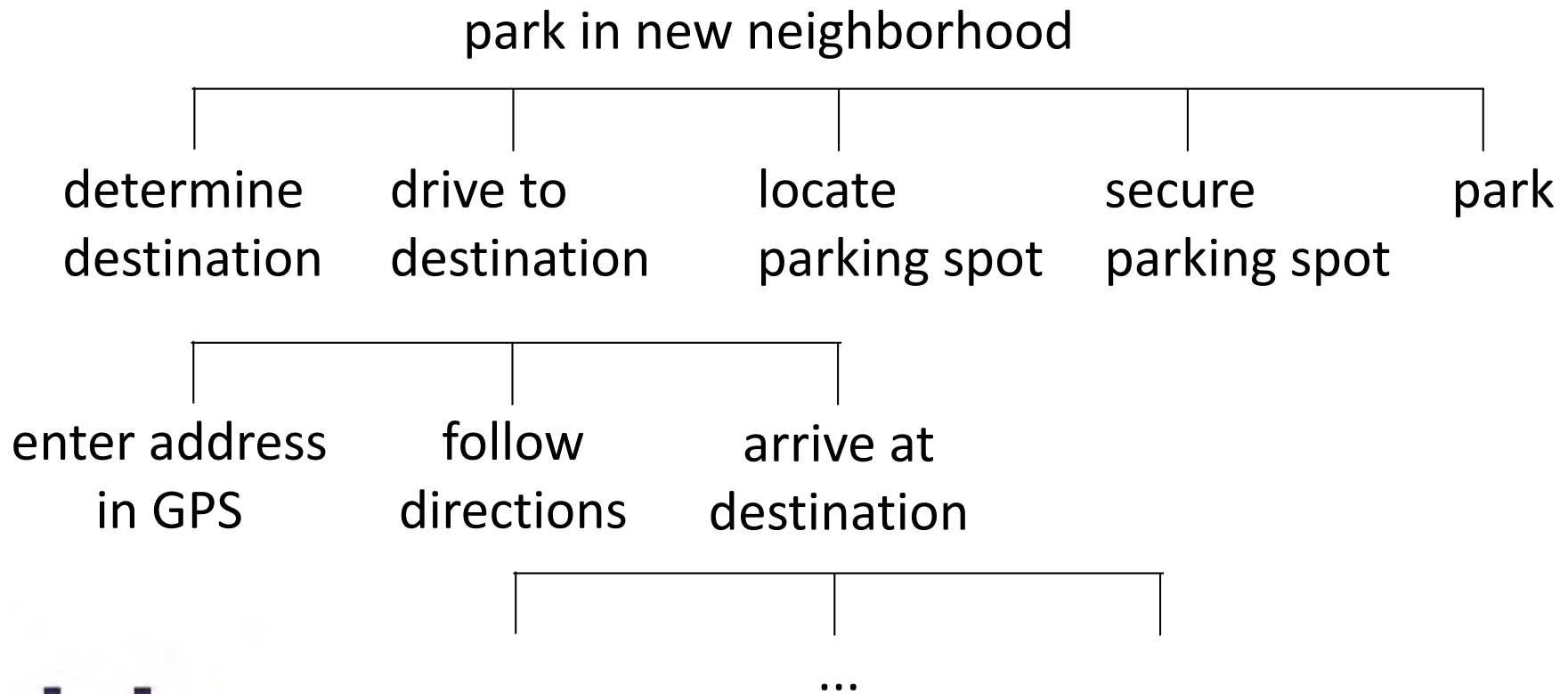
Use Case: in software engineering, describes requirements using one or more scenarios

Task: Park in a New Neighborhood

Peter is going to brunch on a Sunday with his roommates. He is trying a new place he found on Yelp. He has the address for the place and he is using a smartphone GPS for directions. He leaves the apartment with his roommates at around 8:30am and he wants to beat the crowd so they won't have to wait in line. He is driving a Toyota Corolla that he has owned for five years. It is a rainy day and he doesn't have an umbrella.

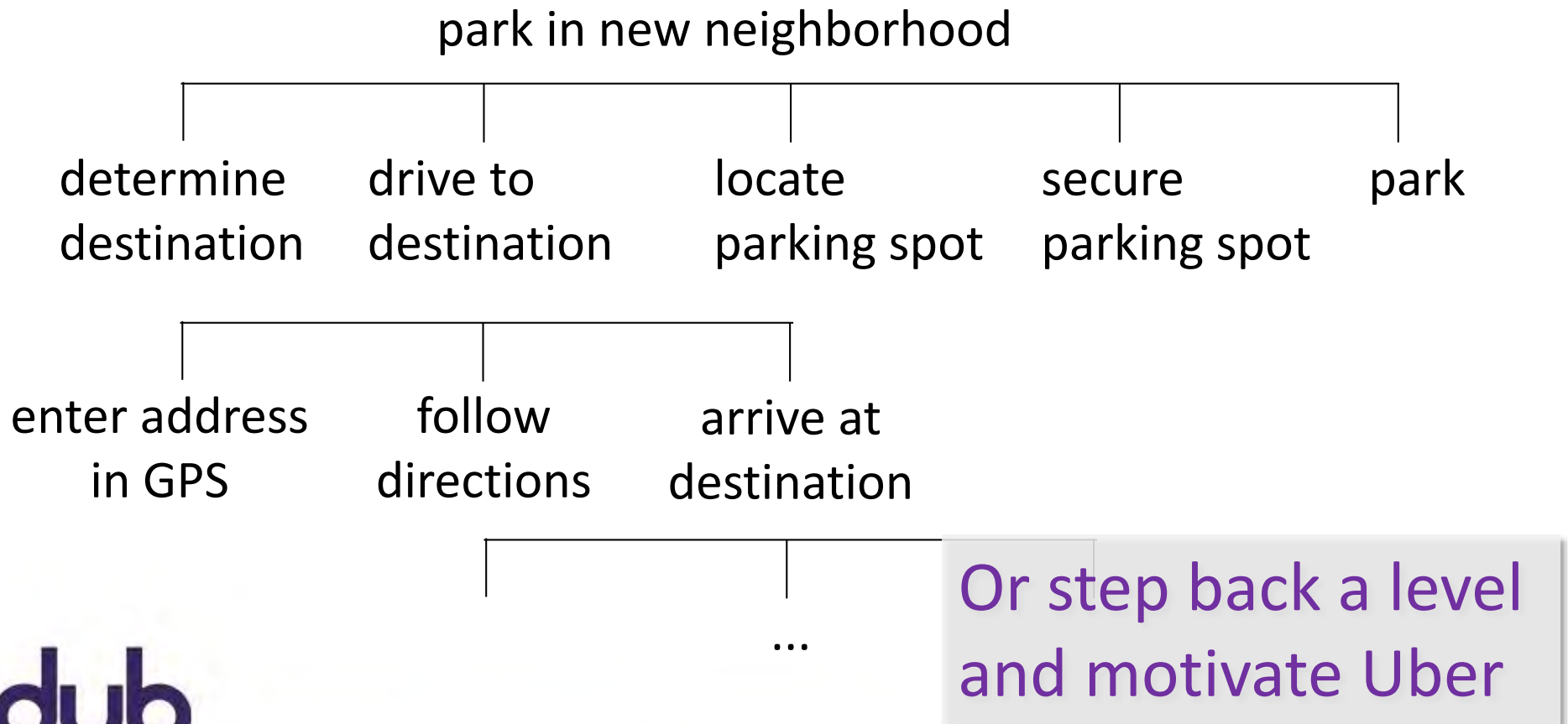
Hierarchical Task Analysis

Steps of the task execution (detailed in a hierarchy)



Hierarchical Task Analysis

Steps of the task execution (detailed in a hierarchy)



Or step back a level and motivate Uber

Tasks in Your Projects

Say what is accomplished, not how

Real tasks that people currently encounter,
or new tasks your design will enable

Reasonable coverage of the interesting aspects
of your problem and your design space

Range of difficulty and complexity

Park at the zoo, Friday night in Ballard, at the airport

Today

Reminder on Tasks

Reminder on Designs and Page Limit

Reminder on Teams

Design Diamond

Working as Teams

We have had some absences in critiques

It is absolutely good to stay home sick

But some have been unexpected by teams

Revealed incomplete project knowledge

Highlights you working as groups instead of teams

Teams vs. Groups

There is a place for groups:

Working groups are both prevalent and effective in large organizations where individual accountability is most important. The best working groups come together to share information, perspectives, and insights; to make decisions that help each person do his or her job better; and to reinforce individual performance standards. But the focus is always on individual goals and accountabilities.

Teams vs. Groups

Teams differ fundamentally from working groups

... they require both individual and mutual accountability. Teams rely on more than group discussion, debate, and decision; on more than sharing information and best practice performance standards. Teams produce discrete work-products through the joint contributions of their members. This is what makes possible performance levels greater than the sum of all the individual bests of team members.

A team is more than the sum of its parts.

Teams vs. Groups

Groups

- strong leader
- individual accountability
- organizational purpose
- individual work products
- efficient meetings
- measures performance by influence on others
- delegates work

Teams

- shared leadership
- individual & mutual accountability
- specific team purpose
- collective work products
- open-ended meetings
- measures performance from work products
- does real work together

Keys to Team Success

Common commitment

requires a purpose in which team members believe

Specific performance goals

comes directly from the common purpose

helps maintain focus – start w/ something achievable

A right mix of skills

technical/functional expertise (programming/design/writing)

problem-solving & decision-making skills

interpersonal skills

Agreement and mutual accountability

who will do particular jobs, when to meet & work, schedules

Working as Teams

School has taught you to succeed as an individual

Too many projects are done in groups

Drawing boundaries between code responsibilities

This class requires you to work as teams

You can split up, but you have to come back together

Use complementary skills, be mutually accountable

The “real world” requires this too

Working as Teams

Get to know each other

Figure out strengths of team members

Assign each person a role

responsible for seeing work is organized and done
not responsible for doing it themselves

Names/roles listed on major reports

Group Manager (coordinate team)

Documentation (coordinate writing)

Design (coordinate visual/interaction design)

Fieldwork and Testing (coordinate fieldwork and testing)

Today

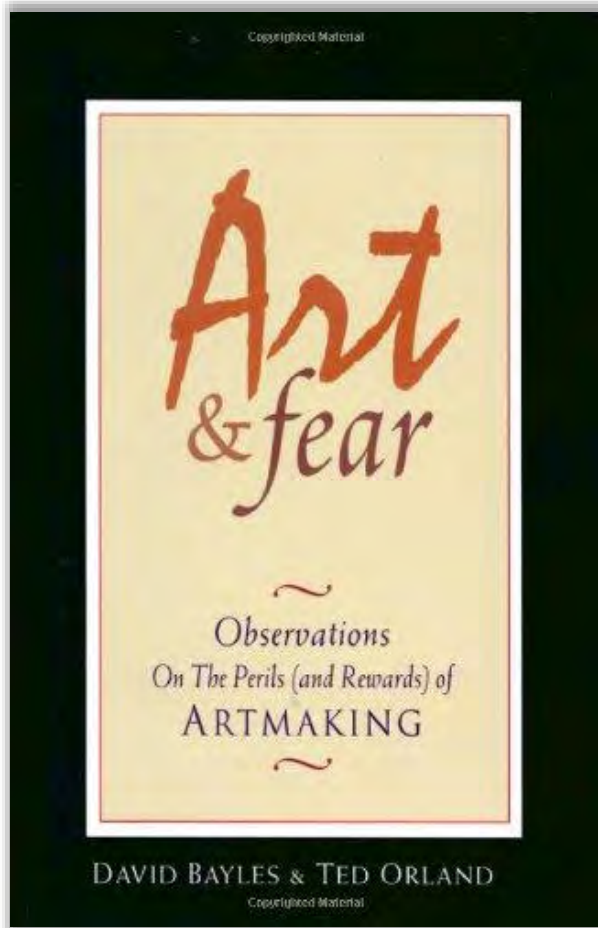
Reminder on Tasks

Reminder on Designs and Page Limit

Reminder on Teams

Design Diamond

Quantity over Quality



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



Quantity v. Quality?

