Design Exploration

Prof. James A. Landay
Computer Science Department
Stanford University

Autumn 2024

October 9, 2024

Music: https://soundcloud.com/dansuneroquette

* 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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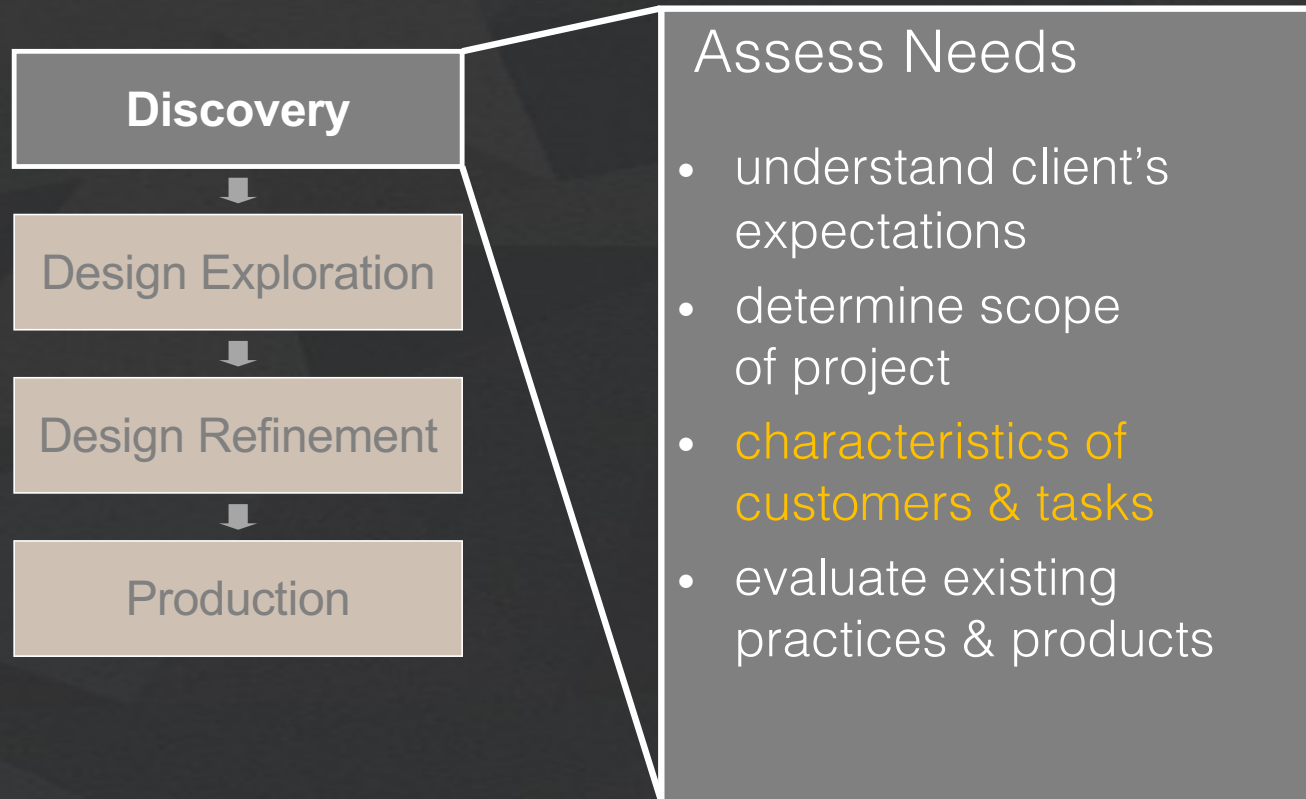
Outline

- Another good concept video

- Reviewing tasks

- Sketching to explore user experiences

- Values in design

High Fidelity Concept Videos

parqtheapp

Design Process: Discovery

Discovery

Design Exploration

Design Refinement

Production

Assess Needs

- understand client's expectations
- determine scope of project
- characteristics of customers & tasks
- evaluate existing practices & products

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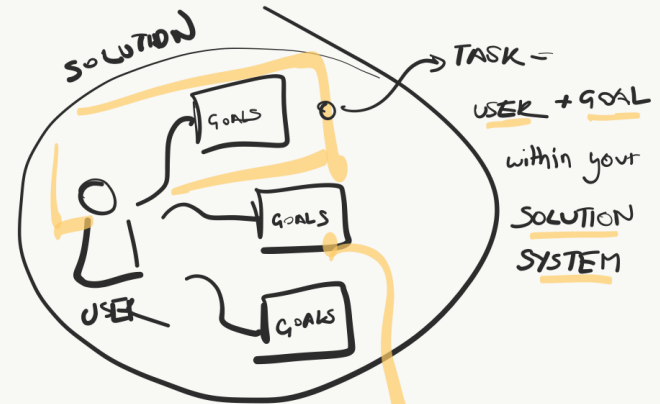
what a user wants to do

