

Design Exploration

Prof. James A. Landay
Computer Science Department
Stanford University

Autumn 2023

October 11, 2023

** slides marked Buxton are courtesy of Bill Buxton, from his talk "Why I Love the iPod, iPhone, Wii and Google", remix uk, 18-19 Sept. 2008, Brighton*

*** values slides based on slides from Dr. Diana Acosta-Navas, Embedded EthiCS Fellow, McCoy Family Center for Ethics in Society - Human-Centered AI*

Hall of Fame or Shame?



Just getting too many emails? Sign up
for Lamps Plus texts!

[Sign Up for Texts >](#)

Lamps Plus

Unsubscribe to email confirmation

As described by former student Kevin Fox @kfury
(designer of the original gmail)

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Lamps Plus

Unsubscribe to email confirmation

Good

- simple & direct text
- a confirmation....

Bad

- I don't want your info & you suggest to bug me in an even more invasive way?

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Outline

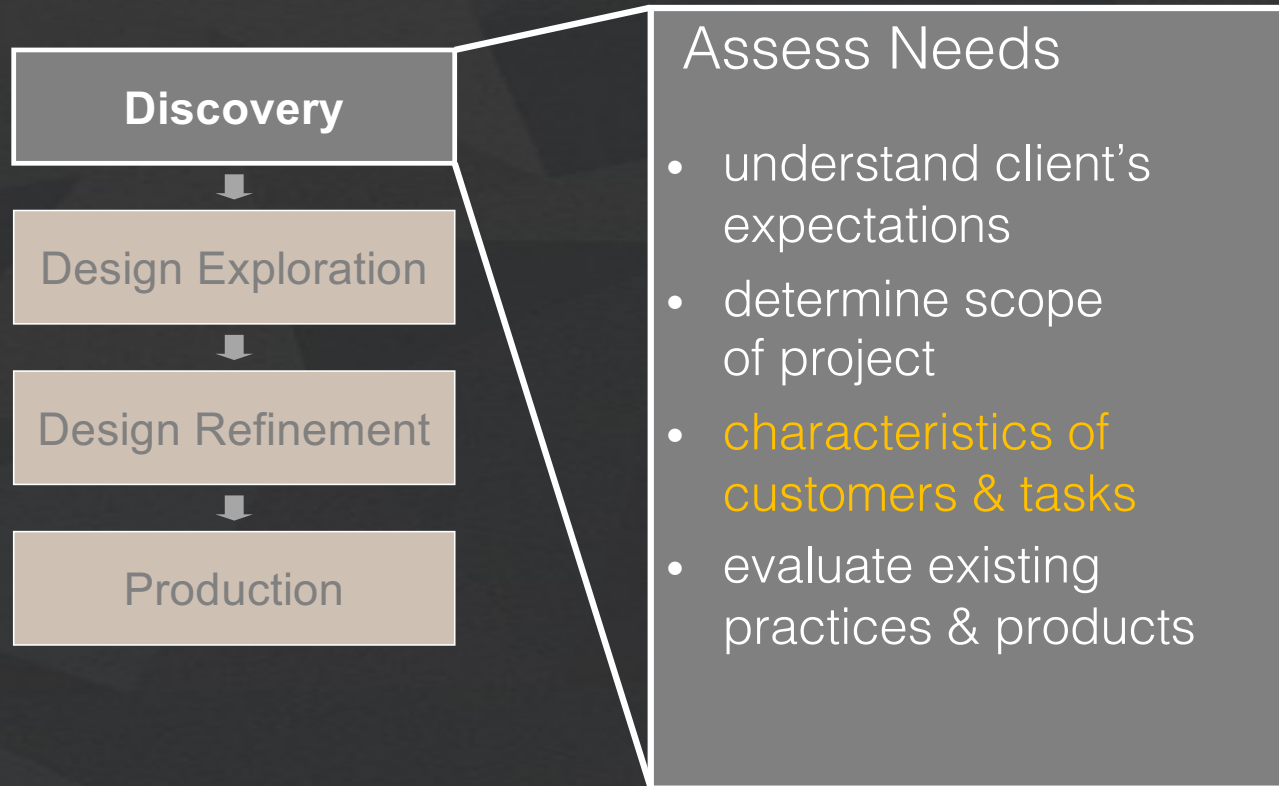
- Another good concept video
- Reviewing tasks
- Sketching to explore user experiences
- Values in design

High Fidelity Concept Videos



parqtheapp

Design Process: Discovery



Task. The structured set of ***activities*** or ***high-level actions*** required to achieve a high level user ***goal***.

what a user wants to do

Another Look at Tasks

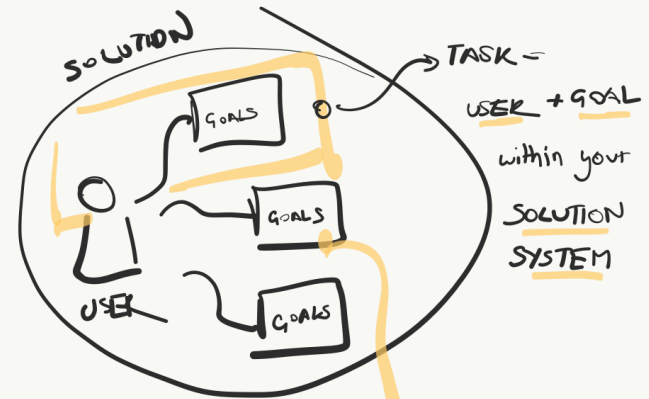
Instead of describing FEATURES in your solution, describe TASKS as (USER + GOALS)

3 COMMON MISTAKE

CONFUSING THE LENS

A lot of tasks get described as what the SYSTEM - designed by you - needs to achieve