“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”

Sketching User Experiences



Sketching

Movies

Theater: Shattuck Cinemas
 Phone: (510) 665-1342 Dist: 1.5 mi
 Address: 2122 Shattuck Ave
 Berkeley, 94709
 Cost: \$8.50 normal, \$6.00 senior, \$4.00 infant

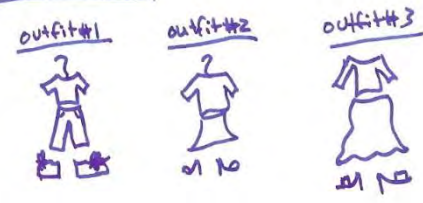
Map-IT

<u>Art of War</u>	☆☆☆
(10:00)-(1:00)-4:00-7:00-10:00	
<u>Bittersweet Motel</u>	☆☆☆☆
(11:00)-(1:30)-4:00-6:30-9:00	
<u>Godzilla</u>	☆☆
(10:30)-(2:00)-5:30-9:00	
<u>The Cell</u>	☆☆☆☆
(11:00)-(1:00)-3:00-5:00-7:00-9:00	

STORE FOR THE STYLE-CHALLENGED

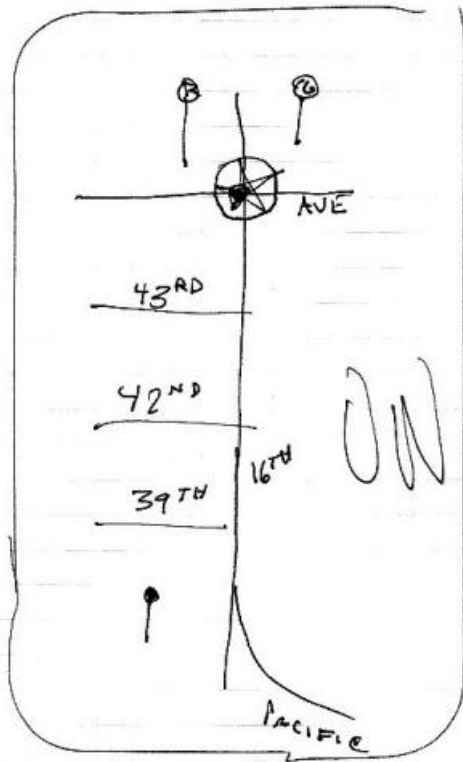


As it should be...

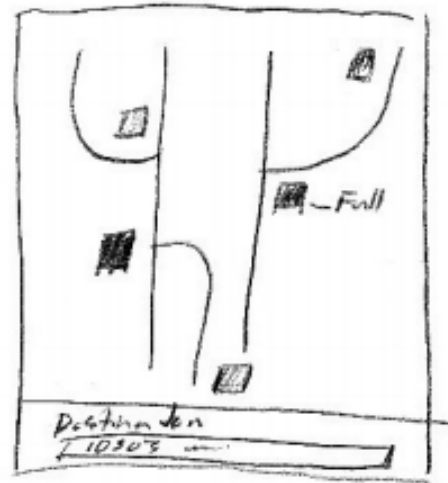


(pre-selected to match so you don't have to choose.)

Sketching

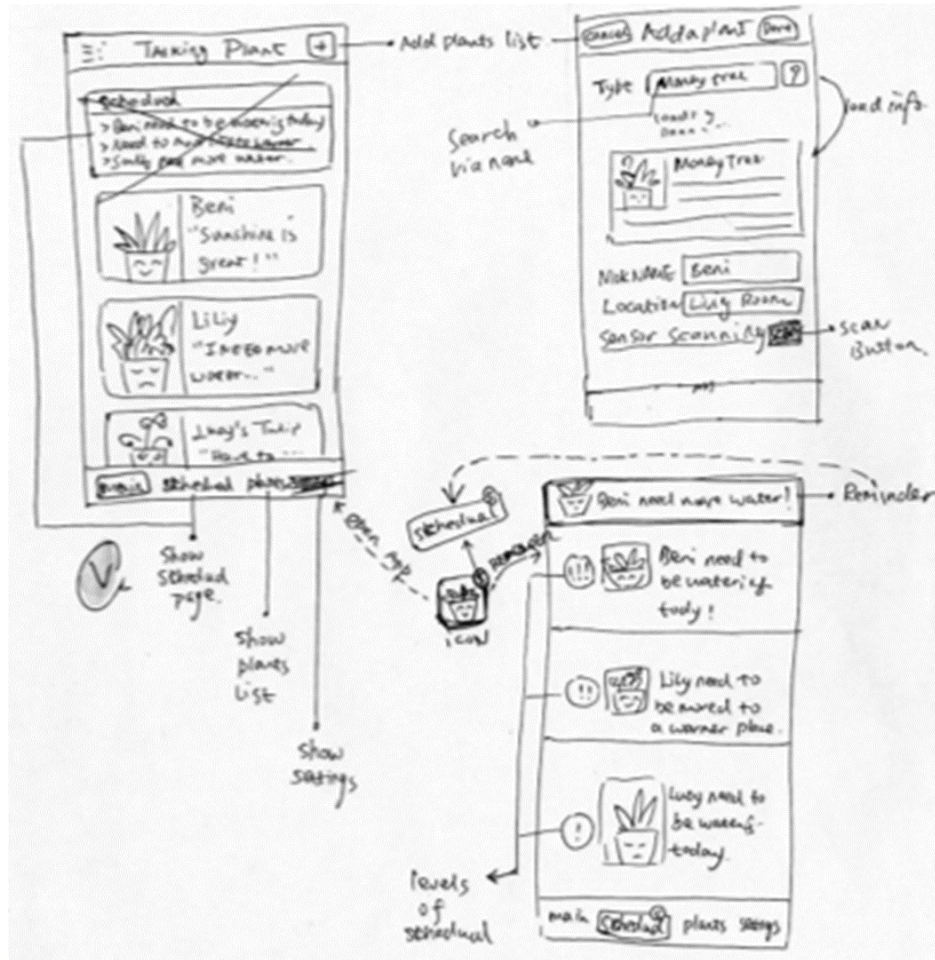


MAP SHOWING PARKING AVAILABILITY BASED ON INPUTTED DATA, INPUTTED ON MAP



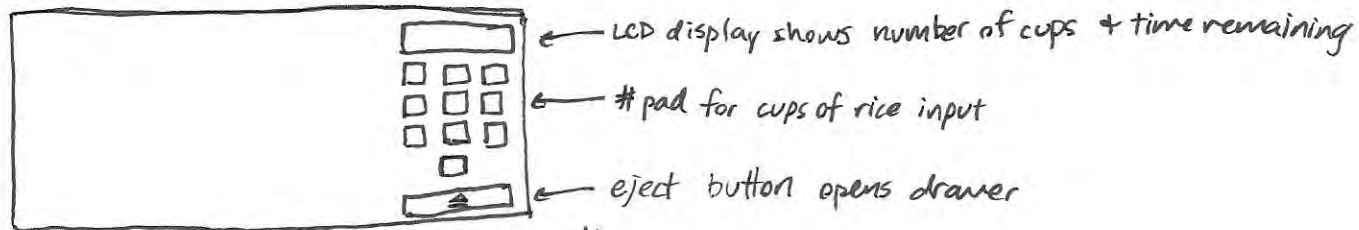
- Different colors
- highlights availability
-

Sketching

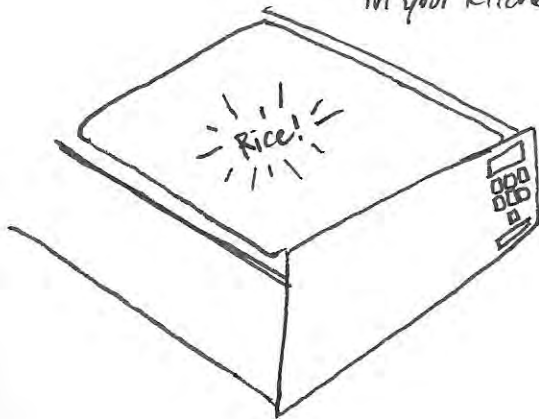


Sketching

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).