Another Look at Tasks

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

Discovery

↓

Design Exploration

↓

Design Refinement

↓

Production

Expand Design Space

- brainstorming
- sketching
- storyboarding
- prototyping
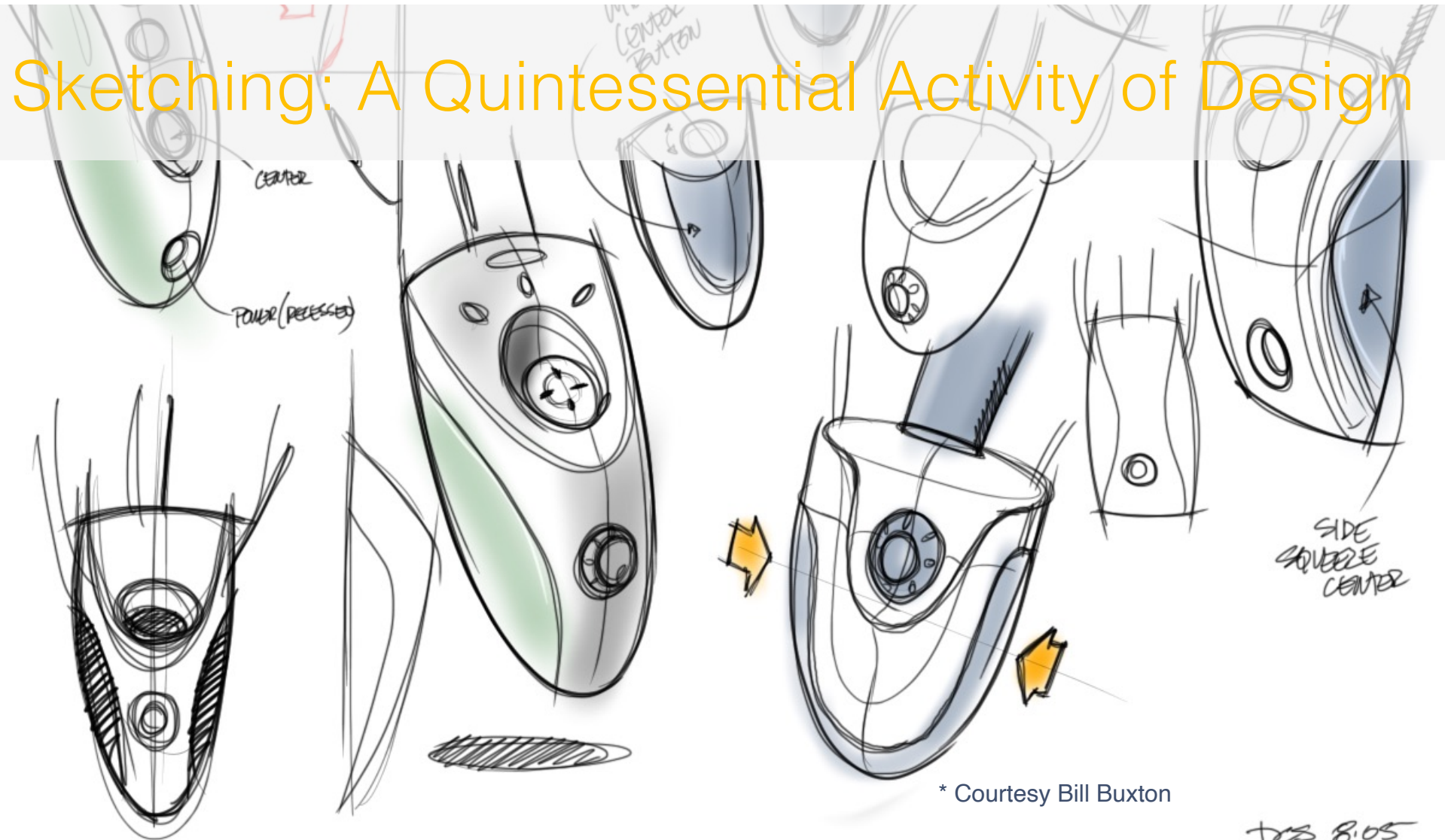
Iteration

At every stage!