Instead ask yourself what the USER needs to ACHIEVE



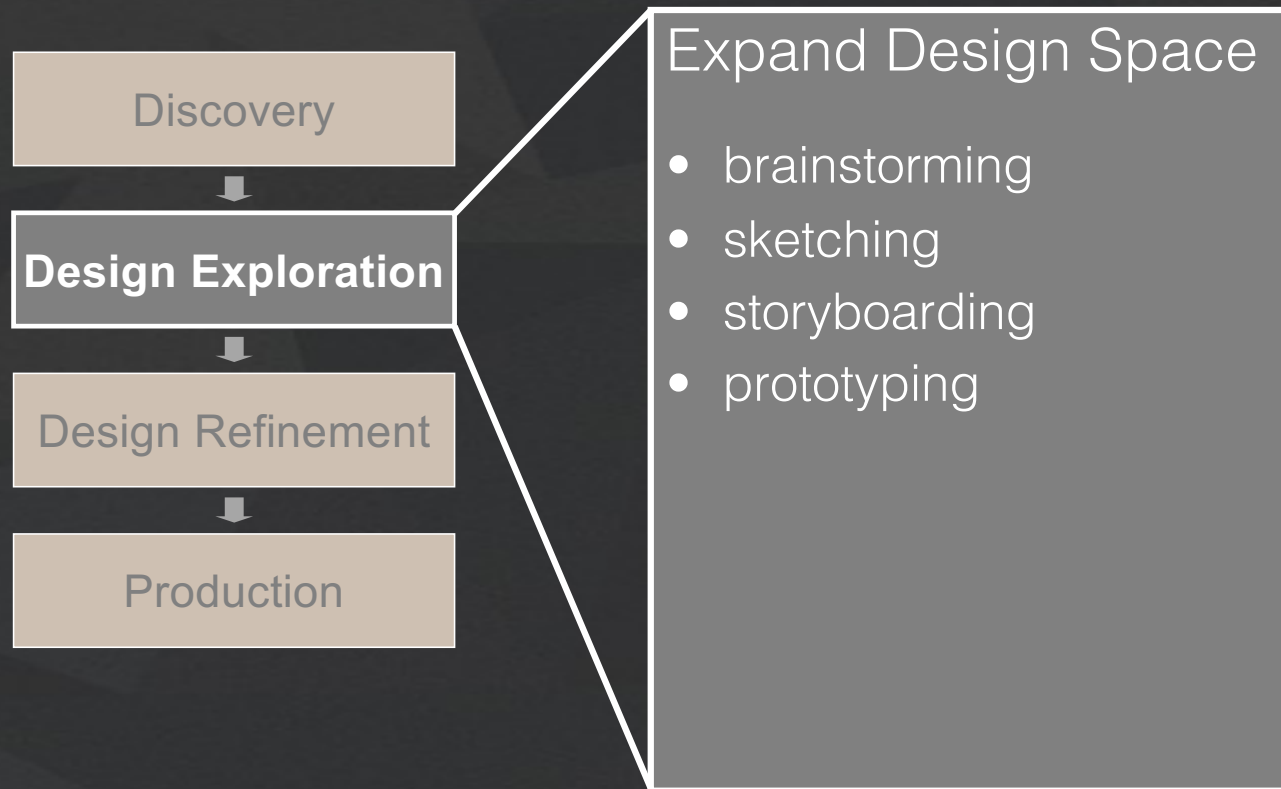
How hard is it for USER to achieve GOAL in solution space = COMPLEXITY

Sketch by Trijeet Mukhopadhyay

Example of Good Tasks: Lyft

- **Simple: Signaling for a ride**
 - this is what 90% of people are going to be using the app for, so it should be easy to accomplish and require as few steps as possible.
- **Moderate: Contacting driver to pick up a forgotten item**
 - this will happen less often, so it will require a few more steps to contact a previous driver and connect with them to coordinate the return of the item (because the UI is designed to make the simple tasks the most accessible).
- **Complex: Become a driver for Lyft**
 - although the goal is still to make this as streamlined as possible, there are multiple levels of screenings and regulations that you have to pass. You must scan and upload documents and register with multiple parties, etc. This is a task that most people will not be doing.

Design Process: Exploration



Iteration

At every stage!

Design

Prototype

Sketch
Paper
Video
Tool
Program



Evaluate

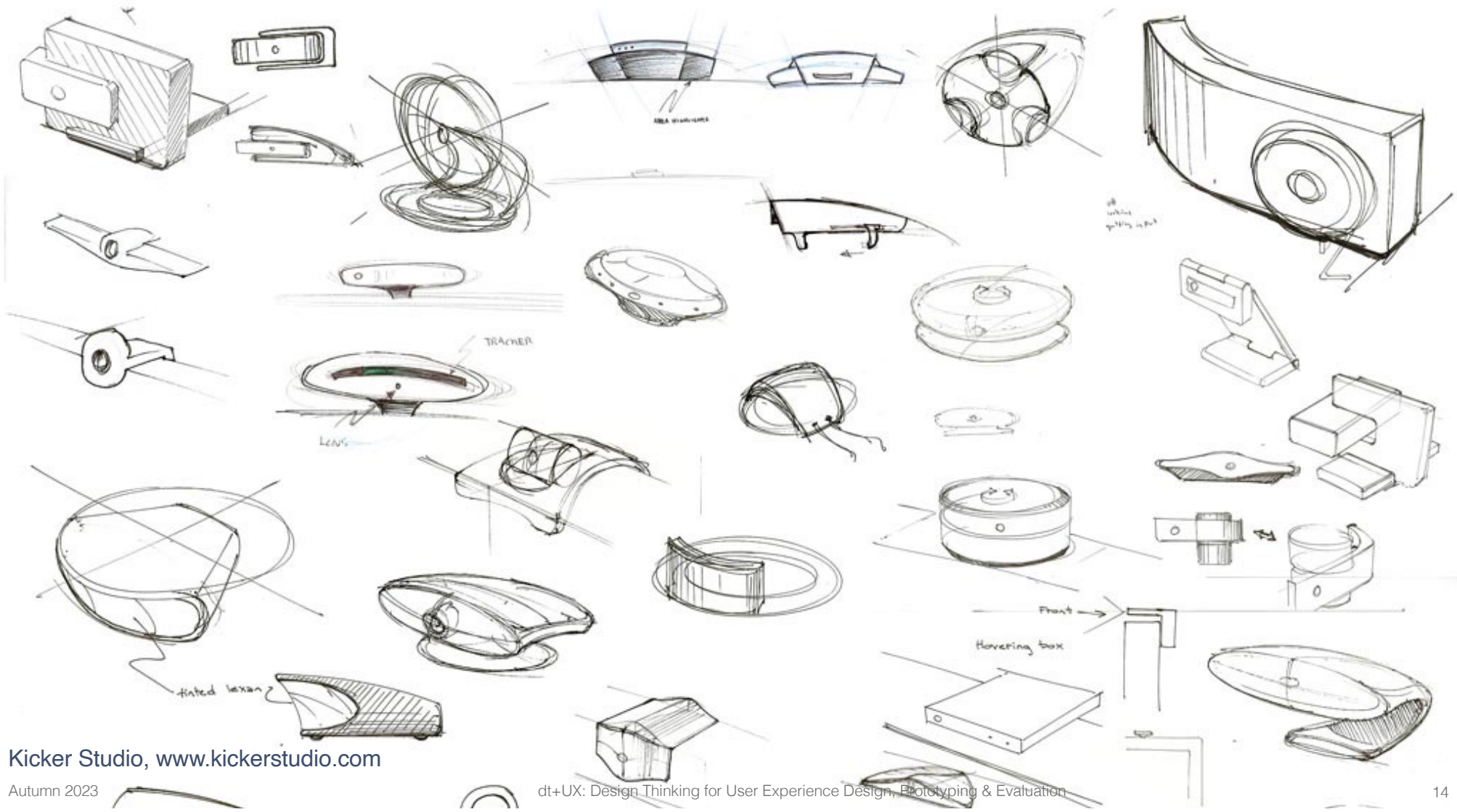
Gut
Crit
Expert Eval
Lo-fi Test
User Study