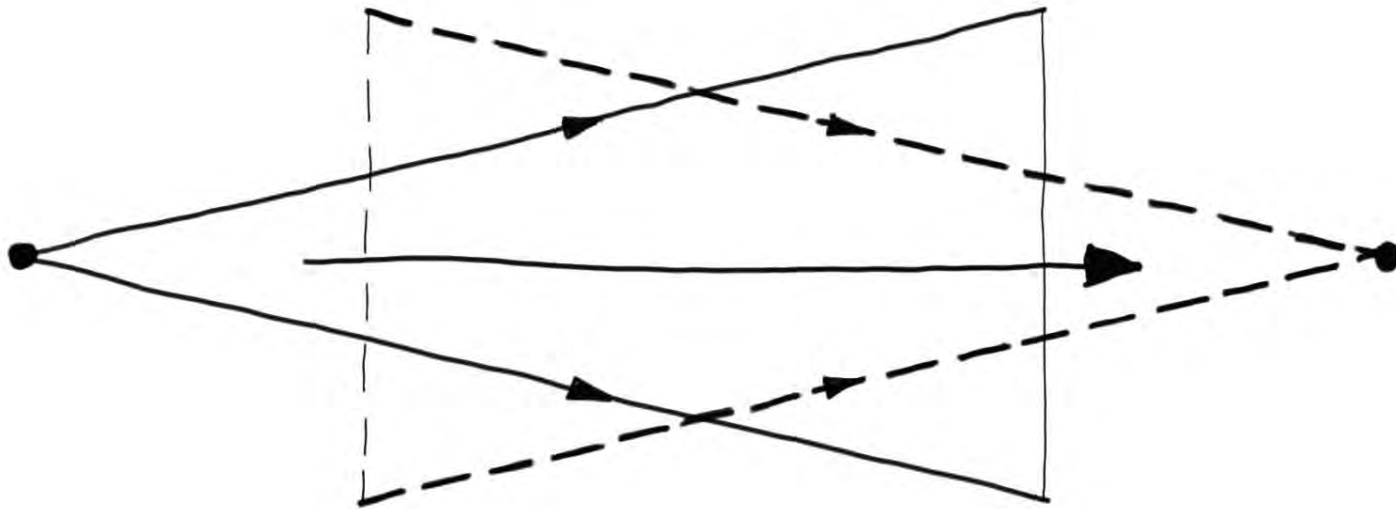
Design as Choice

Elaboration

palette of choices

Reduction

heuristics to choose



Design as Choice

Two openings for creativity

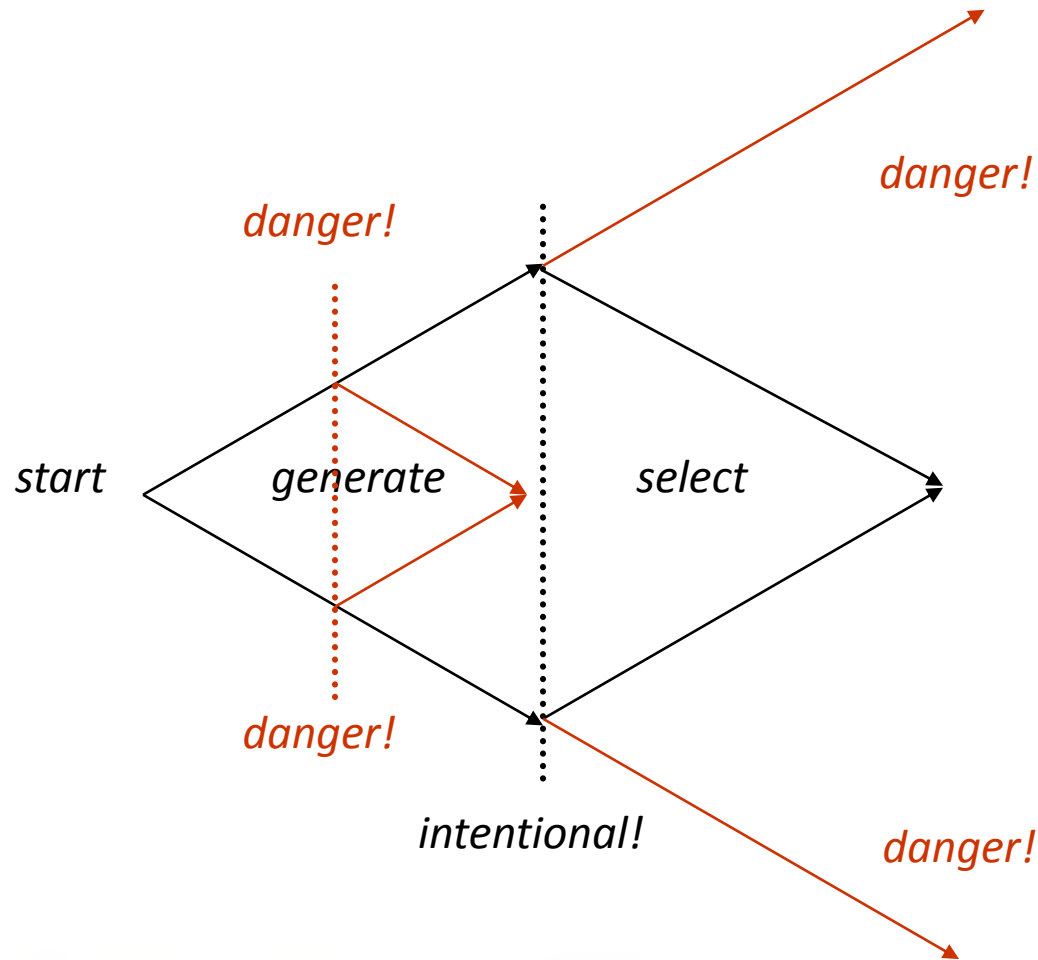
Palette of choices

Heuristics used to choose

Why is your contextual inquiry so important?

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

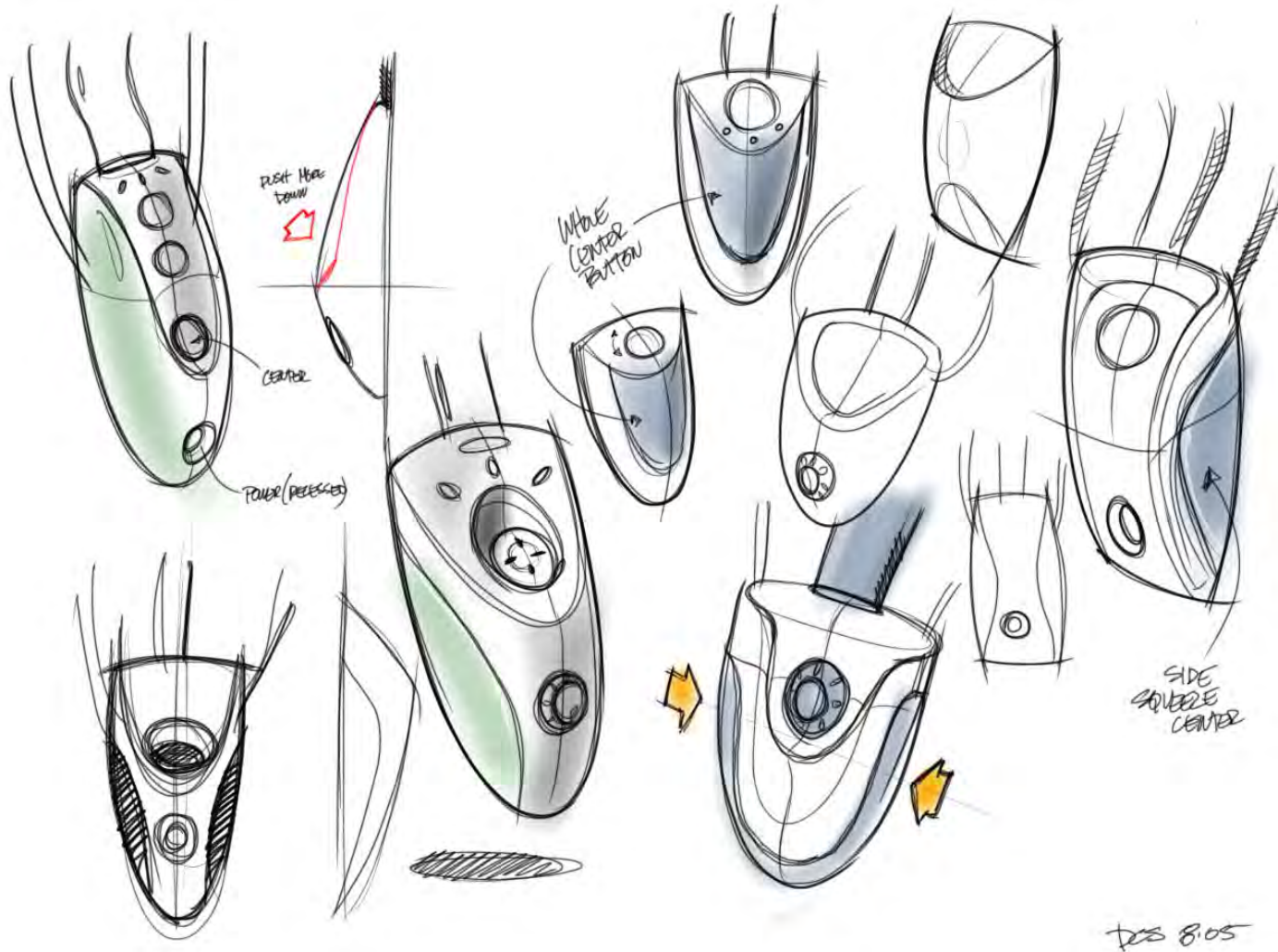
The Design Diamond



Sketching

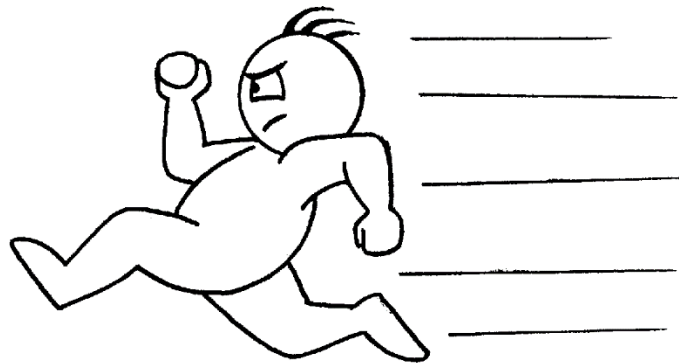
A **process** that enables you to think through ideas and convey design ideas to others very early in the design phase

A Quintessential Activity of Design



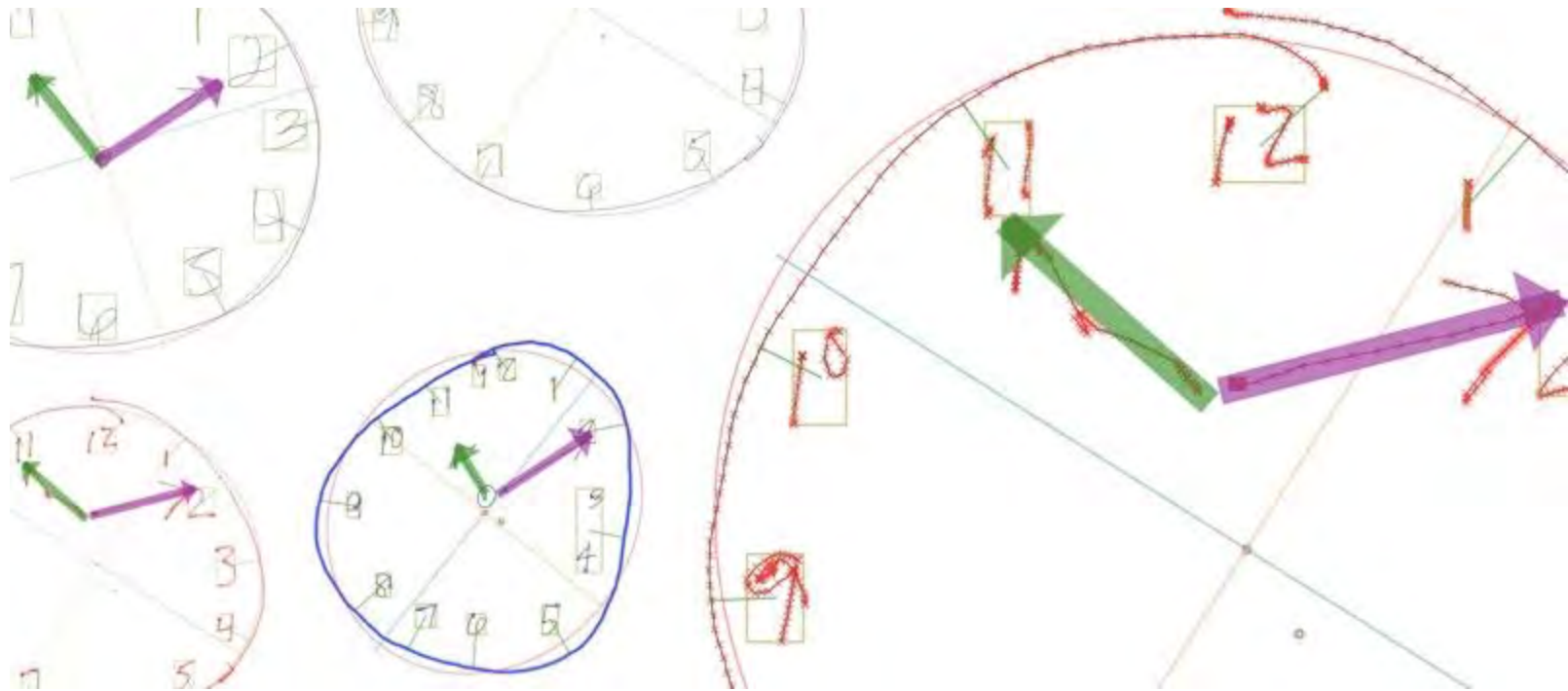
Quick

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

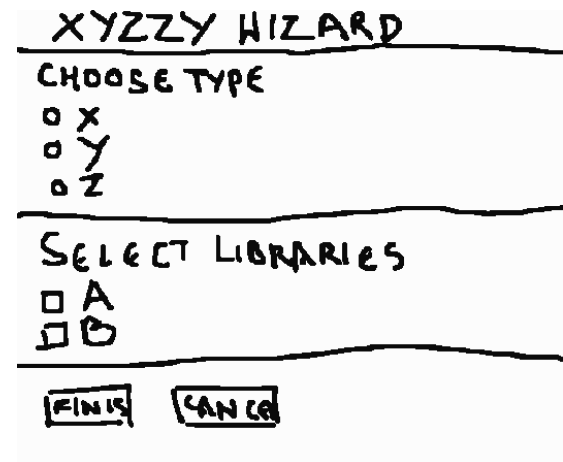
Meaning and relevance
is in the context of a
collection or series