Design

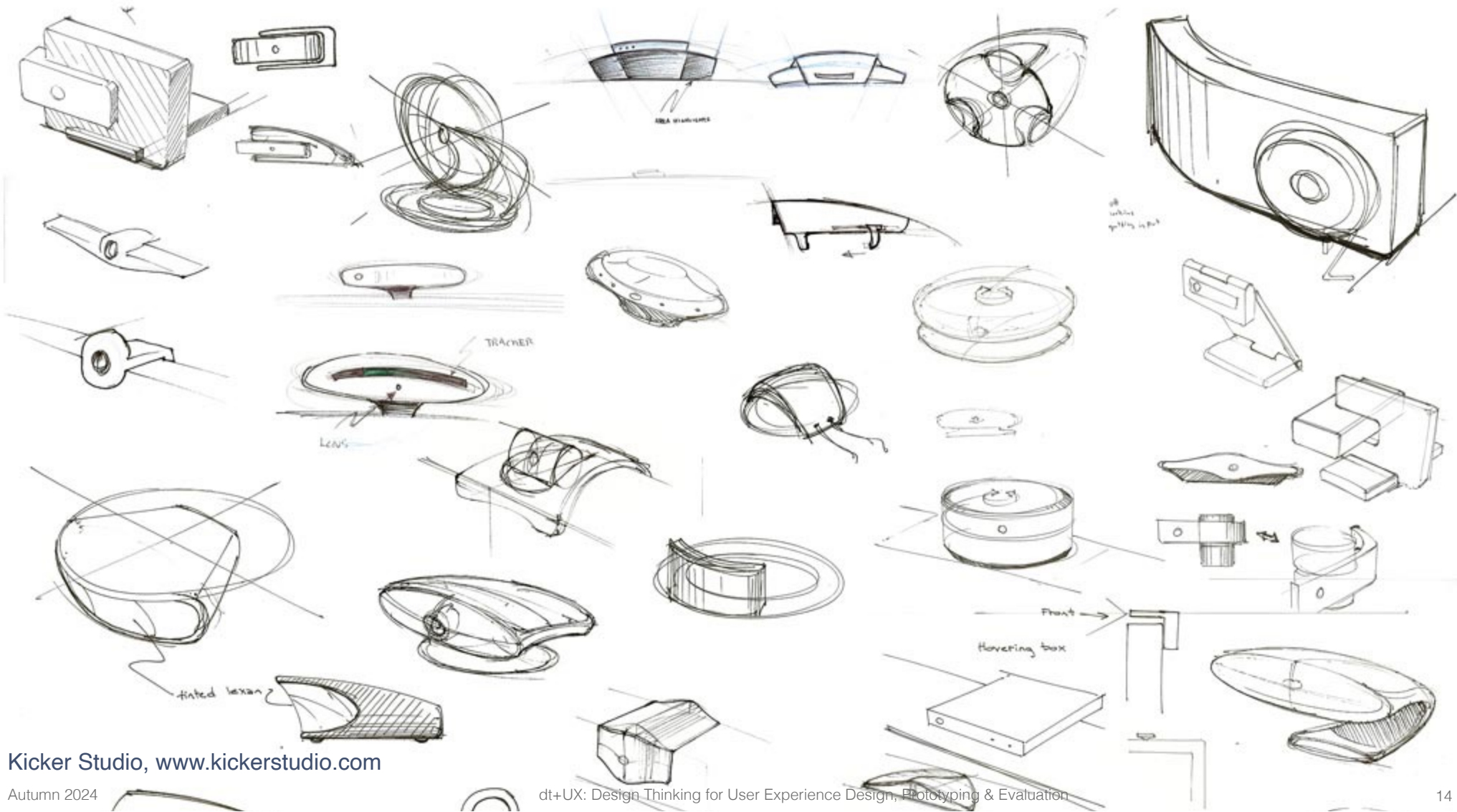**Prototype**

Sketch
Paper
Video
Tool
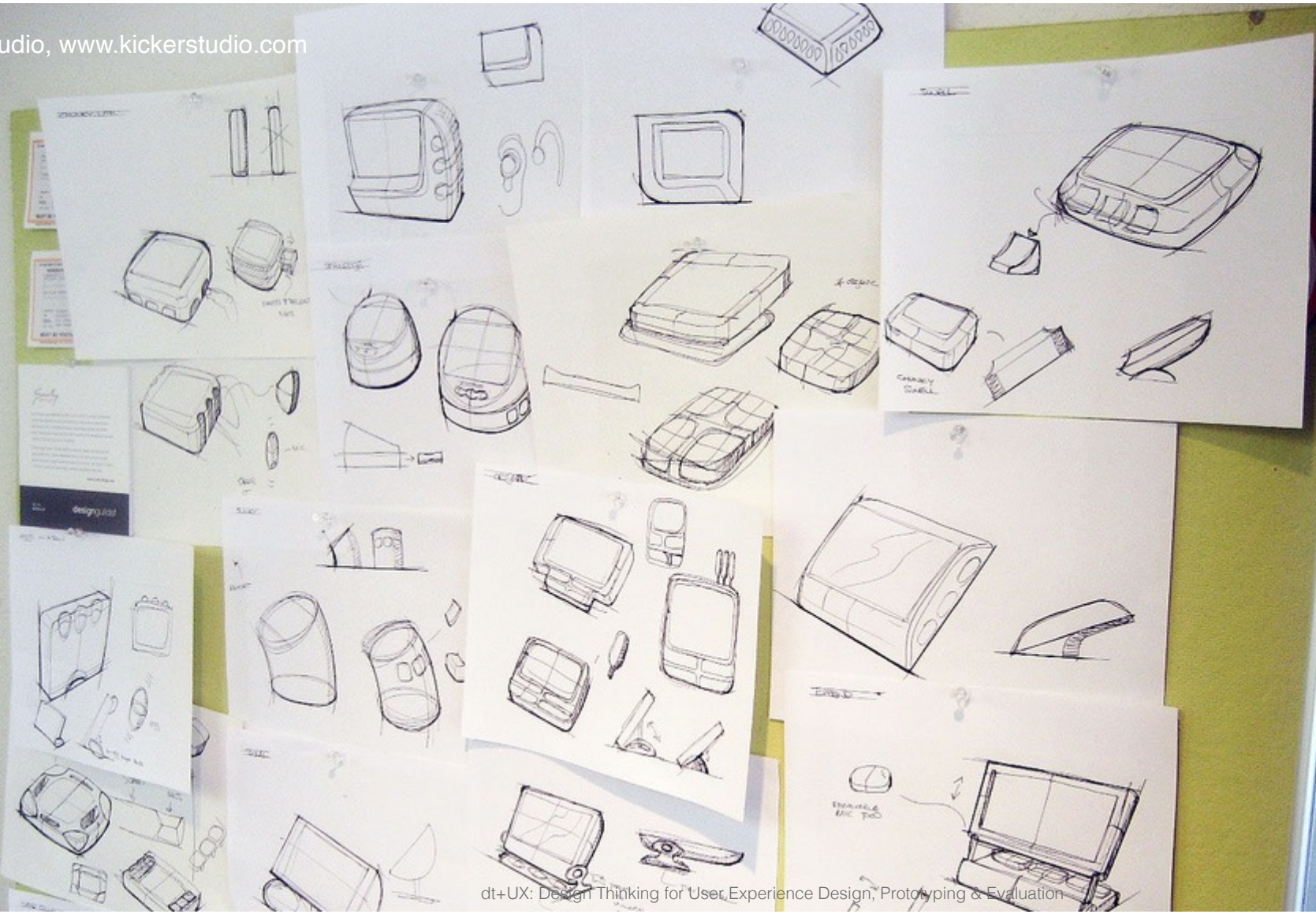Program

Evaluate

Gut
Crit
Expert Eval
Lo-fi Test
User Study

Sketching: A Quintessential Activity of Design

CENTER

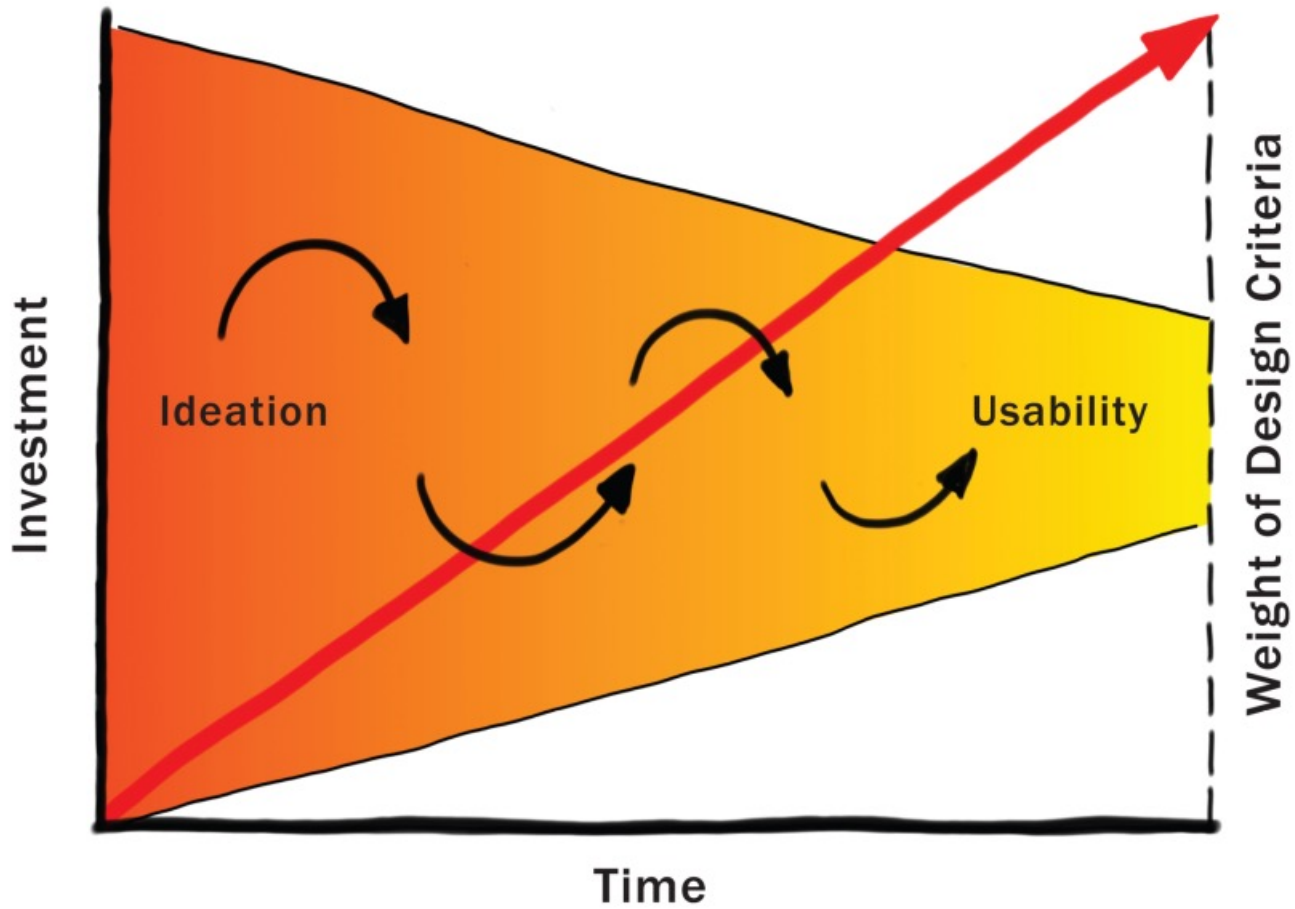POWER (RECESSED)