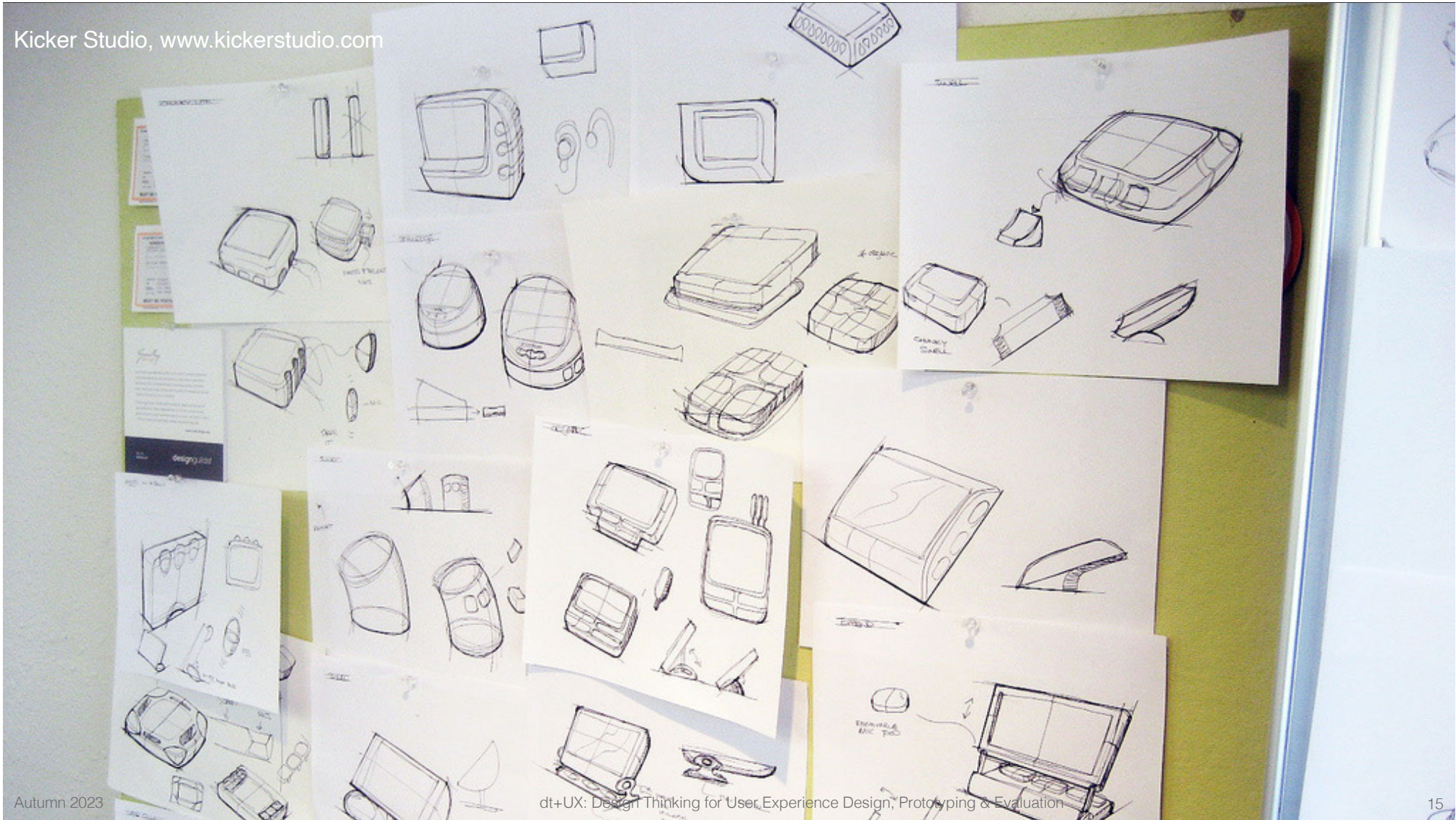
Sketching: A Quintessential Activity of Design



* Courtesy Bill Buxton

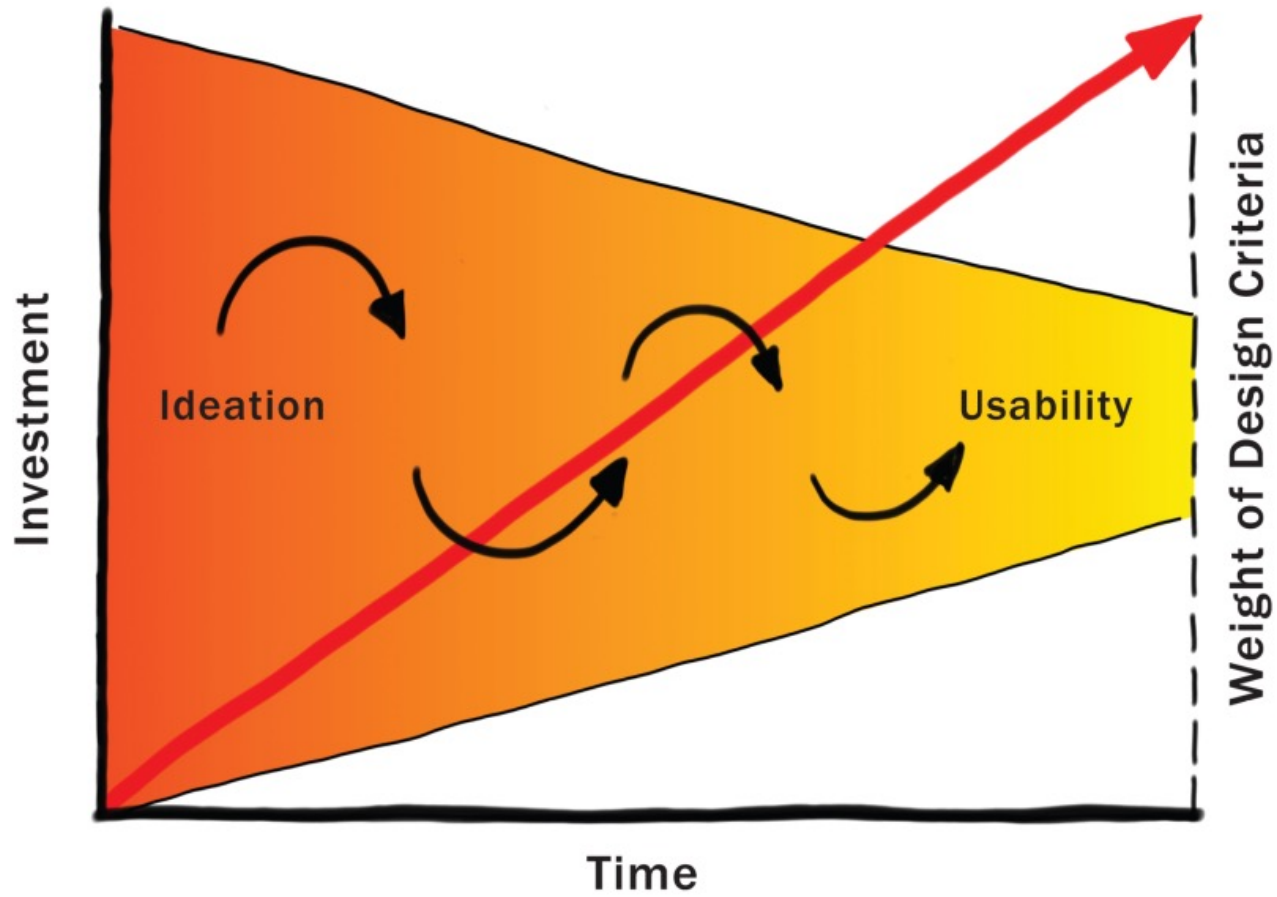
DES 8.05







Amazon Echo Show 10



- Sketch
- Prototype

Courtesy Bill Buxton

From Sketch to Prototype

SKETCH

PROTOTYPE

EVOCATIVE → DIDACTIC

SUGGEST → DESCRIBE

difference in intent rather than in form

QUESTION → ANSWER

PROPOSE → TEST

PROVOKE → RESOLVE

TENTATIVE → SPECIFIC

NONCOMMITTAL → DEPICTION

Courtesy Bill Buxton

The Anatomy of “Sketching”