Clear Vocabulary

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

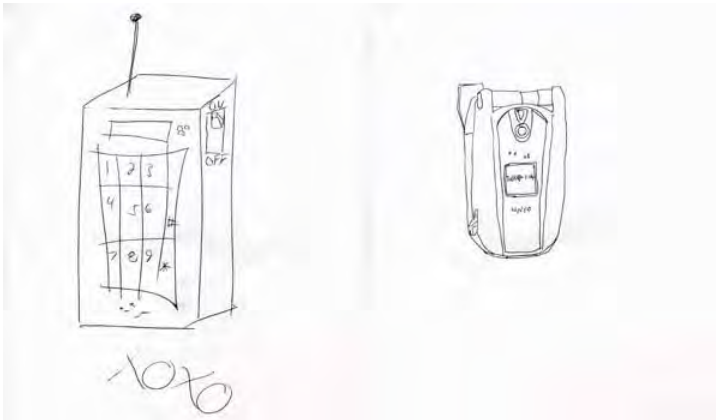
Could be how a line extends through endpoints



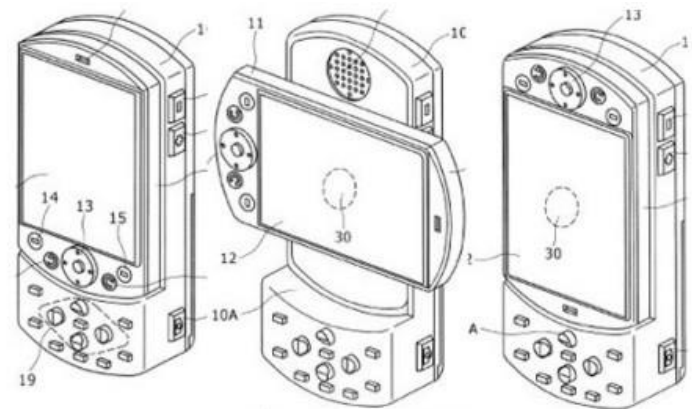
Distinct Gesture

Fluidity of sketches gives them a sense of openness and freedom

Opposite of engineering drawing, which is tight and precise



vs.



Minimal Detail

Include only what is required to render the intended purpose or concept



Create JSP for this page

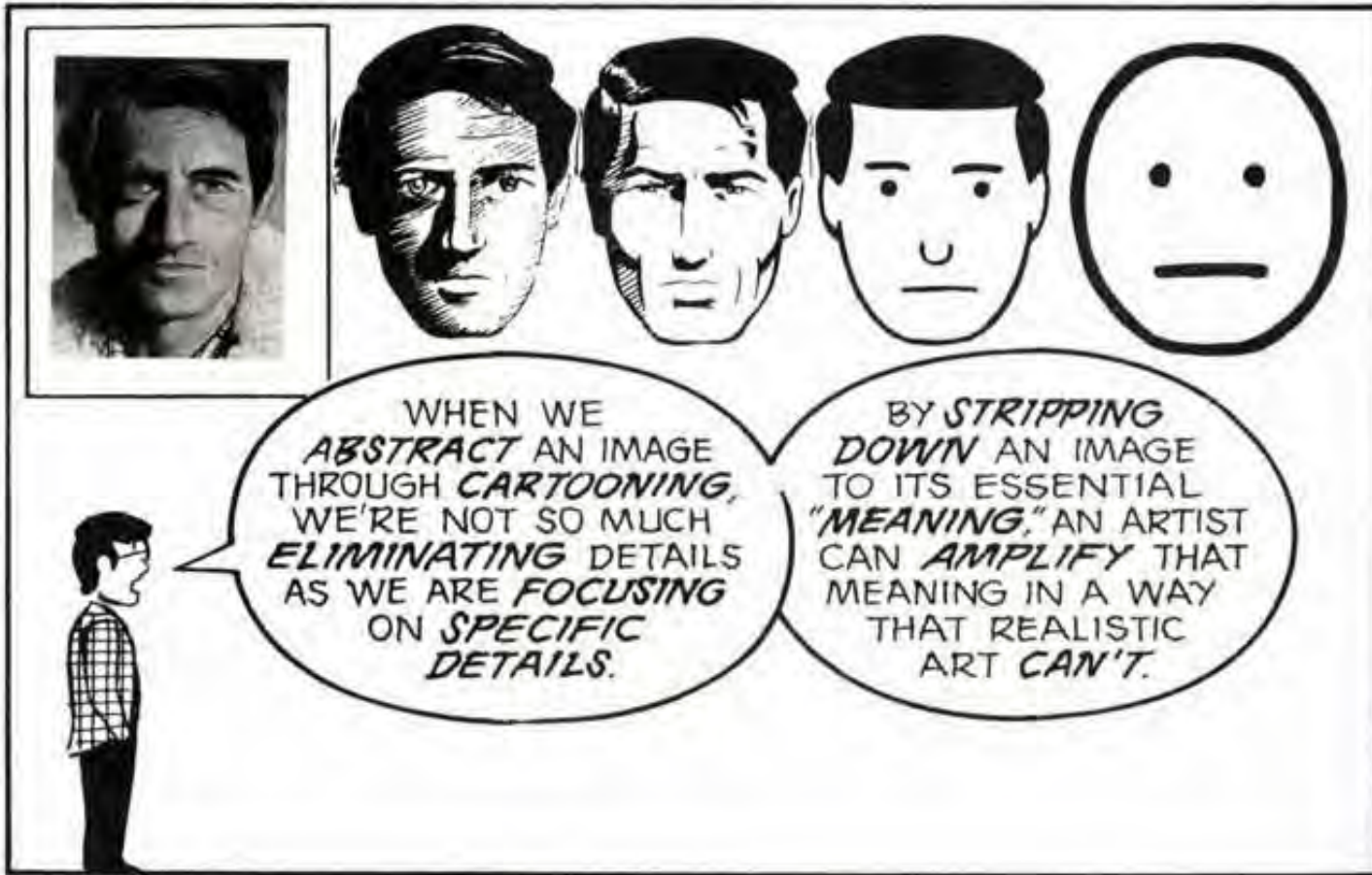
Name:

Number:

Category:

Price Range: to

Minimal Detail

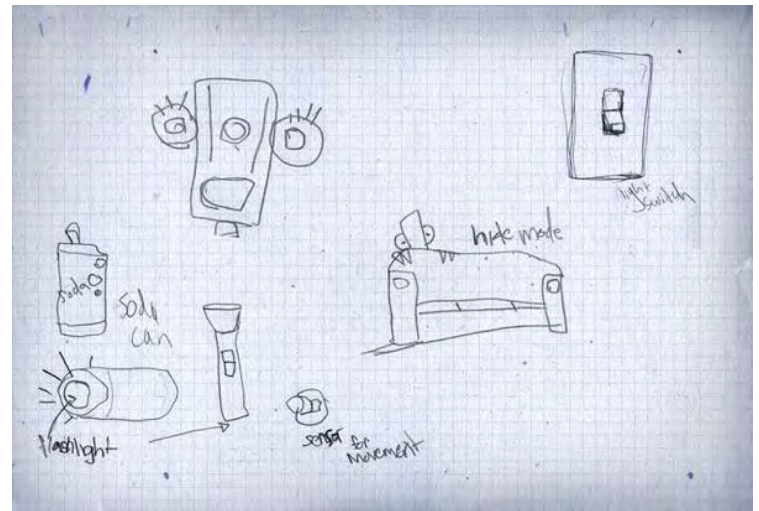


Appropriate Degree of Refinement

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,
the sketch will look much
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