CENTER BUTTON

SIDE SQUEEZE CENTER

* Courtesy Bill Buxton

dt+UX: Design Thinking for User Experience Design, Prototyping & Evaluation

Kicker Studio, www.kickerstudio.com

Kicker Studio, www.kickerstudio.com

Amazon Echo Show 10

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

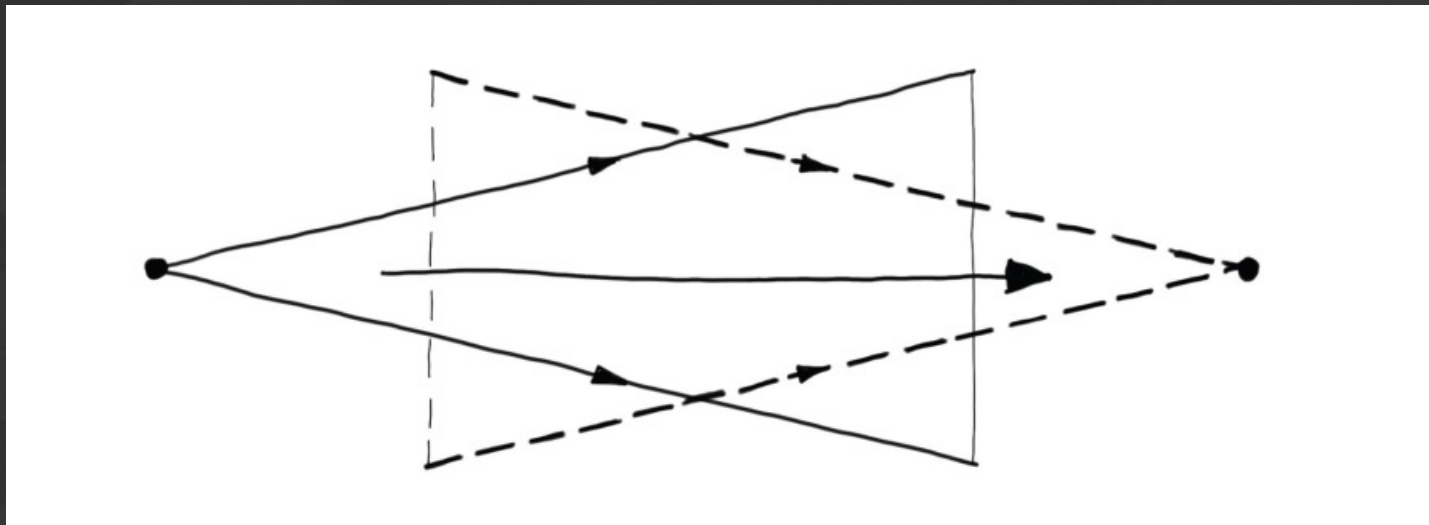If you want to get the most out of a sketch, you need to leave big enough holes.

There has to be enough room for the imagination.

Courtesy Bill Buxton

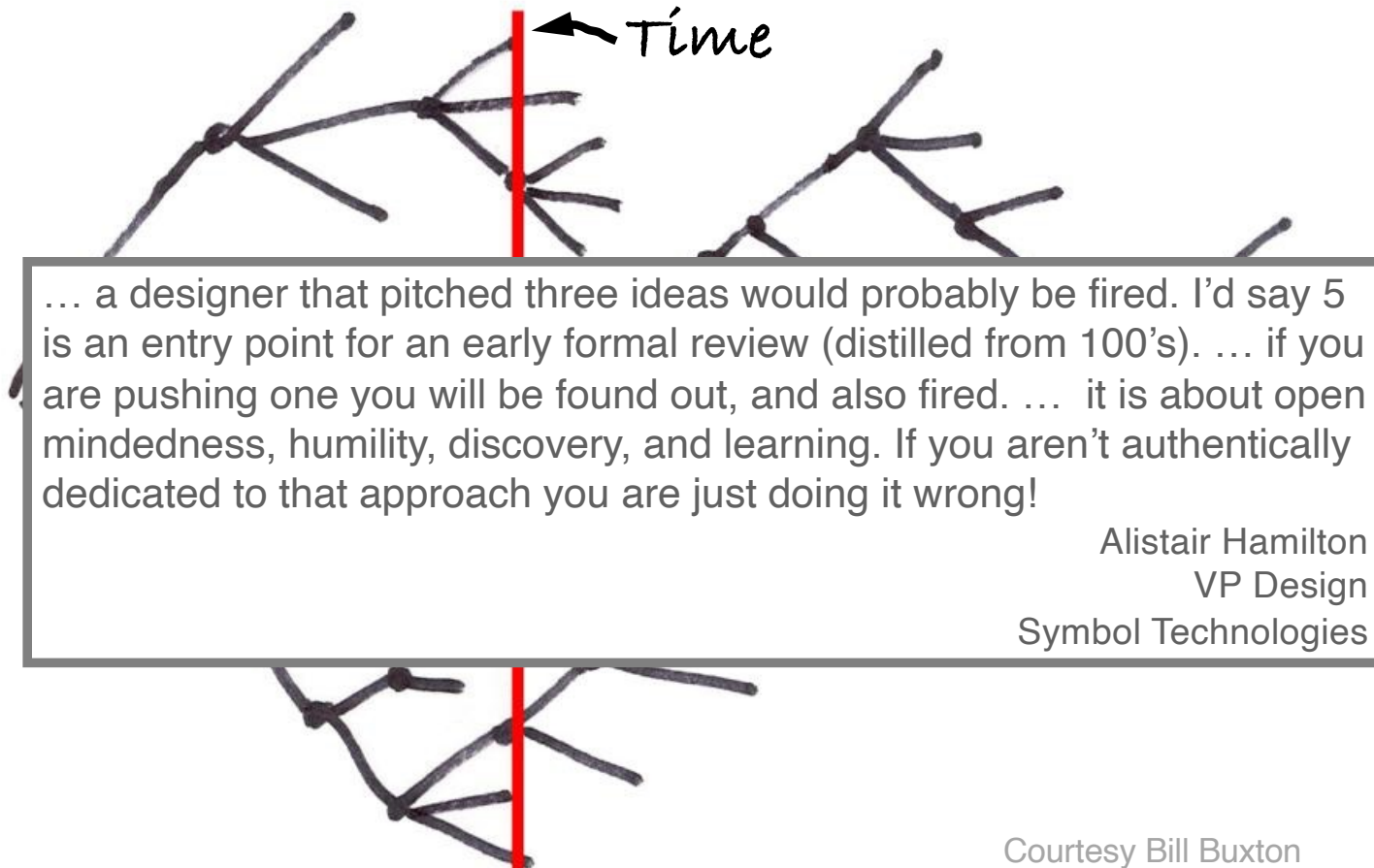# Design as Choice: Generative & Reductive

Elaboration ("Flare")   Reduction ("Focus")

Courtesy Bill Buxton   Laseau (1980)