- Quick / Timely
- Inexpensive / Disposable
- Plentiful
- Clear vocabulary. You know that it is a sketch (lines extend through endpoints, ...)
- No higher resolution than required to communicate the intended purpose/concept
- Resolution doesn't suggest a degree of refinement of concept that exceeds actual state
- Ambiguous

Courtesy Bill Buxton



If you want to get the most out of a sketch, you need to leave big enough holes.

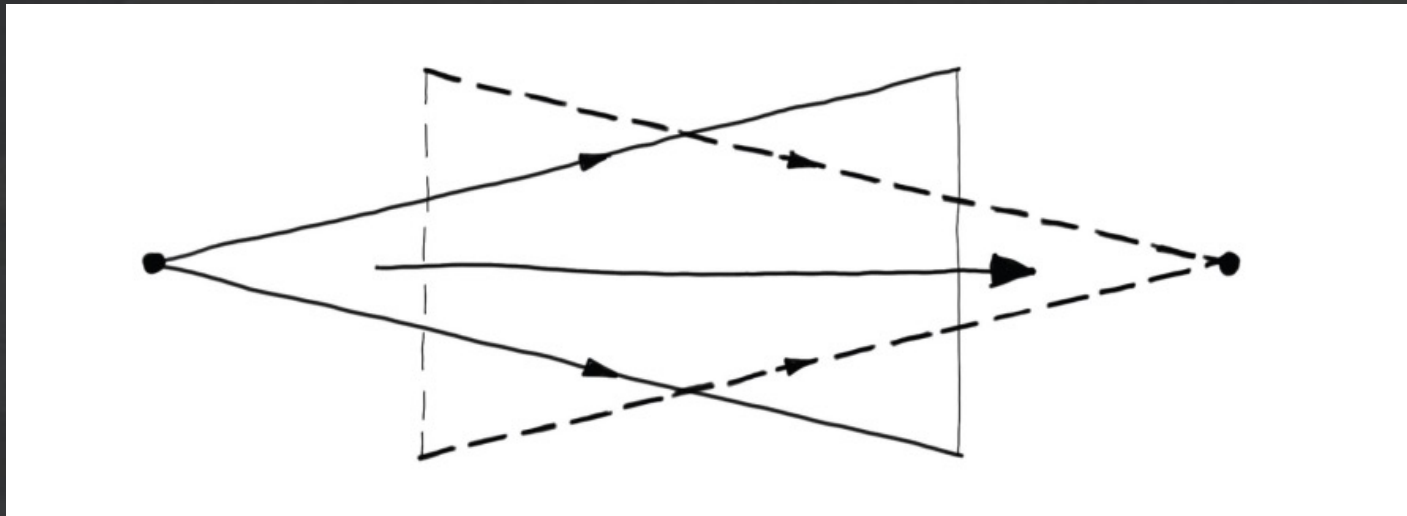
There has to be enough room for the imagination.

Courtesy Bill Buxton

Design as Choice: Generative & Reductive

Elaboration (“Flare”)

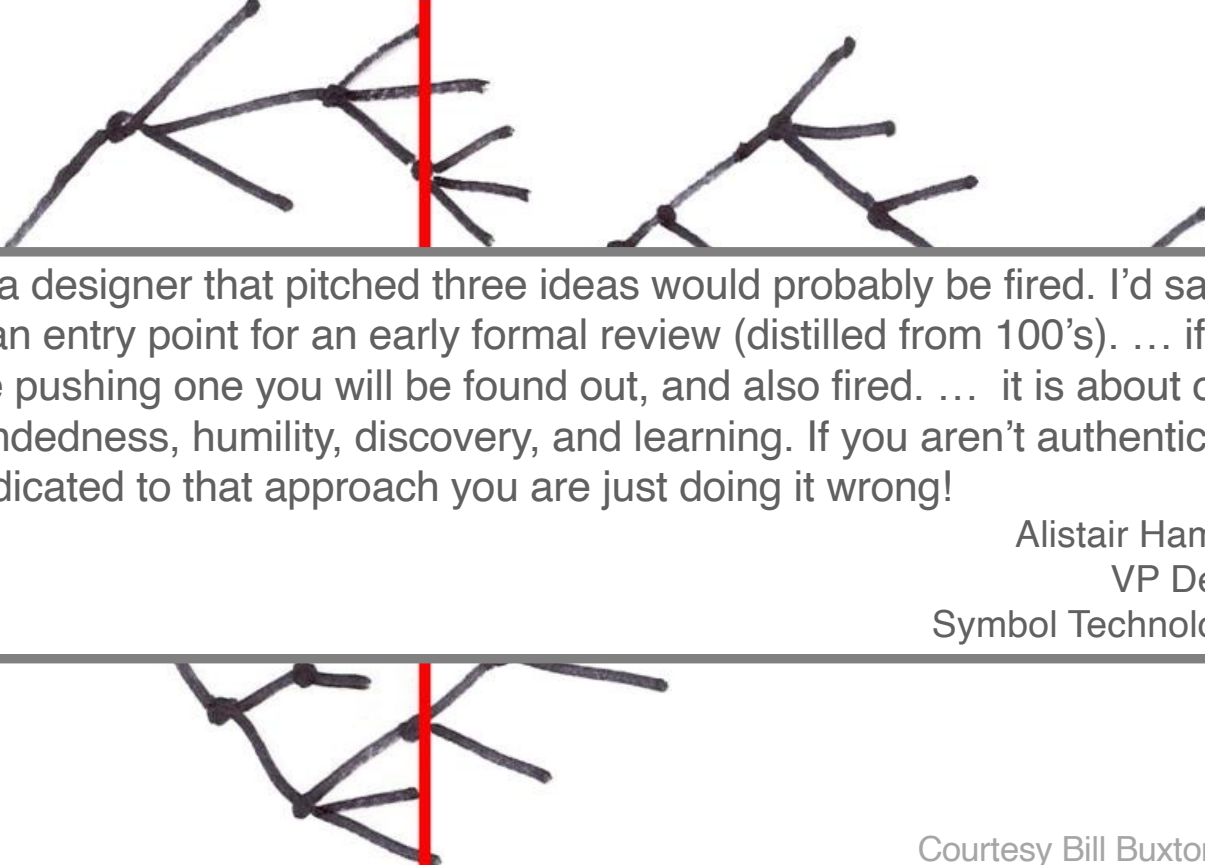
Reduction (“Focus”)



Courtesy Bill Buxton

Laseau (1980)


Exploration of Alternatives



... a designer that pitched three ideas would probably be fired. I'd say 5 is an entry point for an early formal review (distilled from 100's). ... if you are pushing one you will be found out, and also fired. ... it is about open mindedness, humility, discovery, and learning. If you aren't authentically dedicated to that approach you are just doing it wrong!

