Design Exploration

Prof. James A. Landay
Computer Science Department
Stanford University

Winter 2022
January 24, 2022

*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
Hall of Fame or Shame?

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

Sign Up for Texts >

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

Lamps Plus
Unsubscribe to email confirmation
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

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

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

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

• Reviewing tasks
• Sketching to explore user experiences
• Values in design
Design Process: Discovery

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

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

COMMON MISTAKE
CONFUSING THE LENS
A lot of tasks get described as what the SYSTEM - designed by you - needs to achieve

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.
Token (Concept Video)

TOKEN
DISCOVER, RELIVE, AND SHARE MEMORIES
OVER TIME AND SPACE
OUR REPRESENTATIVE TASKS

**Personal Memories**
Create and share personal photos and videos!

**Shared Experiences**
View content shared by your friends!

**Location Discovery**
Engage with a location through public content!
Questions on Tasks or Concept Videos
POOL YOUR KNOWLEDGE

In a moment, you’ll join a random breakout room.

Share

1. brainstorming (or other) strategies you used to get a more novel & interesting solution
2. learnings/strategies that you’ve taken so far for filming & collaborating remotely on concept videos

When you return, we’ll thread your new findings in Slack!
POOL YOUR KNOWLEDGE

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Share

1. brainstorming (or other) strategies you used to get a more novel & interesting solution
2. learnings/strategies that you’ve taken so far for filming & collaborating remotely on concept videos

Please post your new findings on what worked well in Slack!

We’d also like to see your video storyboards in #ask-for-feedback so that classmates & TAs can give feedback
Design Process: Exploration

- Discovery
- Design Exploration
- Design Refinement
- Production

Expand Design Space
- brainstorming
- sketching
- storyboarding
- prototyping
Iteration

At every stage!

Protoype
Sketch
Paper
Video
Tool
Program

Evaluate
Gut
Crit
Expert Eval
Lo-fi Test
User Study

Design
Sketching: A Quintessential Activity of Design

* Courtesy Bill Buxton
From Sketch to Prototype

<table>
<thead>
<tr>
<th>Sketch</th>
<th>Prototype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evocative</td>
<td>Didactic</td>
</tr>
<tr>
<td>Suggest</td>
<td>Describe</td>
</tr>
<tr>
<td>Tact</td>
<td>Relate</td>
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<tr>
<td>Question</td>
<td>Answer</td>
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<tr>
<td>Propose</td>
<td>Test</td>
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<tr>
<td>Provoke</td>
<td>Resolve</td>
</tr>
<tr>
<td>Tentative</td>
<td>Specific</td>
</tr>
<tr>
<td>Noncommittal</td>
<td>Depiction</td>
</tr>
</tbody>
</table>

difference in intent rather than in form

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)
... 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
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
design rationale for decisions is key
diverse teams make this work better
Which Group Produced the Best Ceramic Pots

Group A
– graded by their highest quality pot

Group B
– graded by total number of pots

Photograph: Graeme Robertson/The Guardian
What does the customer want to buy?
“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
Experience vs. Interface Design

user experience = UI + situation + environment

CitrusMate Plus  Mighty OJ Manual Juicer  OrangeX Manual Juicer
Experience Design for a Phone App?

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

- Which is the true object of design?

[Image of a phone app interface]

http://www.listmeapp.com/

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/
People think focusing is about saying “yes.” But… “Focusing is about saying no.” – Steve Jobs
Design Thinking is Iterative

USER RESEARCH

INSIGHTS

CONCRETE

ABSTRACT

CURRENT

FUTURE

PROTOTYPES

IDEAS
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.

In breakout rooms of 5-6 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!
Administrivia

• Grades on assignment 1
  – Team Average (90.8): – (0%) ✔—– (0%) ✔— (11%) ✔ (64%) ✔+ (25%) ✔++ (0%)
  – Presenter Average (94.4): – (0%) ✔—– (0%) ✔— (0%) ✔ (21%) ✔+ (68%) ✔++ (11%)

• Concept Videos due Thur/Fri
  – We will watch the top ones during class next Monday & vote on awards

• Project Selection Criteria
  – novelty
  – significant UI component
  – impact (e.g., frequency, density & pain)

• Workshops coming up (next three Saturdays at 1 PM – recorded but lots of hands-on)
  1) Figma Basics on 1/29 (for beginners)
  2) Design Systems 2/5 (for beginner & intermediate levels)
  3) Accessible Design 2/12 (for all levels)

• Each team needs 1 person to fill out this form by Thur night
Prototype 1: Learning Whitebox
We simulated a virtual whiteboard in 3D space using a cardboard box.

In this cardboard box, you’re able to demonstrate and manipulate 3D objects while the other person can view what’s inside.

To test, we first taught someone how to make an airplane with a graphic. Next, we taught someone how to make one with the box. Both remotely.