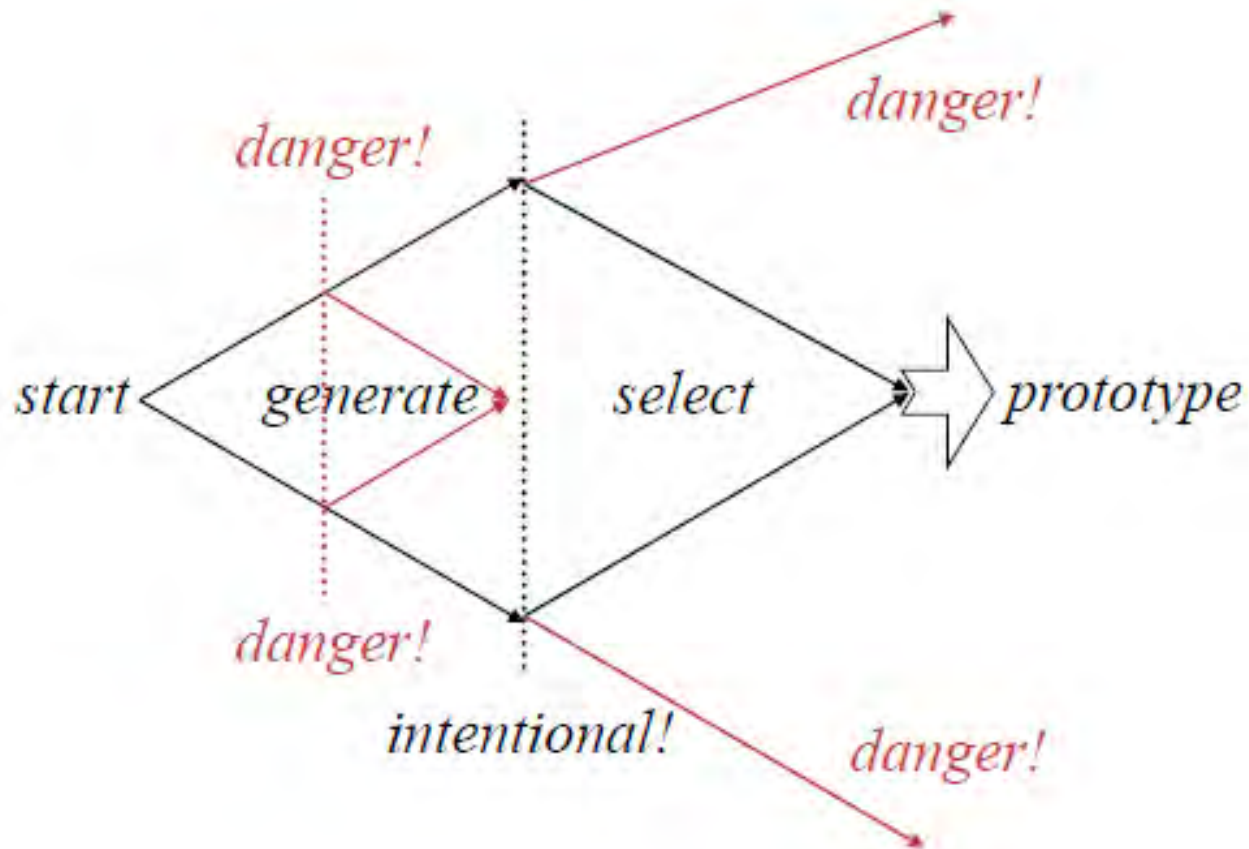


Sketch vs. Prototype

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

Idea Oscillation



Critiquing Sketches is Important

Ideas are both good and bad

Both are useful in design

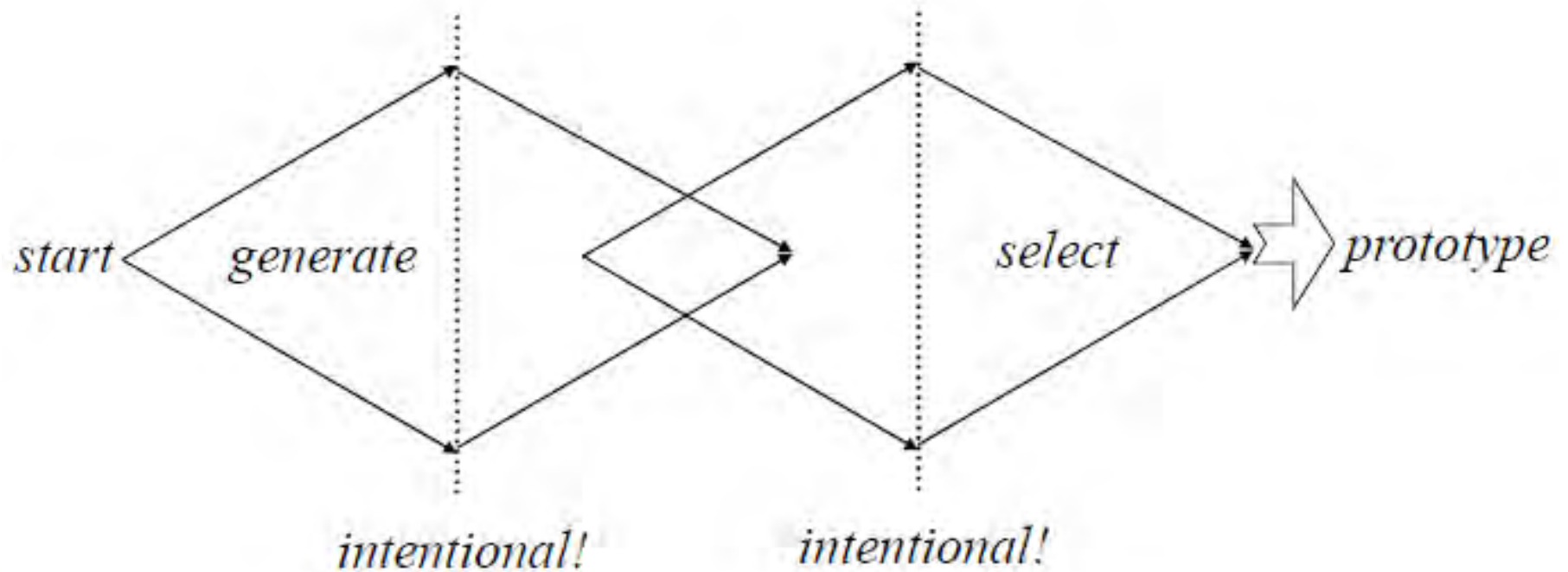
By making clear what is a bad design,
we can avoid actually implementing it