Alistair Hamilton
VP Design
Symbol Technologies

Exploration of Alternatives



People on a design team must be as happy to be wrong as right. If their ideas hold up under strong (but fair) criticism, then great, they can proceed with confidence. If their ideas are rejected with good rationale, then they have learned something.

...

There are no dumb questions. There are no ideas too crazy to consider. Get it on the table, even if you are playing around. It may lead to something.

Bill Buxton
Sketching User Experiences
pg. 147-149

Exploration of Alternatives



design rationale for decisions is key

Exploration of Alternatives



diverse teams make this work better

Which Group Produced the Best Ceramic Pots



Photograph: Graeme Robertson/*The Guardian*
<https://www.theguardian.com/artanddesign/2019/aug/25/throws-of-passion-how-pottery-became-a-refuge-from-our-hyperconnected-times>

Group A

- graded by their highest quality pot

Group B

- graded by total number of pots

Design

What does the customer want to buy?



Experience Design

A photograph of a mountain biker wearing a helmet and a green shirt, riding through a shallow stream. The biker is leaning forward, and a large splash of water is visible behind them, creating a sense of motion and immersion. The background is a lush, green forest.

“The experience of even simple artifacts does not exist in a vacuum but, rather, in dynamic relationship with other people, places, and objects”
– Buchenau & Suri 2000

Courtesy Bill Buxton

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Experience vs. Interface Design



user experience = UI + situation + environment

CitrusMate Plus

Mighty OJ Manual Juicer

OrangeX Manual Juicer

Experience Design for a Phone App?



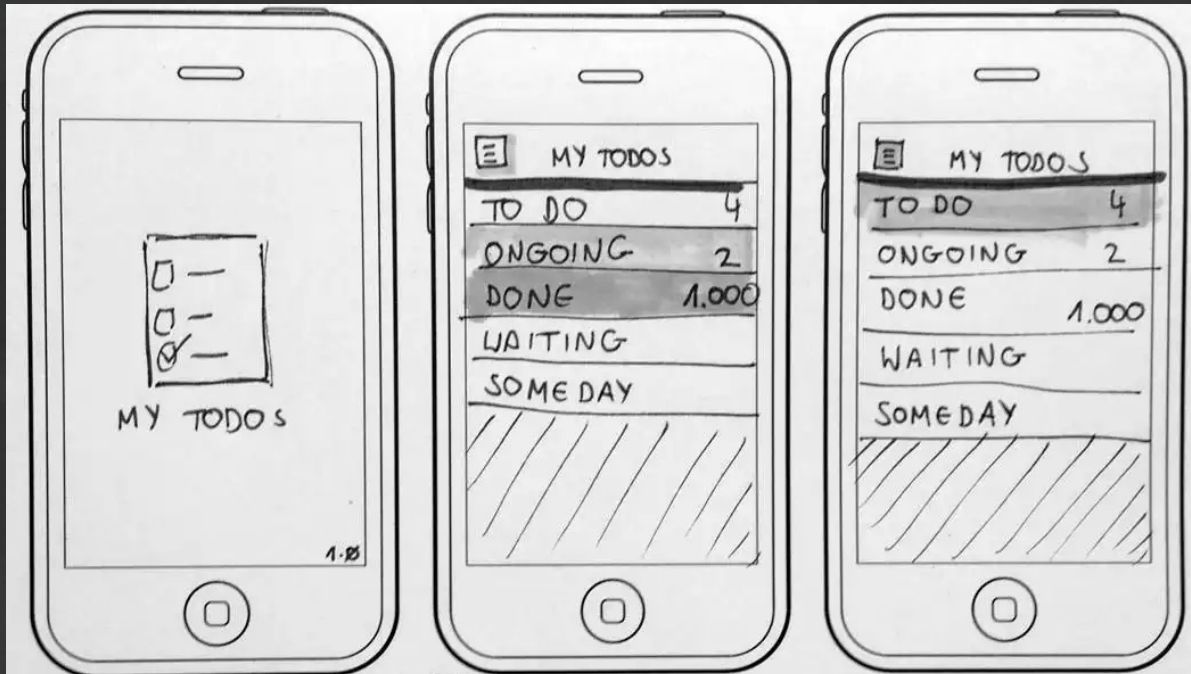
<http://www.listmeapp.com/>

- Draw my phone
- Draw my app's interface
- Draw the experience of using my app
- Which is the true object of design?