Exploration of Alternatives

Time

… 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

Courtesy Bill Buxton

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.
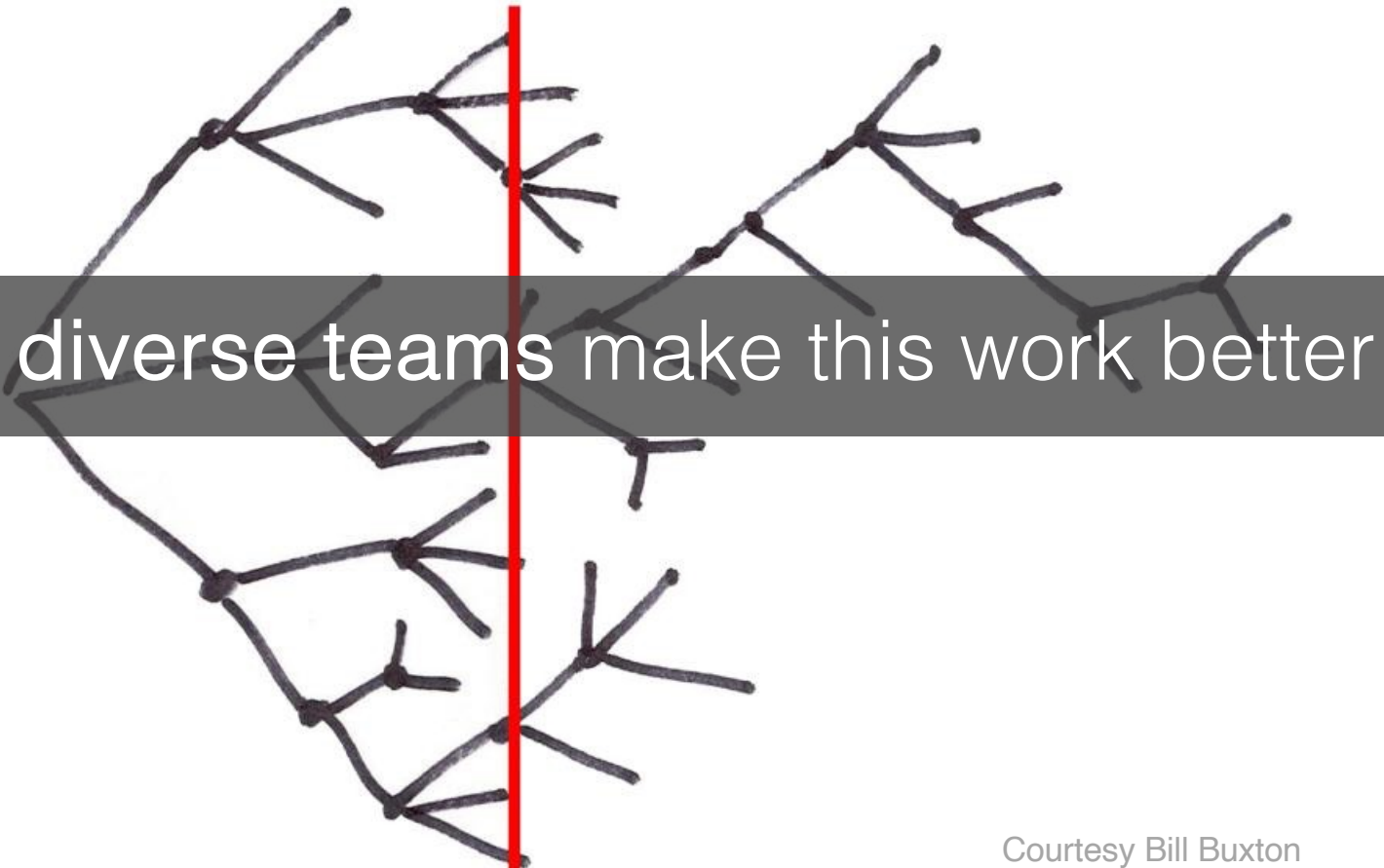
Bill Buxton
Sketching User Experiences
pg. 147-149

Courtesy Bill Buxton

Exploration of Alternatives

design rationale for decisions is key

Courtesy Bill Buxton

Exploration of Alternatives

diverse teams make this work better

Courtesy Bill Buxton

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

PollEv.com/jameslanday032

Design

What does the customer want to buy?