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



ABC News and IDEO's Deep Dive

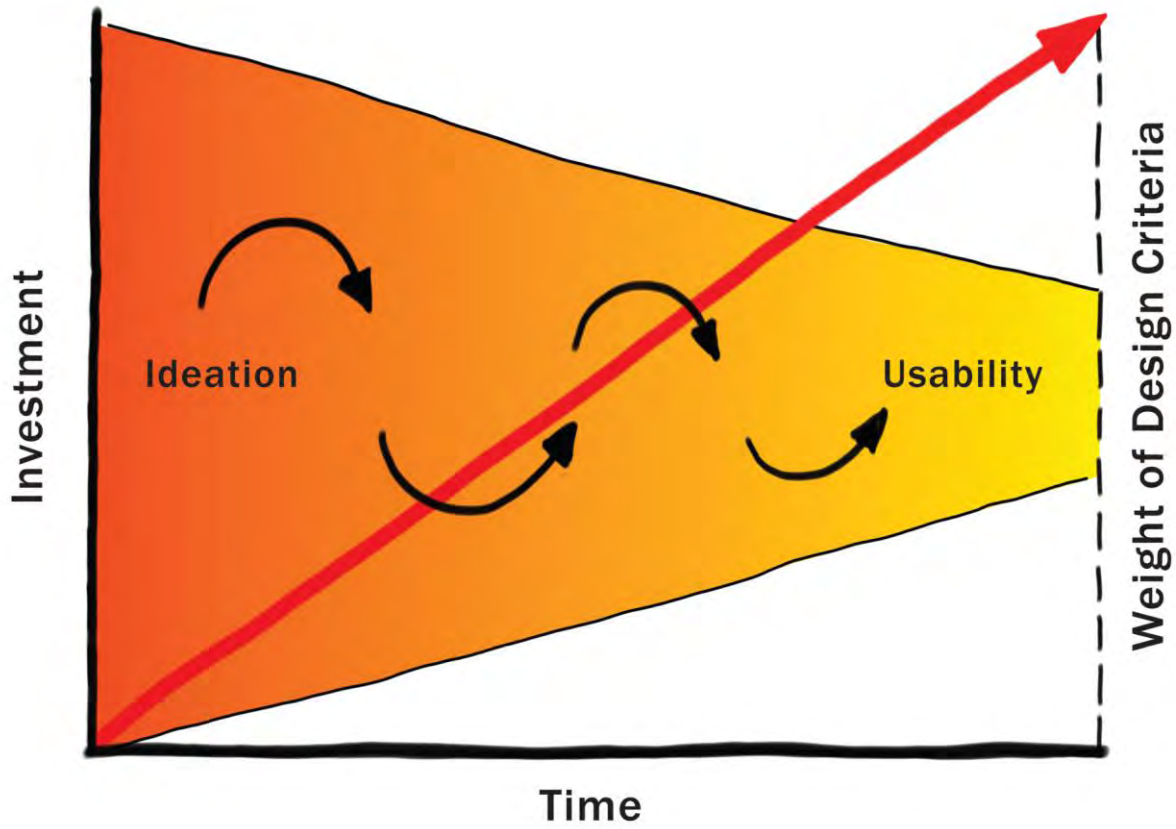


Sketching the Mouse



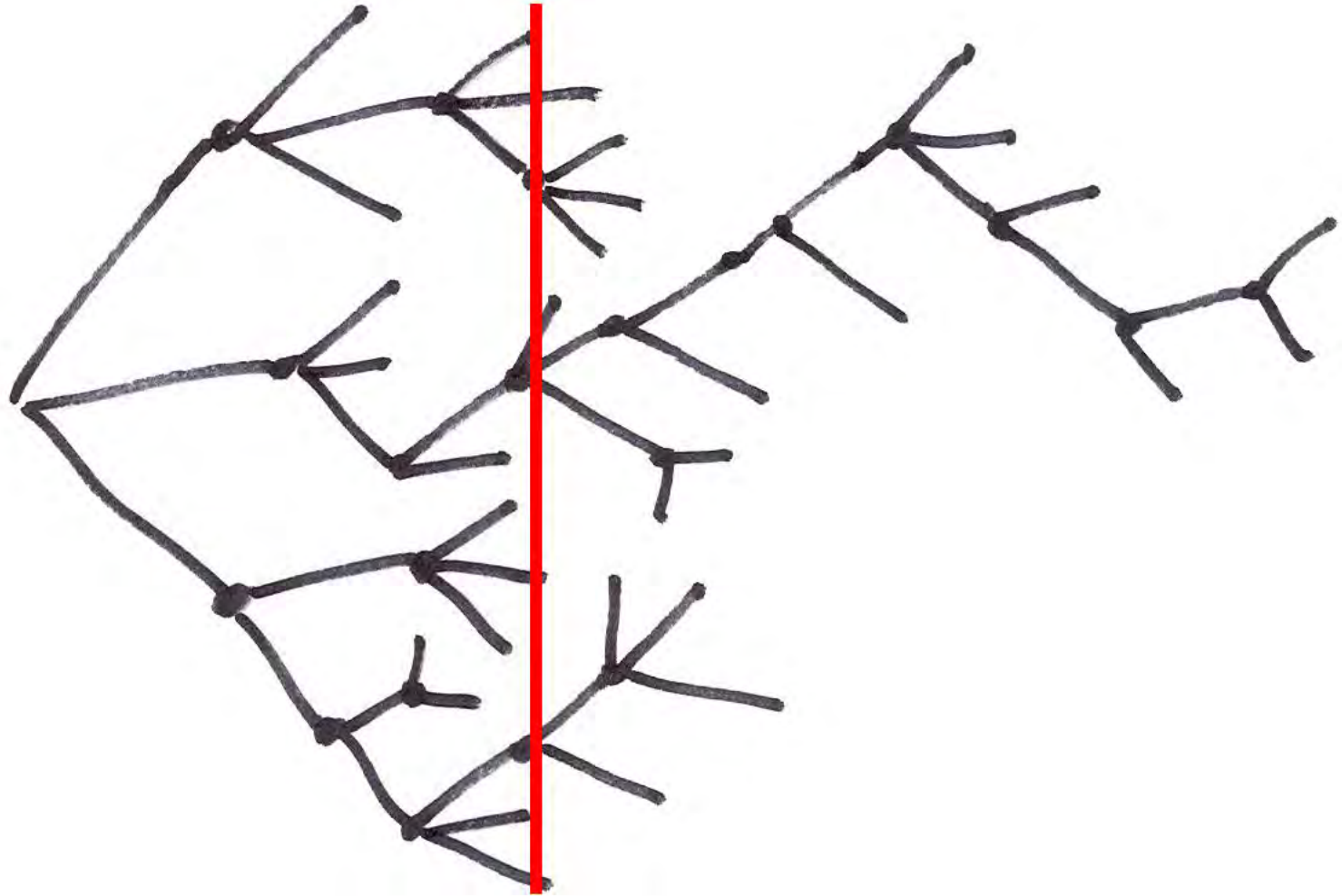
Sketching the Mouse



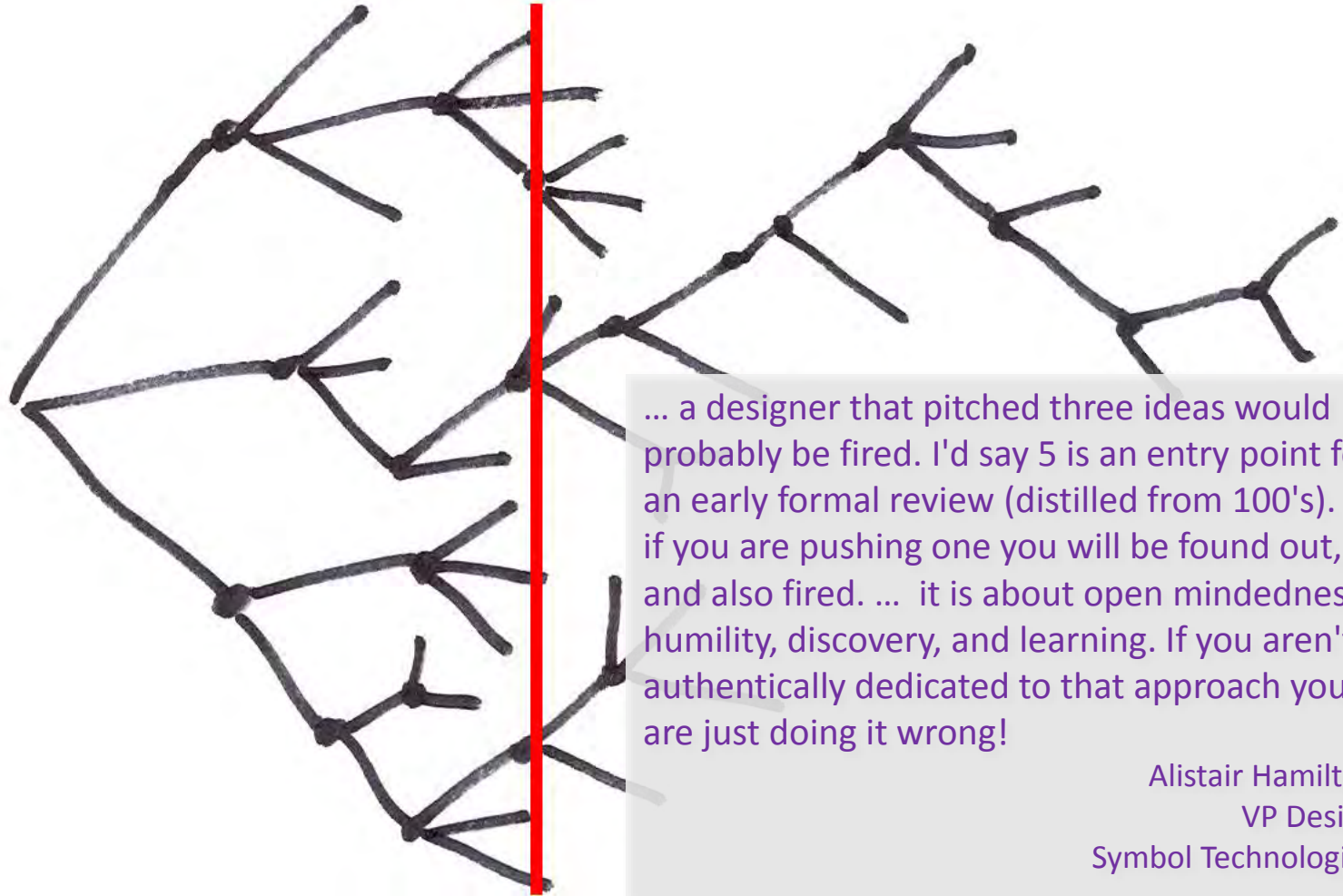


-  Sketch
-  Prototype

Exploration of Alternatives

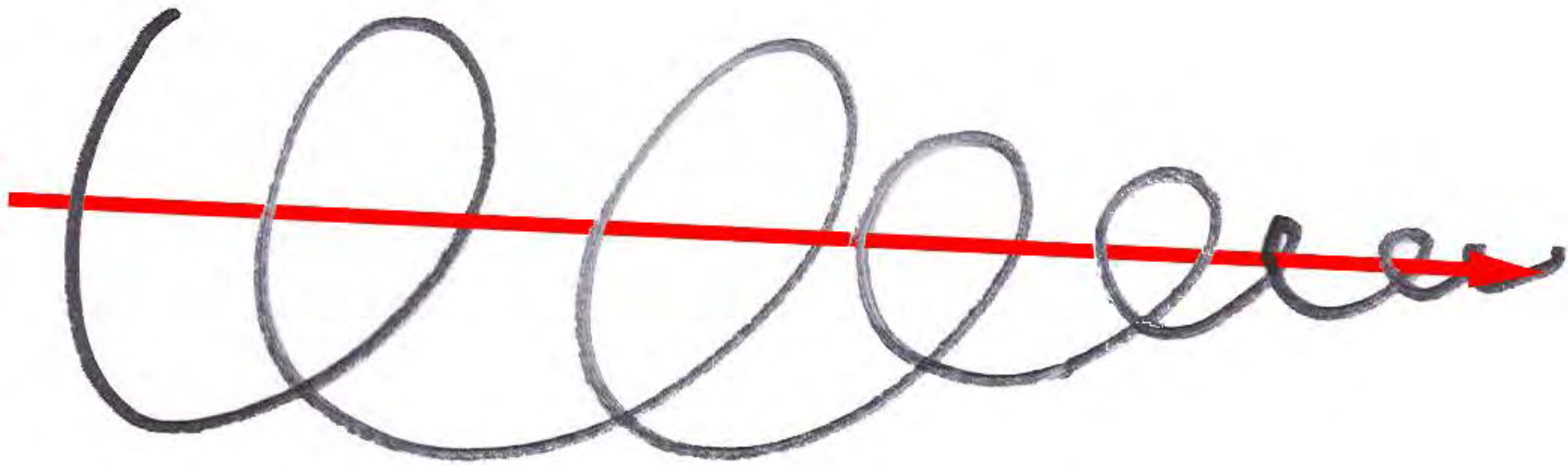


Exploration of Alternatives



Alistair Hamilton
VP Design
Symbol Technologies

The Converging Path



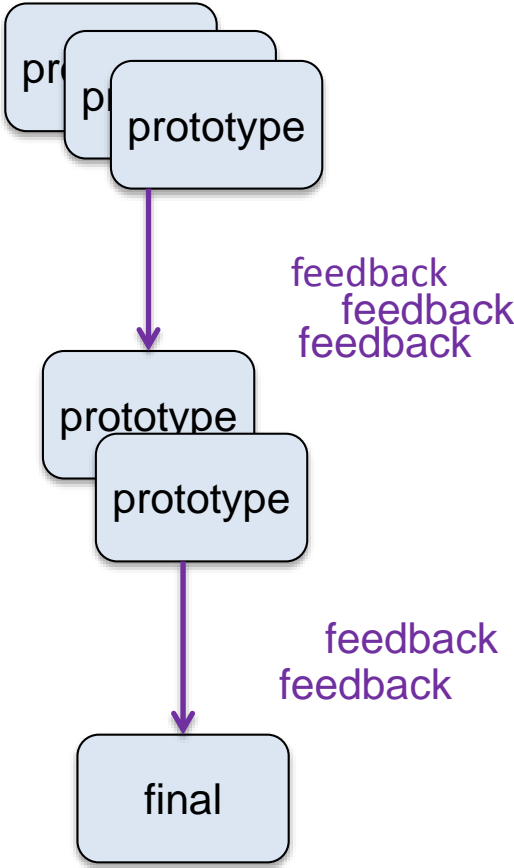
Some Evidence

Task:

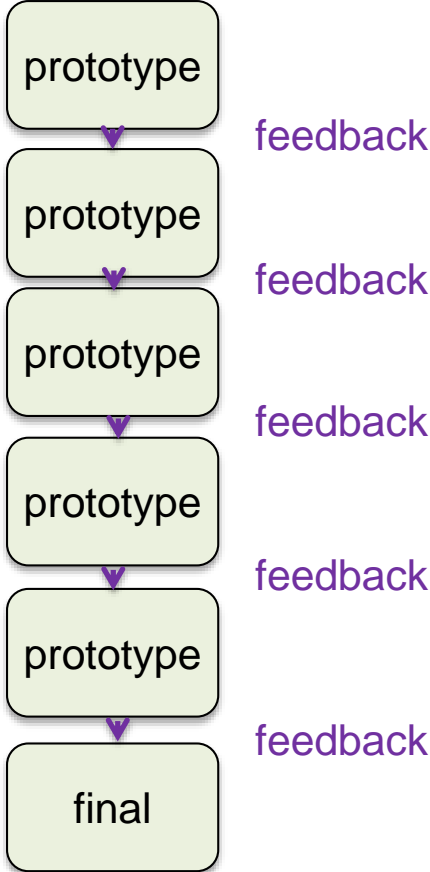
Create a web banner ad for Ambidextrous magazine.



Feedback in Parallel or Serial



Parallel condition



Serial condition

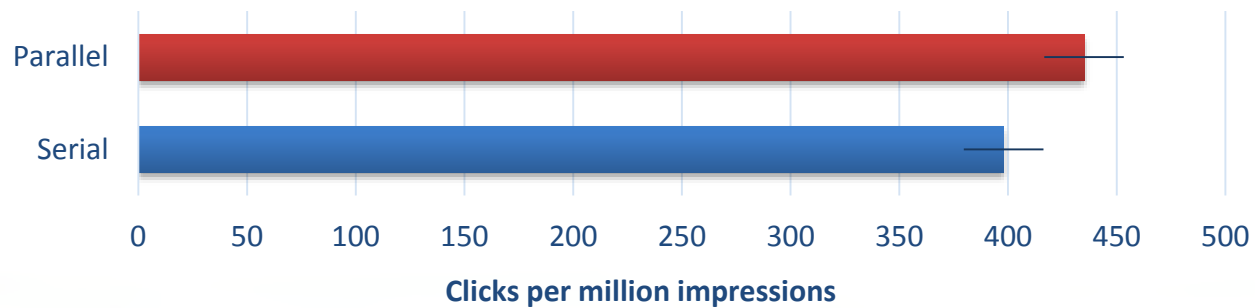
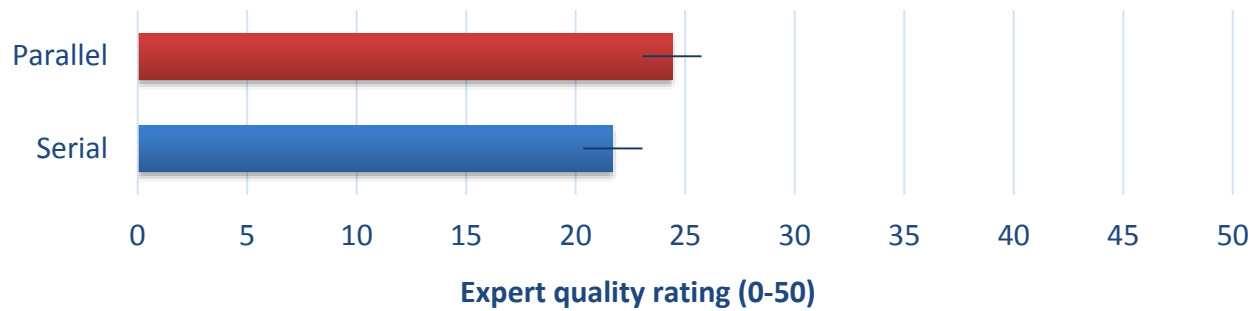
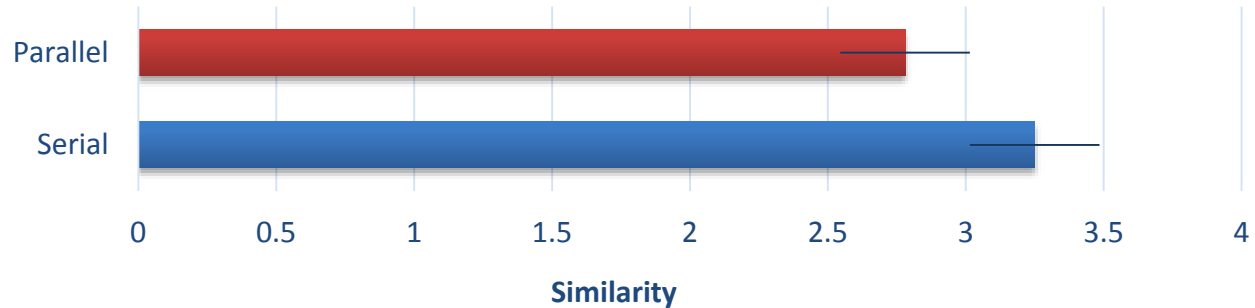
Procedure