Courtesy Bill Buxton

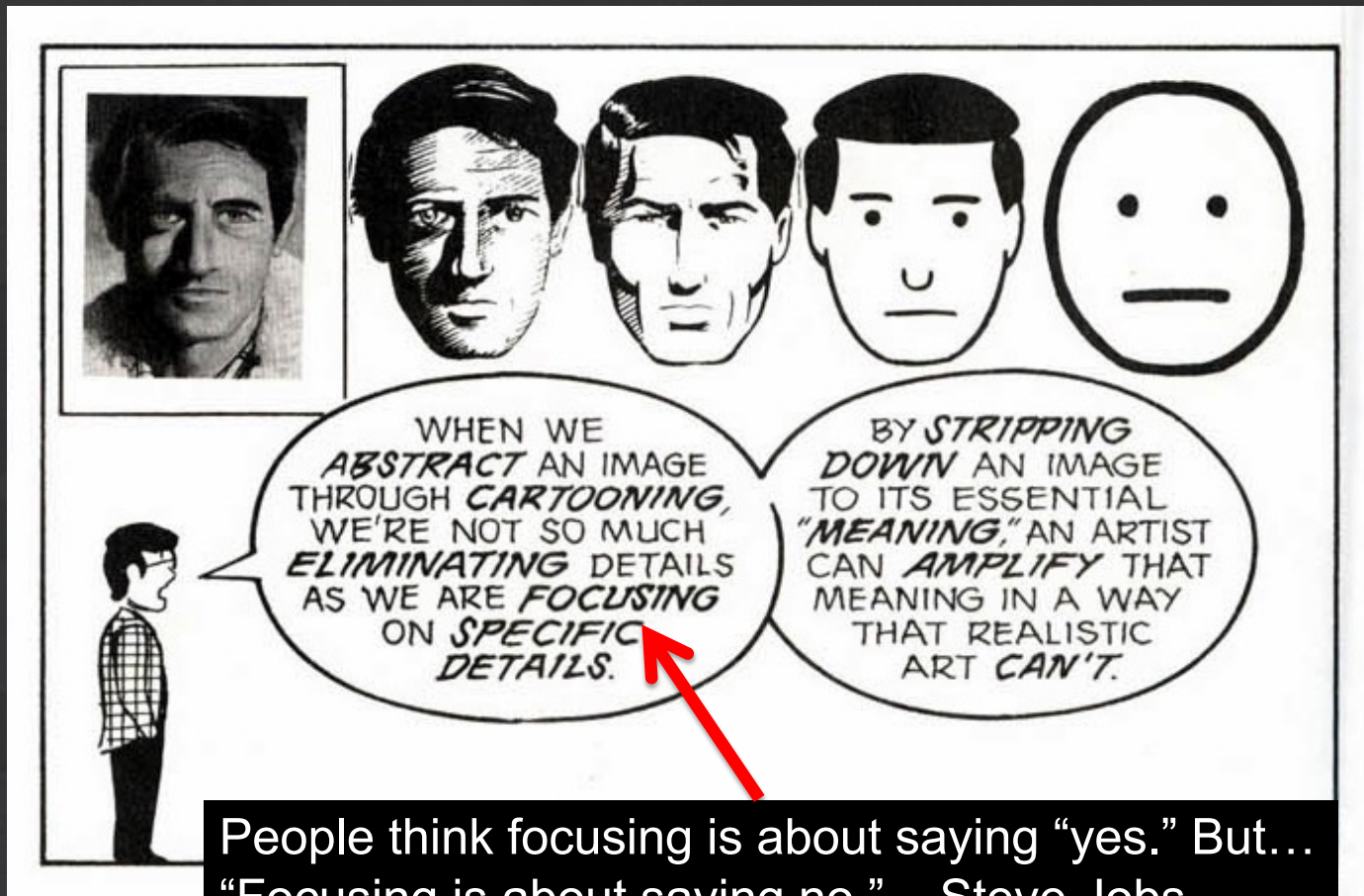
Abstract It with Minimal Detail

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

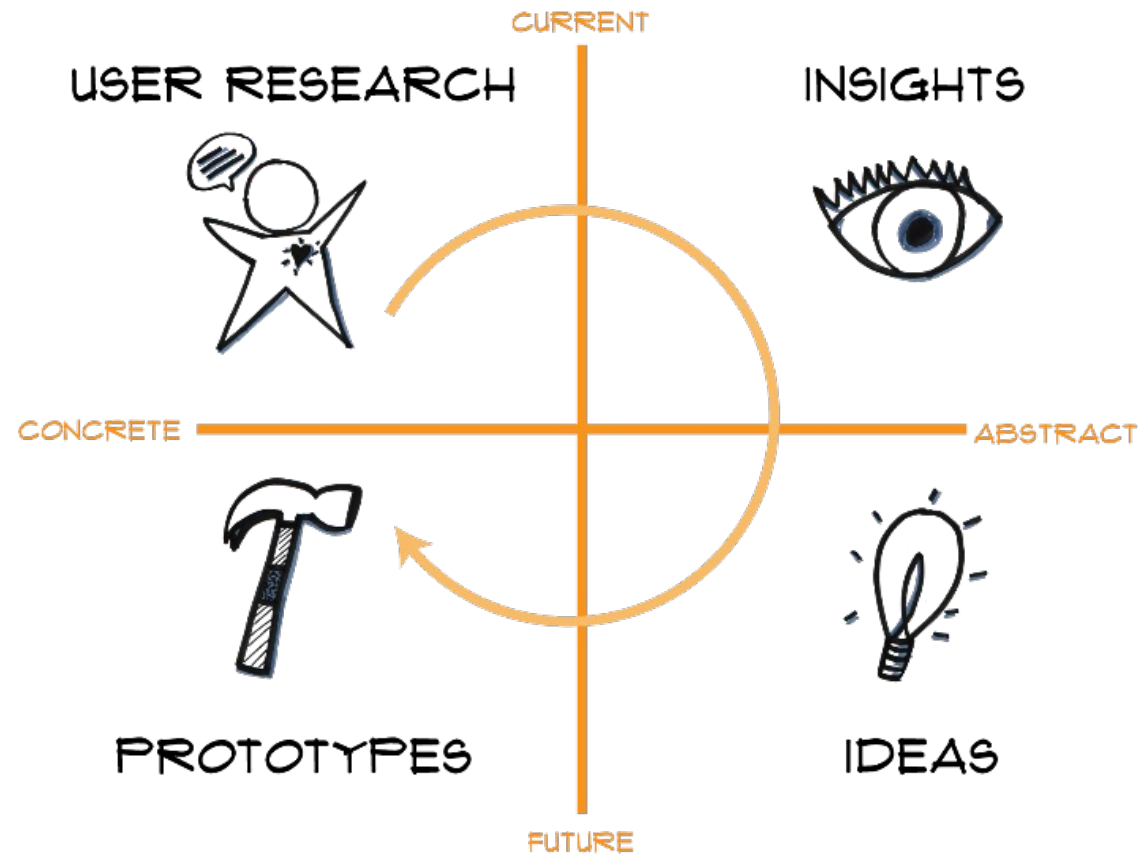


<http://www.smashingmagazine.com/2013/06/sketching-for-better-mobile-experiences/>

Scott McCloud's *Understanding Comics*



Design Thinking is Iterative



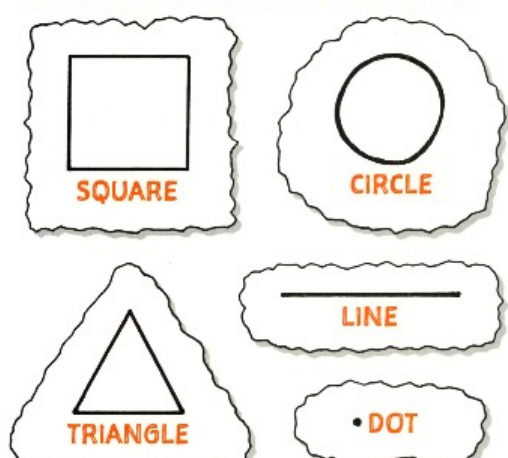
SKETCH FROM THE BASICS!

We'll practice expressing everyday objects through basic shapes! Grab a pen and a piece of paper and draw a 3 x 3 grid on your paper.


Individually spend 4 minutes drawing as many objects from your kitchen from memory using only the 5 drawing elements to the right as the base. Fill every square in the grid within the 4 minutes!

Post a picture of your grid in the slack thread at the end!