Courtesy Bill Buxton

Experience Design

"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

Experience vs. Interface Design

user experience = UI + situation + environment

CitrusMate Plus   Mighty OJ Manual Juicer   OrangeX Manual Juicer

Experience Design for a Phone App?
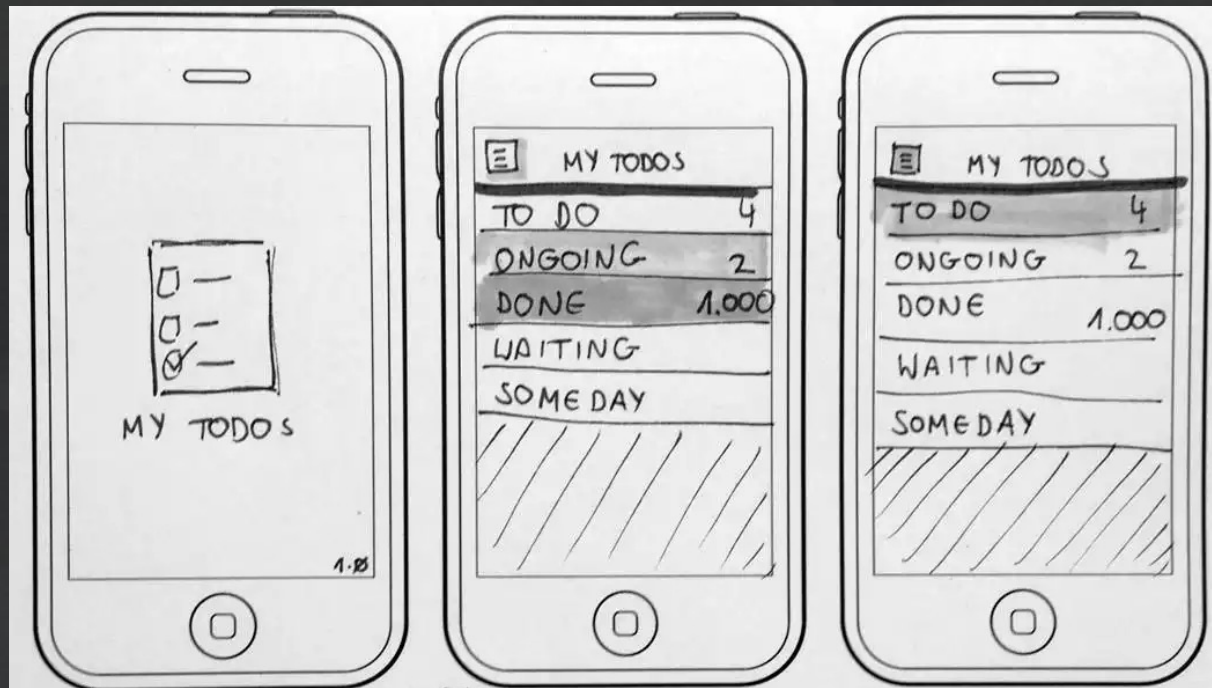

http://www.listmeapp.com/

- Draw my phone
- Draw my app's interface
- Draw the experience of using my app

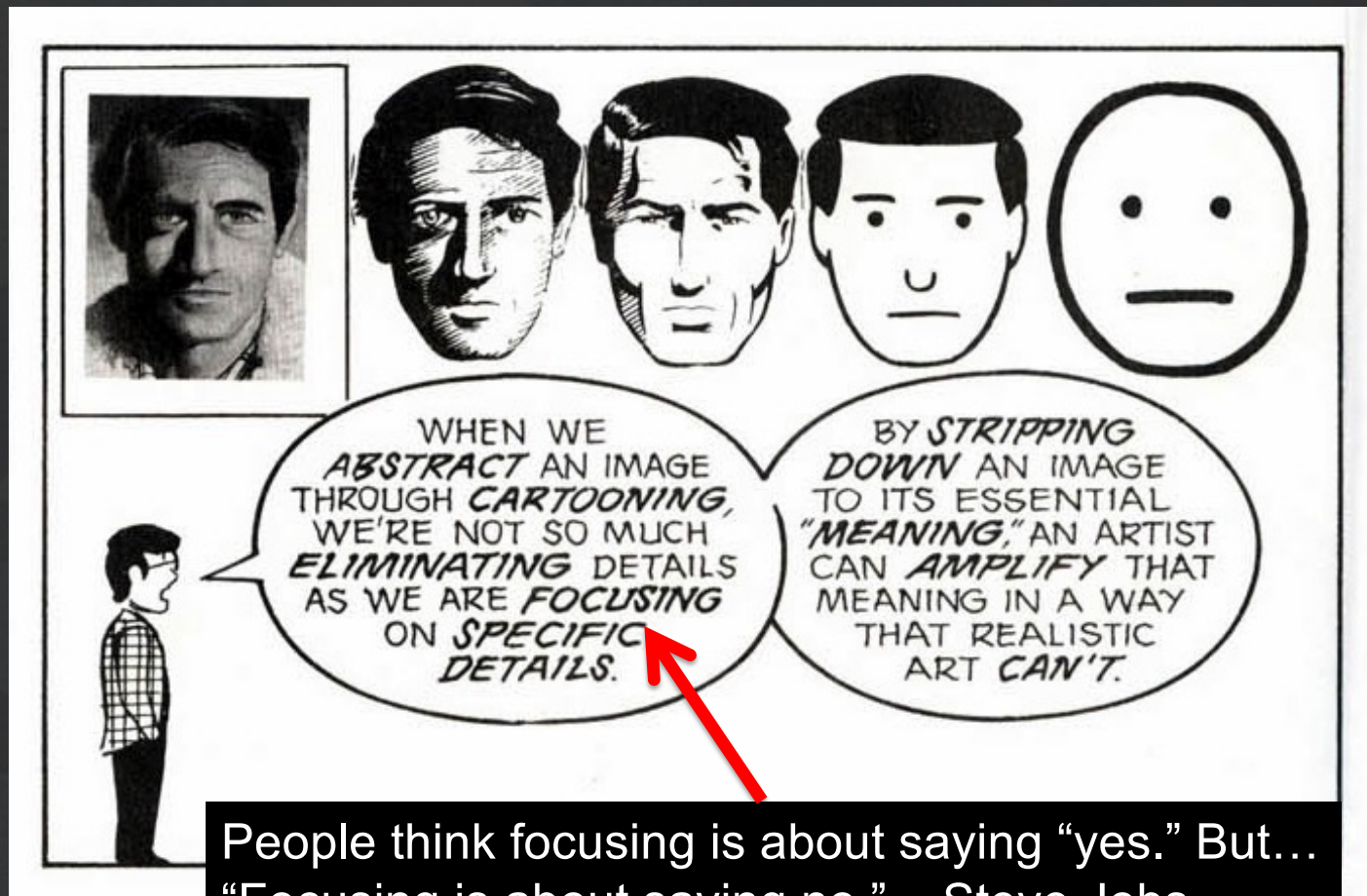- Which is the true object of design?

Courtesy Bill Buxton

Abstract It with Minimal Detail

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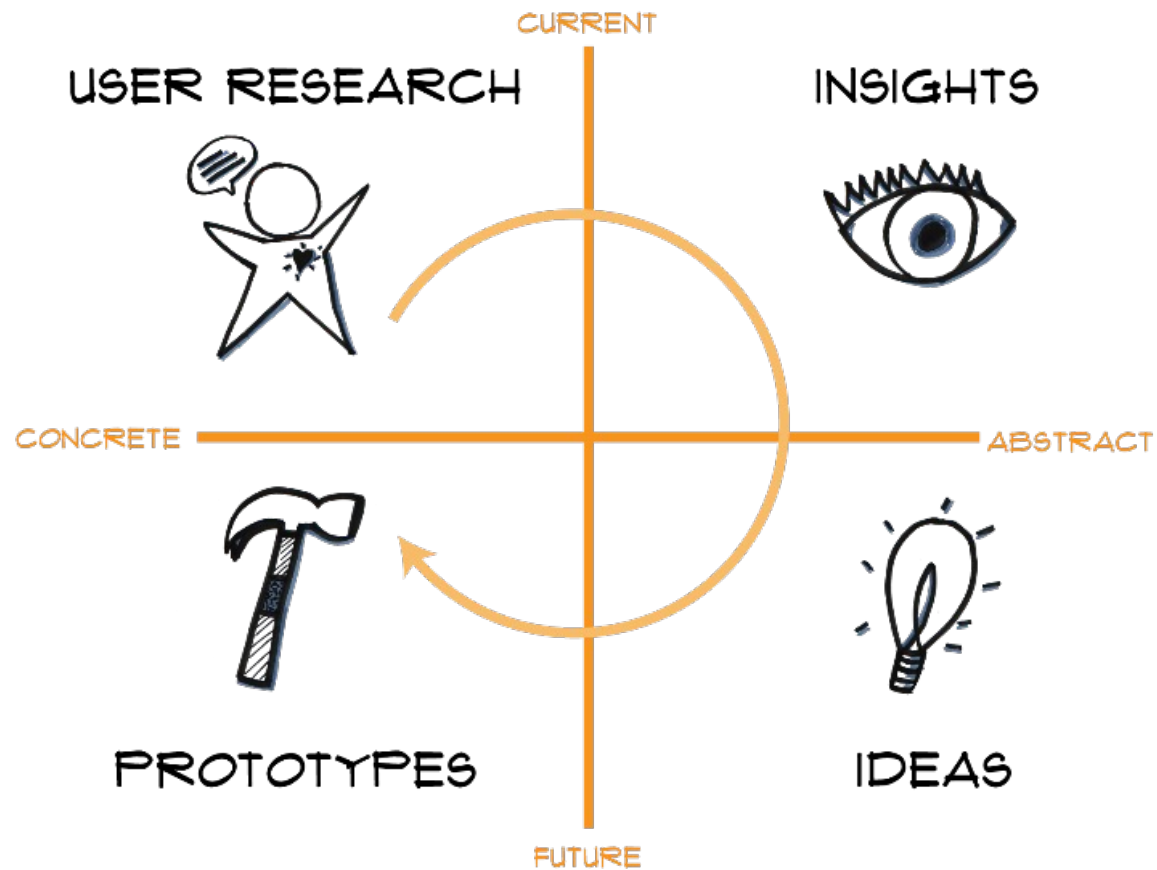

http://www.smashingmagazine.com/2013/06/sketching-for-better-mobile-experiences/

Scott McCloud's *Understanding Comics*

People think focusing is about saying "yes." But…
"Focusing is about saying no." – Steve Jobs