serial
prototyping
condition

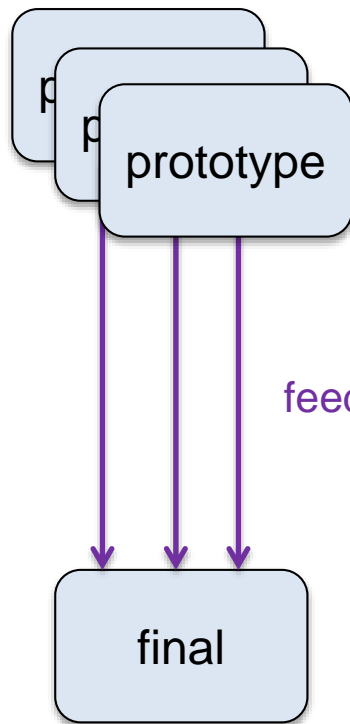
parallel
prototyping
condition



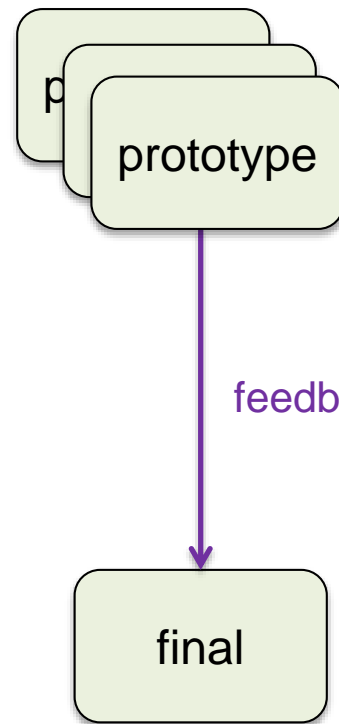
Parallel: more diverse, better, more clicks



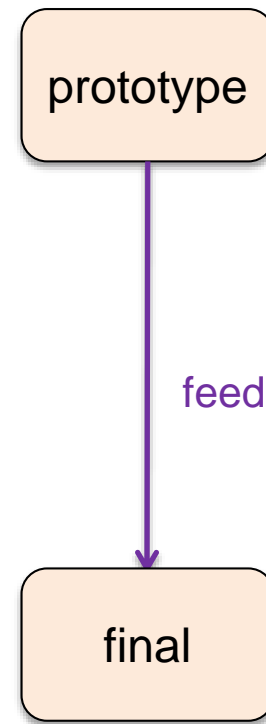
Share one or share your best?



*Share multiple
condition*

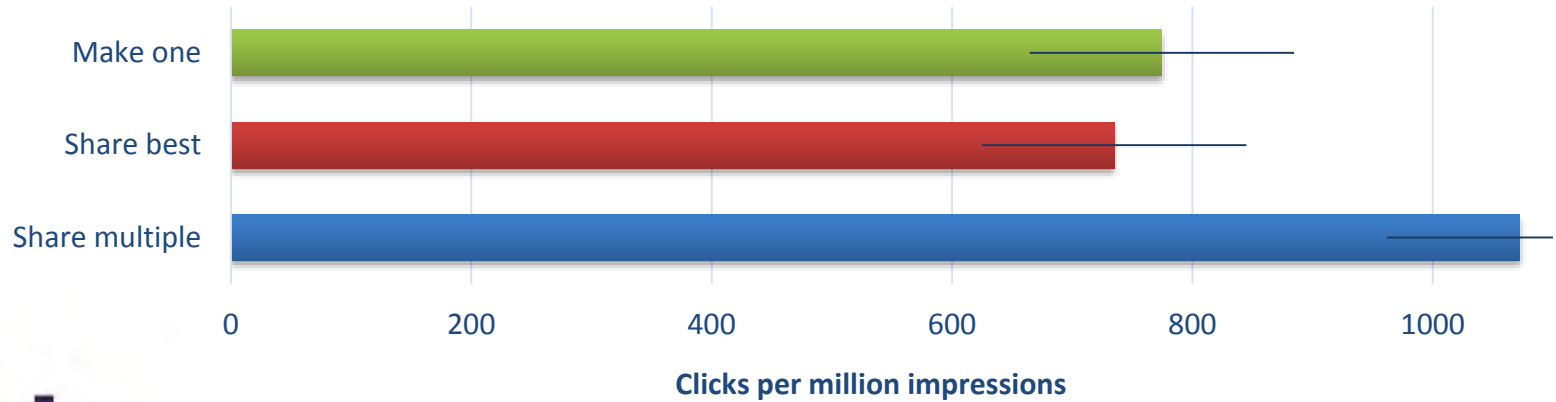
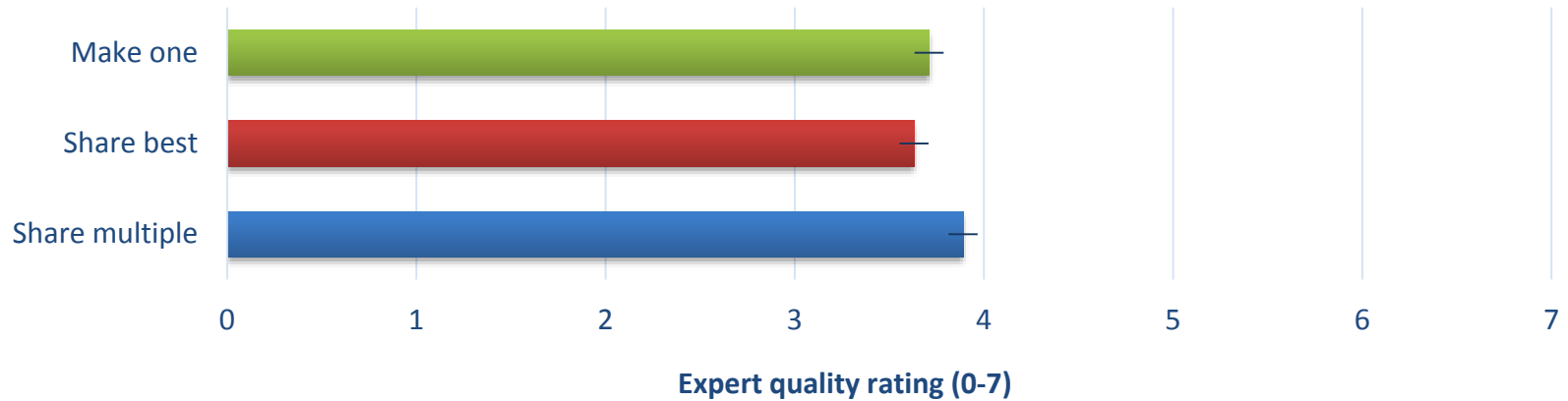