The FIVE BASIC DRAWING ELEMENTS:



The diagram illustrates five basic drawing elements, each enclosed in a decorative, scalloped border. The elements are: a square labeled 'SQUARE', a circle labeled 'CIRCLE', a triangle labeled 'TRIANGLE', a horizontal line labeled 'LINE', and a single dot labeled 'DOT'.

| | | |
|---|--|--|
|  | | |
| | | |
| | | |

Administrivia

- Grades for A1 coming out tonight at latest
- After studio this week think about/brainstorm team names (we need it for the web site – you will fill out a form due on Monday night)

Team Break

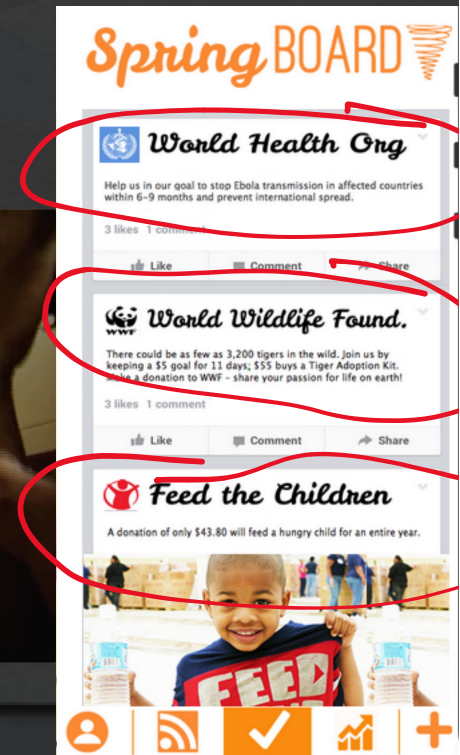
- Complete your team norms (5-10 min)
- This week's assignment (~10-15 min)
 - work on your slides
 - CA will come around and give feedback

Values & Ethics in Design

- Introduction
- Value Sensitive Design (VSD)
- Stakeholder Analysis
- Value tensions
- Further reading

Values in Design

- The artifacts we design embed values of the creators
 - whether we mean to or not...
- Example: Springboard Video (2014)



Values in Design

- The artifacts we design embed values of the creators
 - whether we mean to or not...
- Example: Springboard Video (2014)
- Chimamanda Ngozi Adichie (author) says:

“The single story creates stereotypes... not that they are untrue, but that they are incomplete. They make one story become the only story.”

“The danger of a single story”, TEDGlobal 2009

What are values?

“what is important to people in their lives, with a focus on ethics and morality”

VALUE SENSITIVE DESIGN

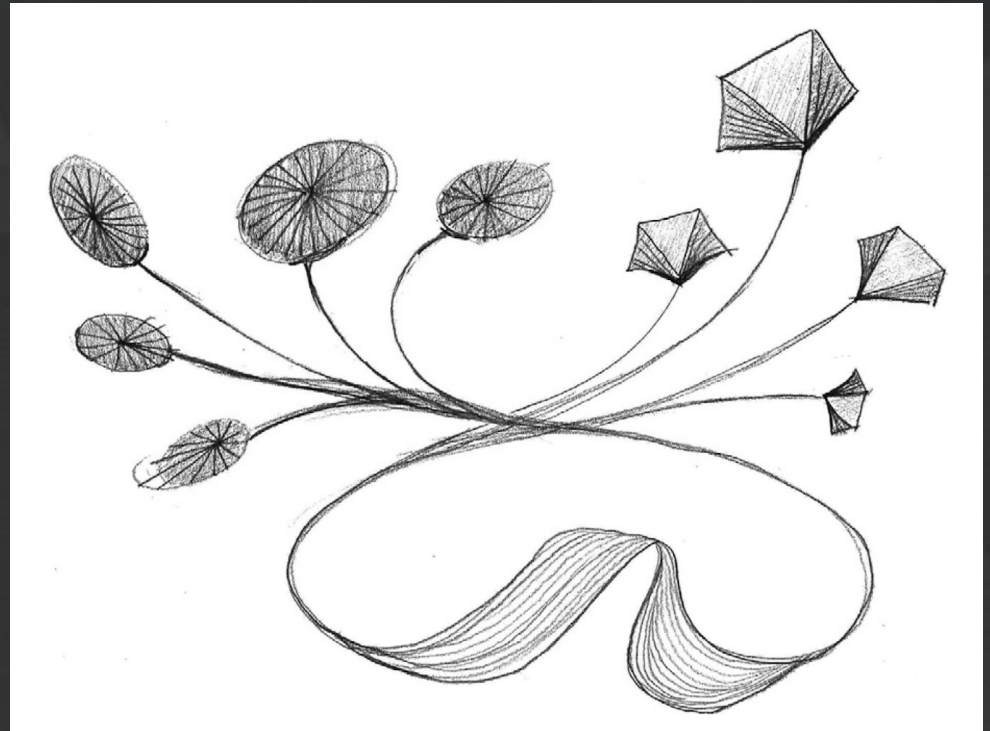
SHAPING TECHNOLOGY WITH MORAL IMAGINATION



BATYA FRIEDMAN
DAVID G. HENDRY

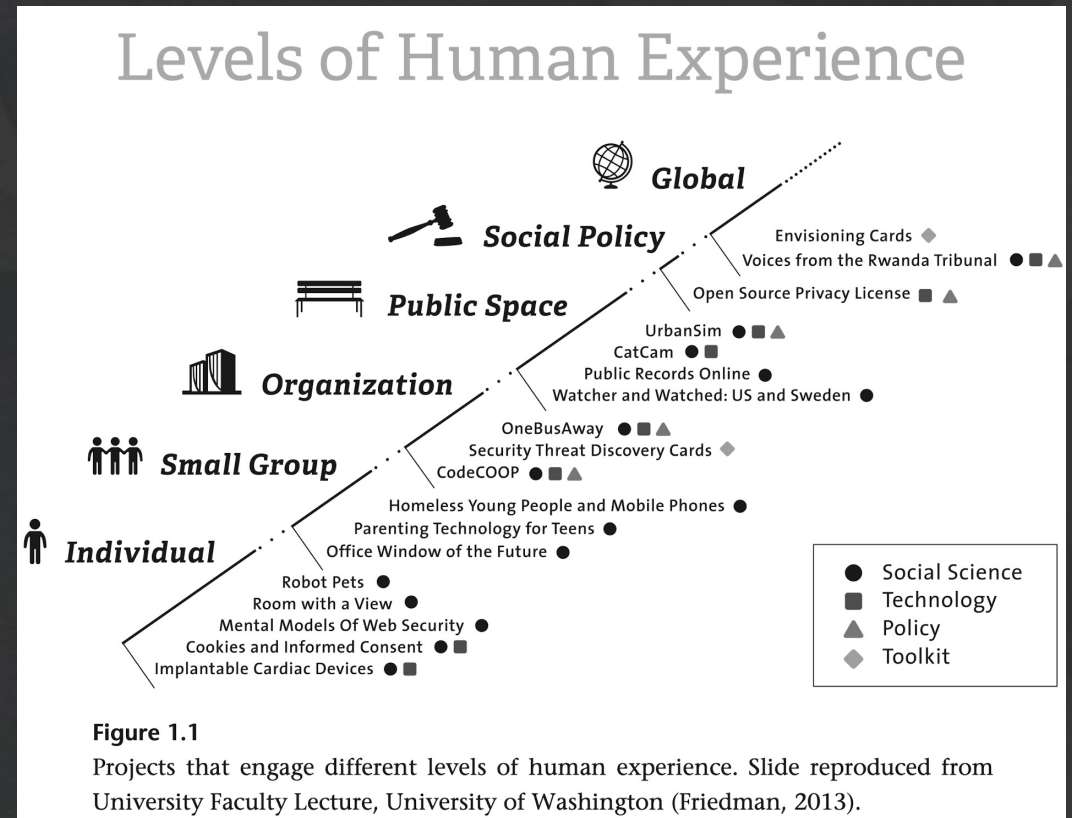
How does technology embed values?