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:

SQUARE
CIRCLE
TRIANGLE
LINE
• DOT
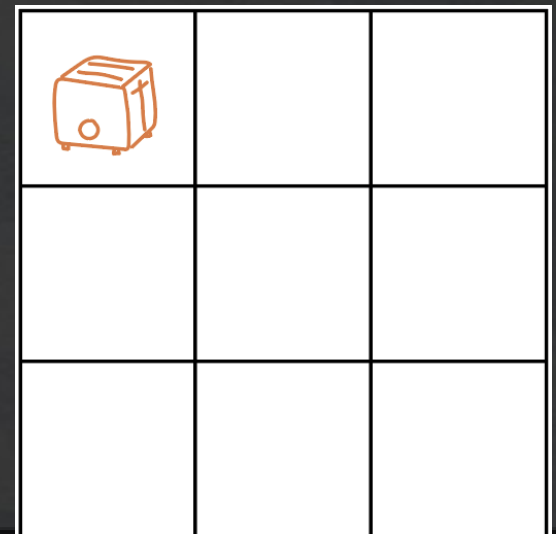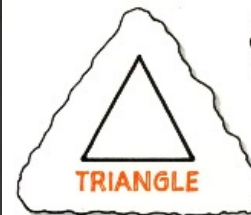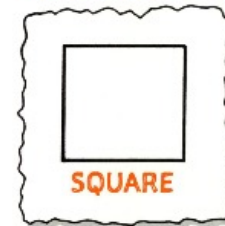
Administrivia

- 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)

- Make sure to sign up for 15 minute team check-in

Team Break

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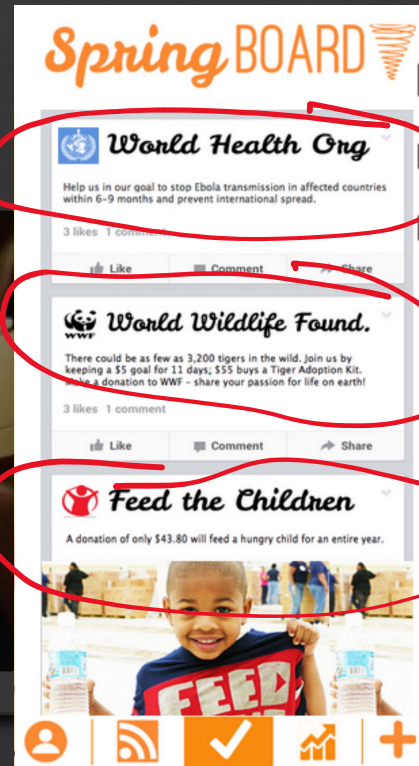
- This week's assignment (~10-15 min)
  – work on your slides
  – CA will come around and give feedback

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."

    <u>"The danger of a single story"</u>, TEDGlobal 2009

What are values?

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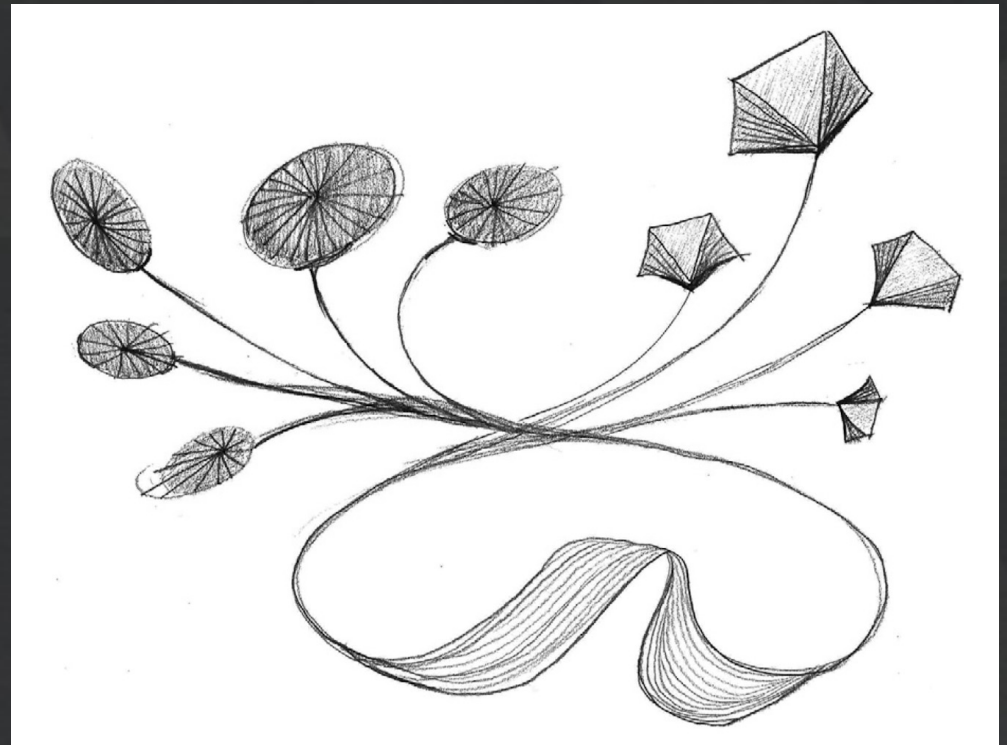

VALUE SENSITIVE DESIGN
SHAPING TECHNOLOGY WITH MORAL IMAGINATION
BATYA FRIEDMAN
DAVID G. HENDRY

How does technology embed values?