Assumption:

People value hands-on learning even when being taught virtually.
Kai (she/her)
16, High School Student

With whitebox

Made visualizing things significantly easier

“I can actually view it from different angles whereas if it's a video I can only see it from one perspective.”

“Someone is showing me what to do and exactly how to do it”

Took some time to setup and understand

Can be inaccessible to under-resourced populations

Using the box did not feel uncomfortable

New Learnings
For instruction that requires following directions, simulating an in-person experience is highly efficient and effective.
Team Break

- Reflect on last week’s assignment (~5-10 min)
  - what did you like about your teamwork?
  - what do you wish could be improved?
  - share out with each other

- This week’s assignment (~15-20 min)
  - work on your tasks
  - TA will come around and give feedback
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
Values in Design

Dr. Diana Acosta-Navas
Embedded EthiCS Fellow

*McCoy Family Center for Ethics in Society - Human-Centered AI*
For Today

• Introduction to values in design
• Discovery
• Implementation
• Value conflicts
• Framework limitations
Introduction to Values in Design

- Design decisions encode values:
  - Efficiency
  - Privacy
  - Beauty
  - Truth
  - Justice
  - Equity
  - Safety
  - Transparency
  - Accountability
  - Inclusion
  - Sustainability

- They are expressive of what we care about
Introduction to Values in Design

Bike-sharing
- Mobility
- Health
- Sustainability
- Inclusion

Contact-tracing
- Health
- Safety
- Efficiency
- Public interest

Social Chatbot
- Wellness
- Solidarity
- Inclusion
Introduction to Values in Design

Values emerge from:
- Designer understanding
- Definition of project
- Specification of instrumental design features
- User perception
- Broader context
Plan and discover values

Verification and evaluation

Implementation that embeds values
Discovery

- Locating values
- Defining values
Discovery

- Locating values
  - Key actors
  - Functional Description
  - Constraints
  - Societal input
Discovery

**Collateral values:** values that crop up as side effects of design decisions.

- Intentions vs. Impact
• Security?
  – Where is information stored?
  – Encryption?
• Privacy?
  – Who has access to information?
  – Geolocation or blue-tooth?
  – What information is accessible to health authorities/ the public?
• Autonomy?
  – Informed consent?
Discovery

Standardization, power, and discrimination

- Default assumptions
  
- **Preexisting bias**, bias that exists in broader society, culture, and/or institutions is reproduced, either intentionally or unintentionally.

- **Technical bias**: underlying aspect of the technology reproduces bias.

- **Emergent bias**: a system that may not have been biased given its original context of use or original user base comes to exhibit bias when the context shifts or when new users arrive.
• Standard user?
  • Gender
  • Age
  • Ability
  • Race
  • Zip code
  • Access to technology
  • Needs

➢ Burden distribution
Defining values:

- Ethical and political values are abstract, controversial, and difficult to define.

- Definition and analysis connect abstract values to concrete design features.

- Products can miss their mark entirely if values are not well-defined.
Inclusion?

- Welcoming any kind of speech and any topic that is of users’ interest.

- Protecting vulnerable users from insult and psychological harm by banning certain words and topics.
Implementation

• Translation of values, visions, ideas, and aspirations to design features.

• Two guiding principles:
  – Pay systematic attention to projects’ elements
  – Consider how your product expresses your values
    • Integrated elements
    • Who is your audience?
    • Context of use

➢ Not a recipe. Know-how acquired with experience. Should be flexible to applications in varied contexts
Value Conflicts

- Values may conflict with one another
  - Inevitable consequence of value pluralism (i.e., the recognition that different things matter to us, often to the same degree)

- These conflicts may appear intractable
  - This does not mean that we should throw up our hands
  - Rather, we should strive to make conscientious and responsible choices
Efficiency
Health
Safety
Public interest

Security
Privacy
Autonomy
Value Conflicts

Three approaches

- **Dissolving**: developing a creative alternative that avoids conflict and achieves all values in question.

- **Compromising**: promoting each of the values in question to a different degree.

- **Trading-off**: Giving up one or some values in favor of others.
Framework Limitations

- The values in design framework has been criticized for not addressing historical injustice and power relations.
- The framework provides the bases to make such an analysis.

- Complementary frameworks:
  - Inclusive design
  - Design justice
  - Feminist HCI
  - Critical race and HCI
  - Queer HCI
Thank you!

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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

- Our *values are embedded* in our artifacts → be aware of the values you’re bringing to your design
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://docs.google.com/forms/d/1Gi4LTTkcyk_C6C74dGHyaNQPohfsRtlyWaTI_ZV6vj0/edit

• Project (due Thur/Fri in studio)
  - Concept Video
  - Short (90 seconds ideal)
  - Tell a *story* more than show an interface
  - *Storyboard* first!
  - Glad to look at rough cuts on Tue or Wed.