- Humans shape the design of technology
- Technology in turn shapes human experience and society



How does technology embed values?

- Humans shape the design of technology
- Technology in turn shapes human experience and society
- This occurs at multiple scales



Stakeholder analysis

Whose values are being considered?

Direct stakeholders people interacting directly with a technology

Indirect stakeholders people who are affected by the technology, but don't interact directly with it

Stakeholder analysis

Whose values are being considered?

Direct stakeholders people interacting directly with a technology

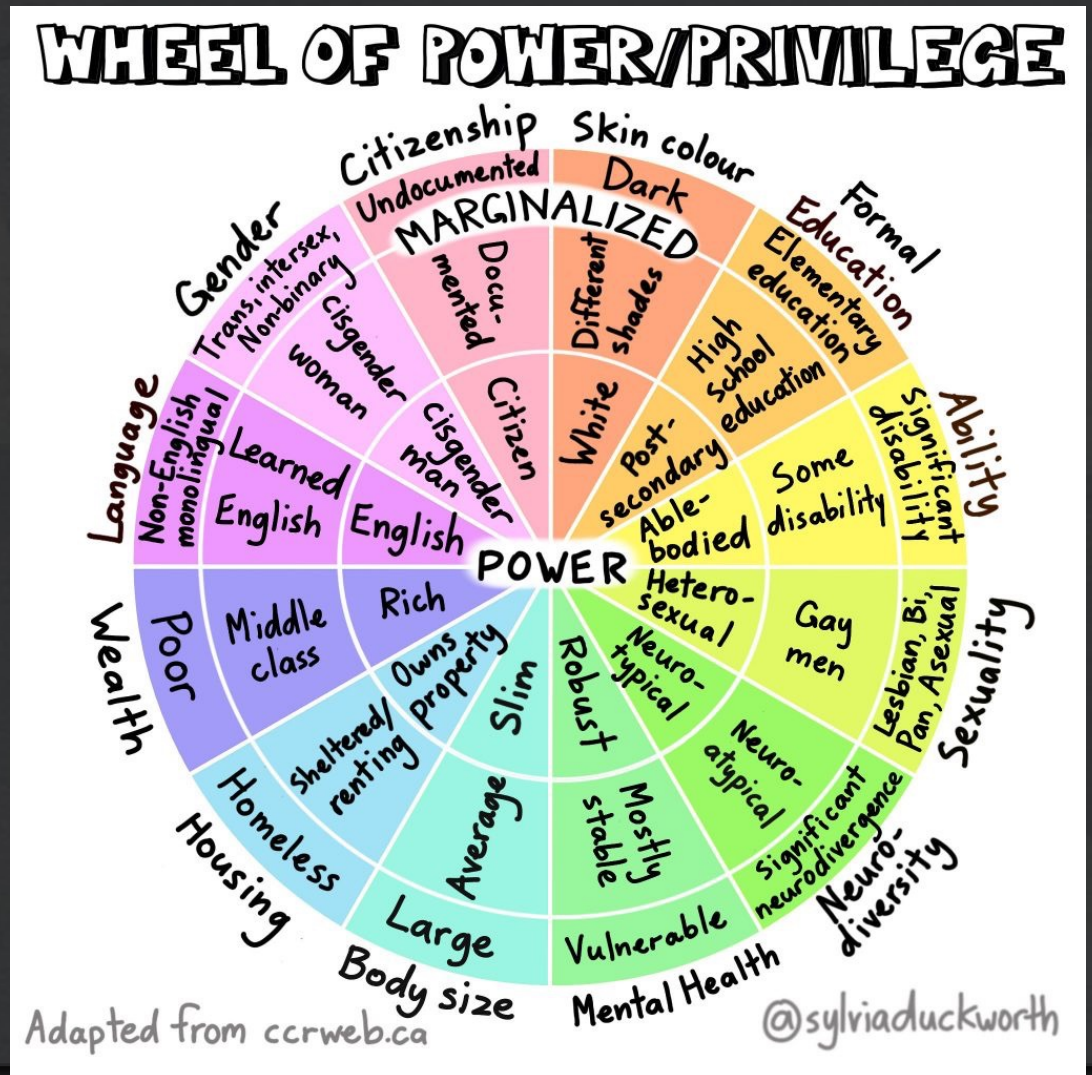
Indirect stakeholders people who are affected by the technology, but don't interact directly with it

Example: electronic health record systems

Direct stakeholders doctors, insurance agents, nurses

Indirect stakeholders patients

Whose values are being considered?



How can we surface values in design?

- Value elicitation materials
 - value lists
 - value scenarios
 - card decks
 - ...
- Talk to people! Observe!
- Build prototypes and show it to people!

What values are encoded?

Bike-sharing



Mobility
Health
Sustainability
Inclusion
Accessibility

Contact-tracing



Health
Safety
Efficiency
Public interest
Privacy

Social Chatbot



Wellness
Solidarity
Inclusion
Human connection

What did we learn?

Values don't exist in isolation

Values are interconnected and are often in *tension* with each other

An example



A wearable fitness tracker for older adults that monitors their health, detects falls and injuries, and automatically sends updates to their doctors and loved ones.

Tarot Cards of Tech

“a set of provocations designed to help creators more fully consider the impact of technology”

→ help designers think of different “risk areas” that can uncover missing stakeholders and value tensions



tarotcardsoftech.artefactgroup.com

An example



A wearable fitness tracker for older adults that monitors their health, detects falls and injuries, and automatically sends updates to their doctors and loved ones.

THE FORGOTTEN



When you picture your user base, who is excluded? If they used your product, what would their experience be like?

Whose perspective is missing from product development?

Pretend the opposite of your assumptions about your core user are true—how does that change your product?



Further Reading

- Other frameworks
 - Inclusive design
 - Design justice
 - Participatory design
 - Feminist HCI
 - Critical race and HCI
 - Queer HCI
- Other resources
 - [Building Utopia Deck](#)
 - [Envisioning Cards](#)
 - [Judgement Call](#)
 - [Timelines](#)
 - Many, many more

Values & Ethics Design Ethics Research

Once designers have identified values & value tensions, who gets decide how to navigate them?

How might we enable stakeholders to directly participate in navigating value tensions?



<https://dl.acm.org/doi/10.1145/3563657.359599>

2

Summary

- Sketching allows *exploration* of many concepts in the very early stages of design
- As investment goes up, need to use more and more formal criteria for evaluation
- *Values are embedded* in designs → think critically about which values and whose values you are embedding

Next Time

- Lecture
 - Early-Stage Prototyping (low-fi & medium-fi)
- Read
 - “Involving Customers with Iterative Design” (Ch 4) of *The Design of Sites*
 - “Making a Paper Prototype” (Ch 4) from *Paper Prototyping* by Carolyn Snyder
- Watch
 - *The danger of a single story*, Chimamanda Ngozi Adichie, TEDGlobal 2009 (20 min.)
https://www.ted.com/talks/chimamanda_ngozi_adichie_the_danger_of_a_single_story?language=en
- Exit Ticket
 - <http://bit.ly/CS147-2023au-exit-ticket-3-173>