*Share best
condition*

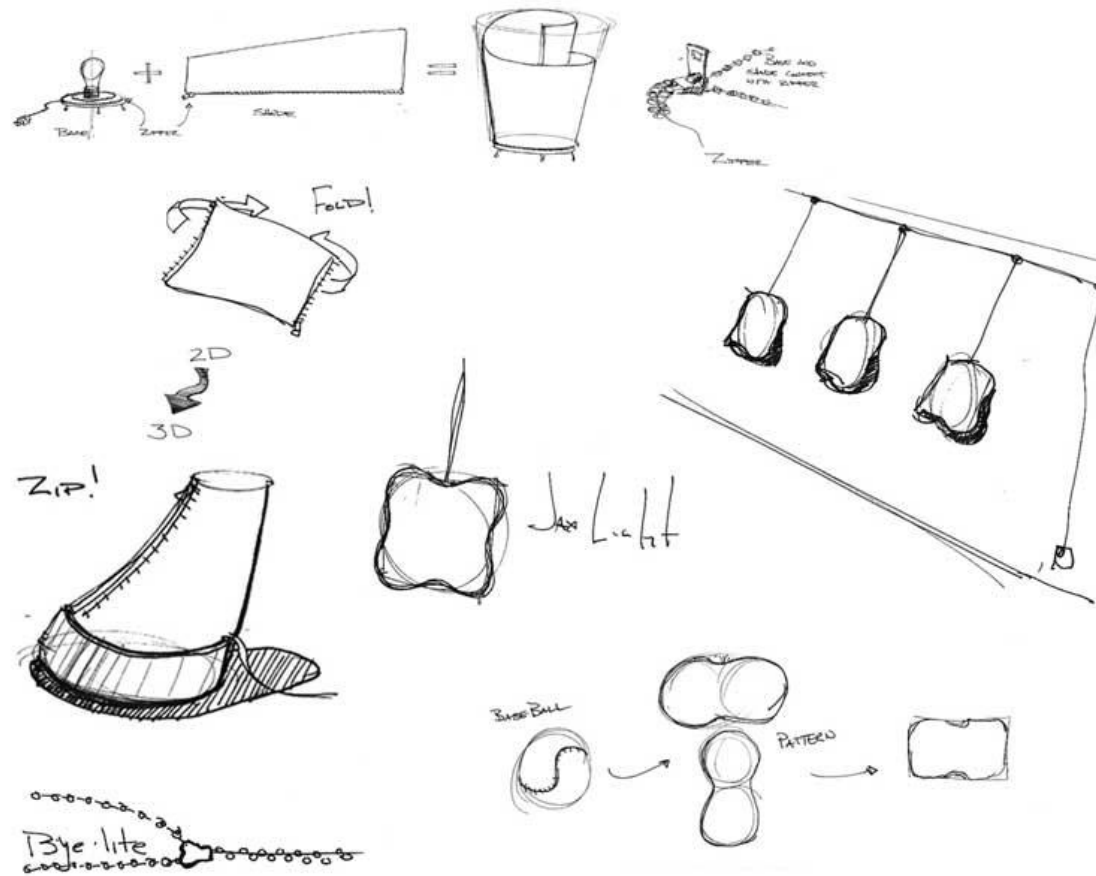


*Make one
condition*

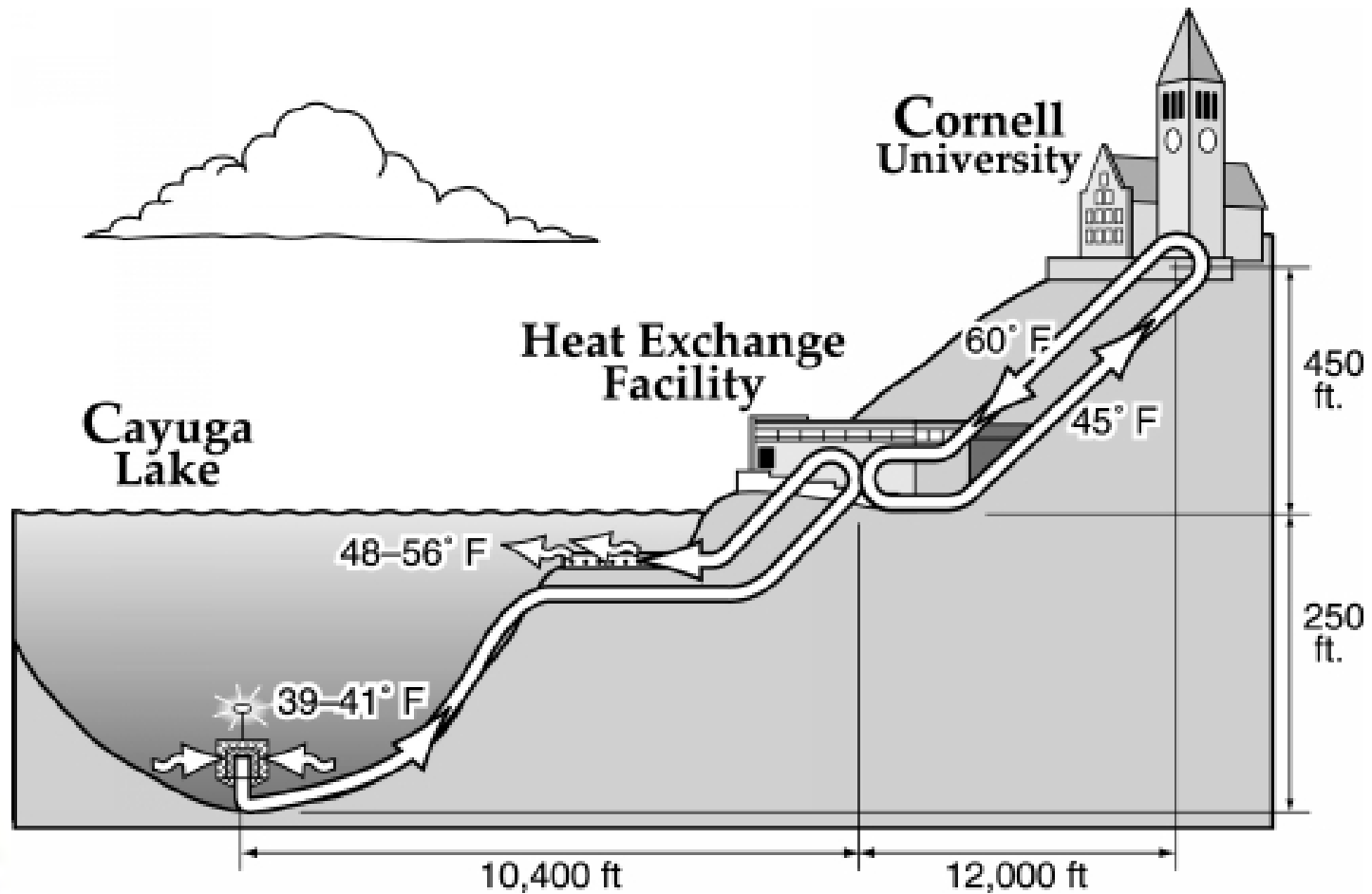
share multiple: better, more clicks



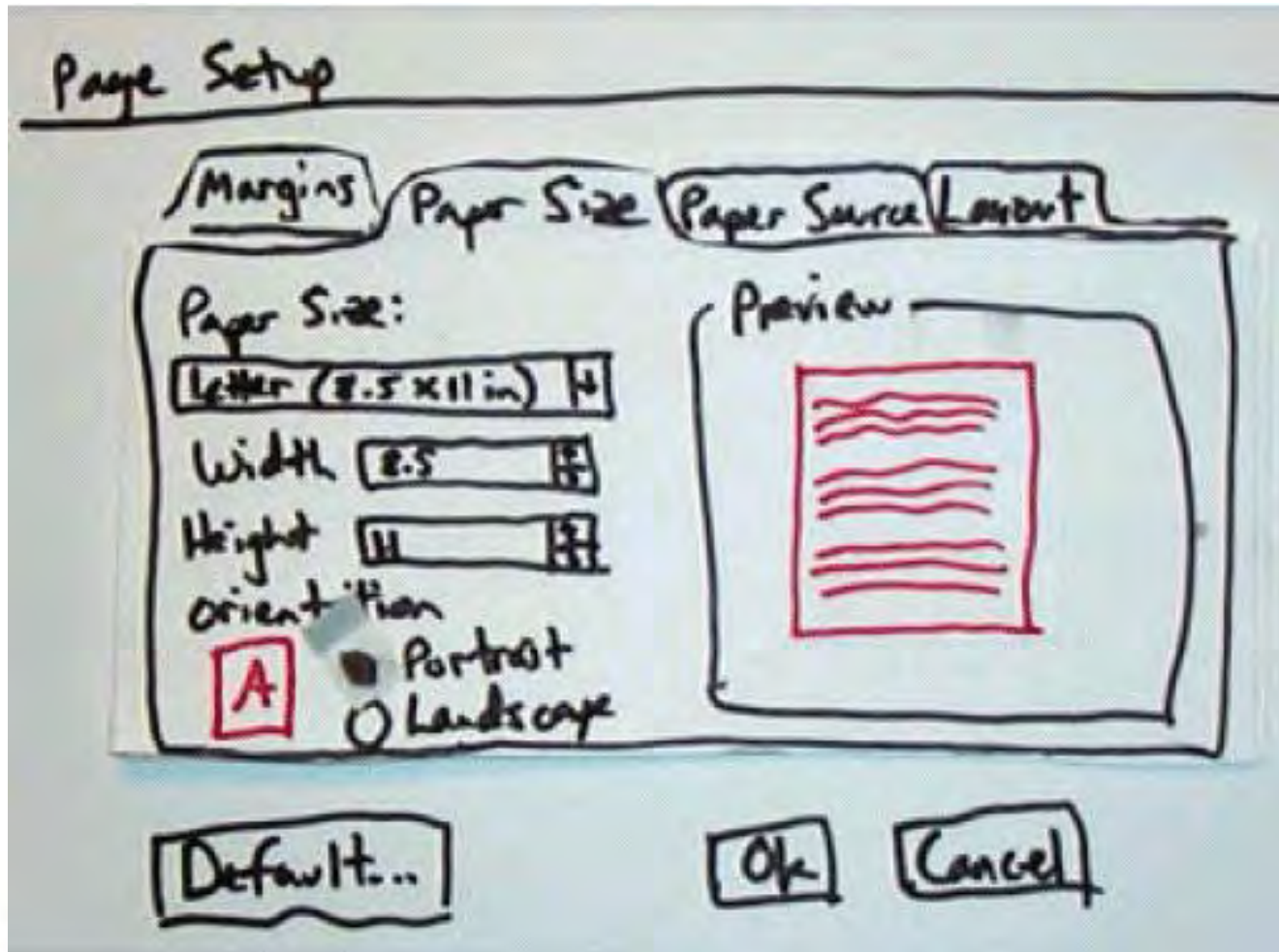
Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Learn

Look

Ask

Try

Quick-and-Dirty Prototyping

HOW: Using any materials available, quickly assemble possible forms or interactions for evaluation.

WHY: This is a good way to communicate a concept to the team and evaluate how to refine the design.

IDEO team members designing a shopping device quickly prototyped various concepts to evaluate qualities like weight, size, and orientation.

Is this a sketch? Why or why not?



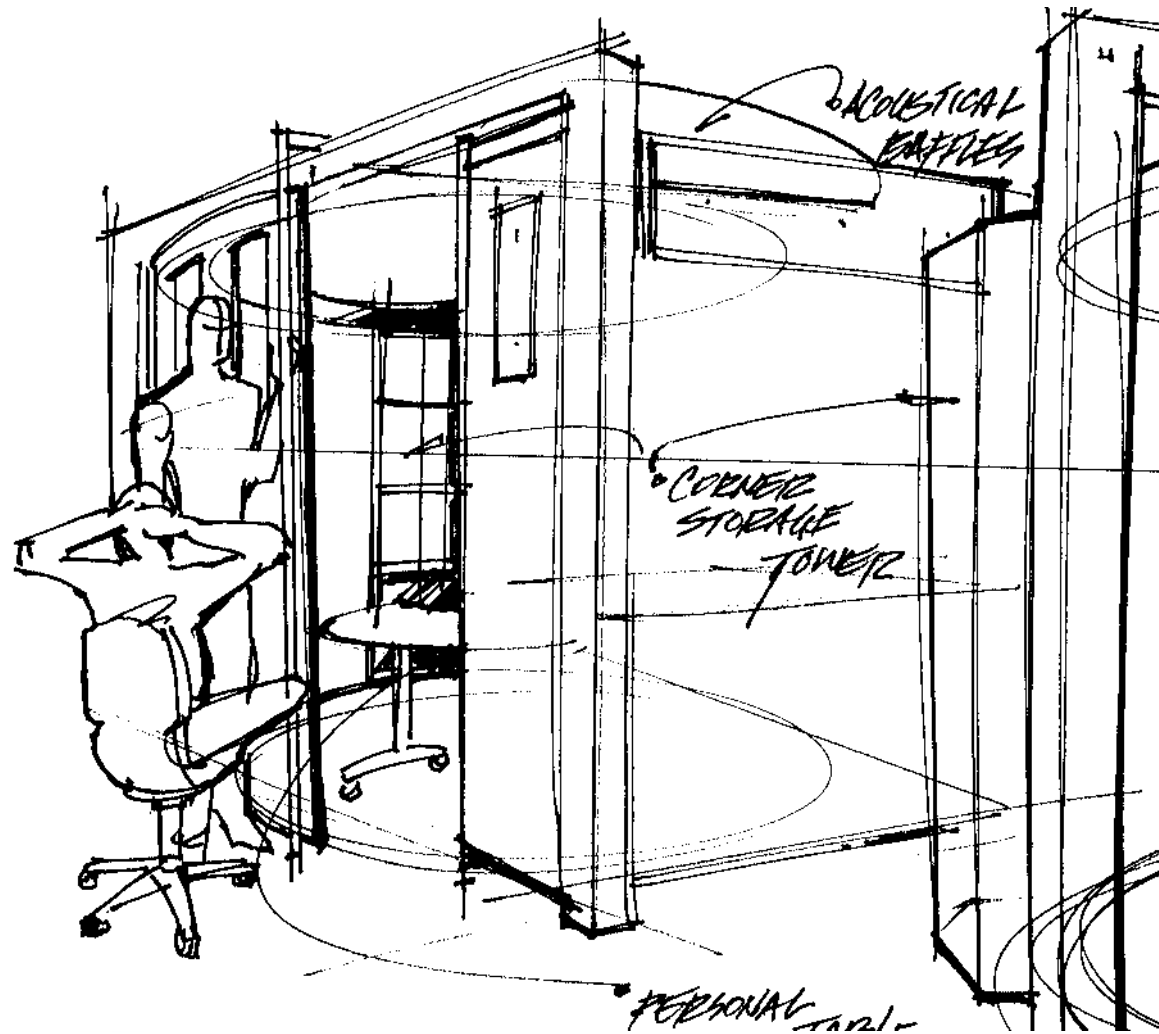
Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



Is this a sketch? Why or why not?



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 07:
Design Diamond

James Fogarty
Daniel Epstein
Brad Jacobson
King Xia

Tuesday/Thursday
10:30 to 11:50
MOR 234