- Humans shape the design of technology

- Technology in turn shapes human experience and society

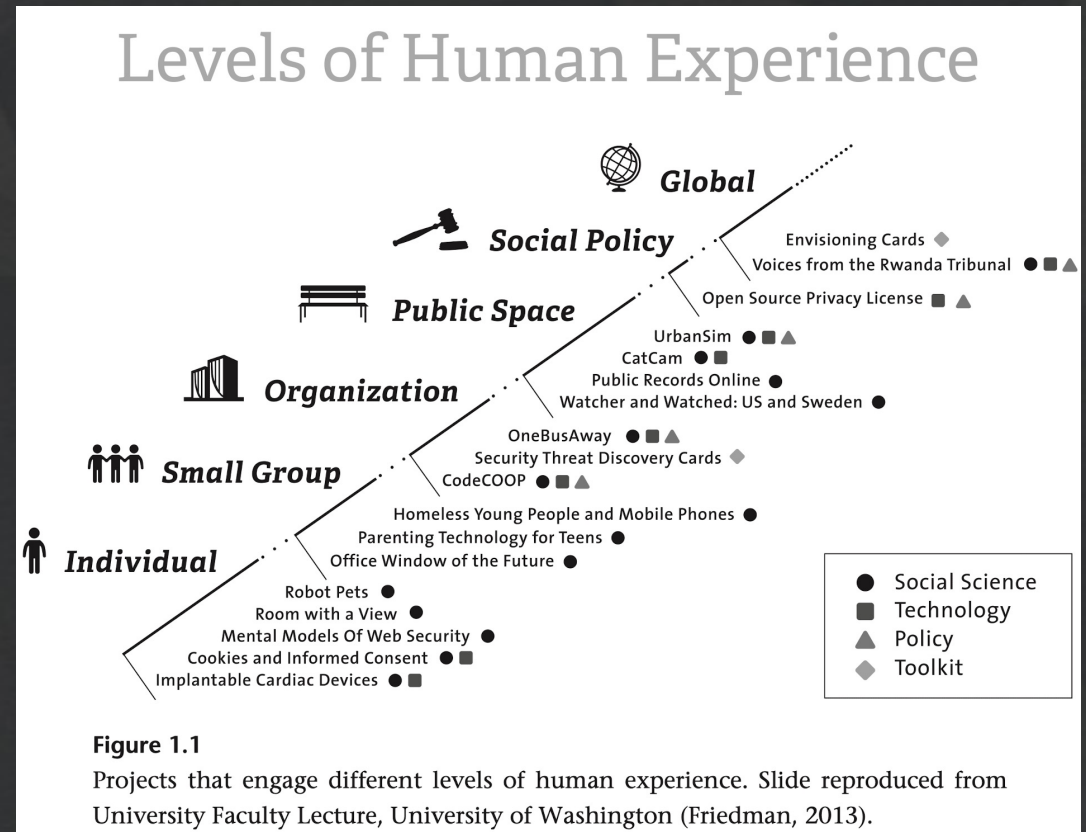# How does technology embed values?

- Humans shape the design of technology

- Technology in turn shapes human experience and society

- This occurs at multiple scales

Levels of Human Experience

Figure 1.1
Projects that engage different levels of human experience. Slide reproduced from University Faculty Lecture, University of Washington (Friedman, 2013).

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

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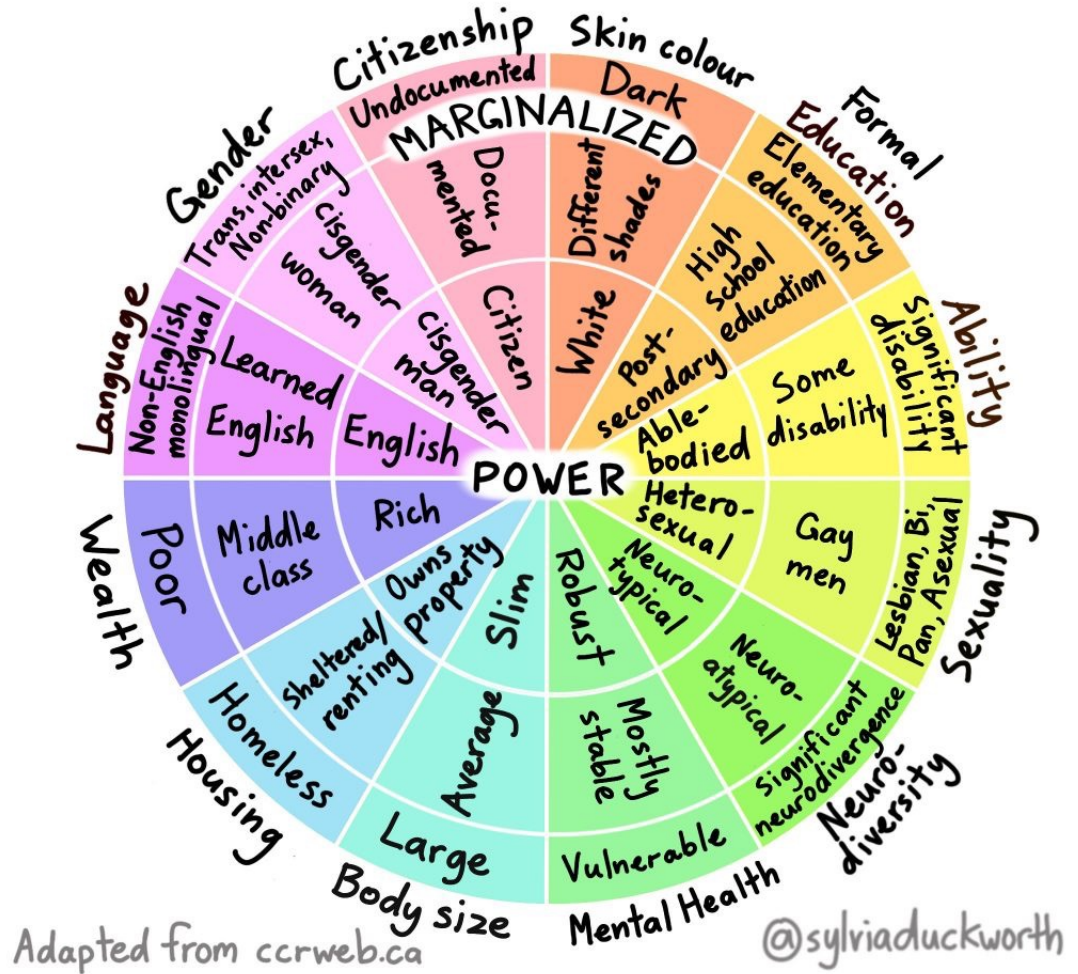

Example: electronic health record systems

Direct stakeholders   doctors, insurance agents, nurses

Indirect stakeholders   patients, families

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!

Surfacing Values Using Prototypes

Implication Design

Embedding an artifact's ethical implications into its design

"[prototypes] surface value tensions that can later serve as inspiration for designers … to navigate these tensions."
Haghighi, Jörke, et al., 2023

Eyecam is a webcam shaped like a human eye. It can see, blink, look around and observe you.
Teyssier et al., 2021

What values are encoded?

Bike-sharing	Contact-tracing	Social Chatbot
Mobility Health Sustainability Inclusion **Accessibility**	Health Safety Efficiency Public interest **Privacy**	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?

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/10.1145/3563657.3595992

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

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
  - Figma workshop & work on videos in class
- Read for Wed
  - "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