Lecture 6: Brainstorming Workshop

Shengdong Zhao

Acknowledgement:
Some material in this lecture is from Maneesh Agrawal, Scott Klemmer, Richard Davis, etc. Used with permission.
Announcements

• Pick a paper for your presentation and submit the paper choice by next week
  – Presentation will be held during the lab time in week 10
• G1 is due **Tomorrow**
The Design Process

[Koberg & Bagnall]

Design Thinking Workshop
Today’s Outline

Brainstorming

Storyboarding

Rapid prototyping
Before we start, let’s play a game
Functional Fixation

Duncker, 1945
Creativity and Dissent

**Authentic dissenters** – people who really disagree with group – can enhance group creativity.

Their opinion needn’t be right – but they can free the group from stagnant thinking.

The originality of the minority stimulates the majority.
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Dissent and Authenticity

The benefits of dissent are weakened if

**Dissent is not real:** A deliberate “devil’s advocate” in the group can actually stifle dissent, because the majority know the opinion is manufactured.

**Dissent is not encouraged:** Polite or pro-forma acceptance is not enough.
An Important Lesson: Embrace Differences
Today’s Outline

Brainstorming

Storyboarding

Rapid prototyping
Brainstorming Outline

Why methodology & process again? I’m busy designing/coding/researching/selling.

How does IDEO ideate & prototype? Why?

Let’s try it in class!
Personal desires drive changes and innovation.

If you disagree, please walk out of this room.
Personal desires drive changes and innovation.

The history of HCI = An ongoing effort to augment, match, and surpass human intelligence.

- Mechanical Turk
- Fake calculating machine
- Real calculating machine
- "Mother of All Demos" because computers caught up with the way humans do/want to work
- We continue to dream up ways for technology to surpass us (and the pitfalls too!)
But we work in groups.

You can’t do everything yourself.
Point of View
- Know yours; understand others’

Method
- Know yours; understand others’

Communicate
- Explain; persuade; synthesize

Experiment
- Learn; document; progress
The myth of lone genius

The famous individuals are often masters teamworkers, groups in disguise. (Edison etc. See “Art of Innovation”)
Brainstorm is for everyone.

Everyone does it.
Many organizations already do it.

It's got a history.

Osborn, 1953, Applied Imagination
Business, psychology, and engineering people study it.
Robert Sutton, Stanford Business School
Tom Kelly, The Art of Innovation

Critical thinking vs. Lateral thinking

Critical: Judges true/false value of a statement, identifying errors.

Lateral: Judges “movement value” of a statement, moving from one known idea to creating new ideas.
Brainstorm is NOT for everyone.

It’s a skill you learn and improve.  
First, you should understand its purpose.  
Second, you should practice.

Many designers and visionaries are introverts.  
But you might need to acquire certain attitudes and skills to be an effective brainstormer and teamworker.
Improvisation

Listen to the other person. Faster reflexes, say the first thing that comes to your mind.

YAP: Yes And Practice

Improv technique; make up a new sentence using a word from previous person’s sentence. Say the first thing that comes to mind; speak loudly.

“I saw A when I came here”
“Yes, and because of A, B was on the TV.”
“Yes, and when the President saw B, he decided to call C.”
“Yes, and C was shopping for D.”
IDEO’s Brainstorming Rules

1. Sharpen the Focus
2. Playful Rules
3. Number your Ideas
4. Build and Jump
5. The Space Remembers
6. Stretch Your Mental Muscles
7. Get Physical

Aim for quantity
Hope for quality
Let’s Try It
Topic

From your last week’s affinity diagram, generate a “How Might We” question that the group wants to work on.

For example: “How Might We replicate information on mobile phones while walking?”
Lecture 7: Storyboarding and Rapid Prototyping

Shengdong Zhao


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Today’s Outline

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Storyboarding

Rapid prototyping
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Storyboarding

Rapid prototyping
Design & Prototyping Techniques

1) Scenario • Storyboard • Video
2) Design Sketch • Screenshot
3) Paper • Cardboard • Foam Mockups
   Wizard of Oz
4) Interactive Prototypes

Lo-Fi — Hi-Fi
Vision — Experience
“Scenarios are stories about people and their activities”
Ways to Present a Scenario

Text paragraph
Storyboard (Comic book)
Video
Ways to Present a Scenario

Text paragraph

Storyboard (Comic book)

Video
Example Scenario

John wants to take notes while in class. Even though the slides will be posted online later, he wants to make sure he captures the most important points. Before the professor starts the lecture, he starts the note-taking application on his phone. The application automatically notes the current date, time and class. During the class he can press one of two buttons - to start recording audio or to take a picture. After recording, the application allows him to tag the recording with keywords. Later, when he is home, he can review his notes, synchronized with the powerpoint slides downloaded from the course web site. He can search by keyword, follow the lecture linearly, or sped up in time.
Elements of a Scenario

Agents / Actors
Setting
Goals / Objectives
Actions / Events
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Ways to Present a Scenario

Text paragraph

Storyboard (Comic book)

Video
Ways to Present a Scenario

Text paragraph
Storyboard (Comic book)
Video
The Power of Comics
Storyboarding

- Quick
- Versatile
- Powerful
Storyboard Procedure

• Decide What to Include
• Build the Storyboard
• Feedback & Iteration
Decide What to Include

1) Users
2) System
3) Brainstorm in team
4) Actor & artifacts & key events
5) Draw
Build the Storyboard

- Key frames (sentence description + drawing)

Template:
http://web.mit.edu/2.744/www/Project/Assignments/userExperienceDesign/storyboard_template1.pdf
Build the Storyboard

• Draw user(s), important artifacts, key events

• Use as little text as possible
Feedback & Iteration
Creating Storyboards

timer sounds -> don't burn yourself -> mmm hot muffins

whoa! technicolor! -> why did it change color? -> heat intensifies color

ice fades color -> temperature dependent!

Science is AWESOME!
Guidelines and Tips

• Focused on the point (forget the details)
  – Use the minimal level of detail required to communicate the features of the system.

  – Constraint yourself using paper and pencil first
    • Is it tedious? Yes, but this will force you to only draw the general story instead of details.
Guidelines and Tips

• Get many alternatives instead of one
• Focus on general ideas instead of details
• Question: How to achieve this?

Use Thick Markers

Limit the amount of space

Time yourself

http://ui-patterns.com/blog/User-interface-sketching-tip-3-Use-a-thick-pen
Let’s Try It
Transform into Digital Form

- Once the overall idea is clear, then translate it into digital form using bitstrip.com

http://bitstrips.com/create/comic/
Today’s Outline

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Rapid prototyping
Today’s Outline

Brainstorming

Storyboarding

Rapid prototyping
The Purpose of Prototyping

1. Explore the design space
2. Deal with things that are hard to predict
3. Communicate
The Purpose of Prototyping

1. Explore the design space
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QUANTITY

VS.

QUALITY
Quantity vs. quality exercise
Quantity vs. Quality?
Quantity vs. 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”

- Art and Fear, by Bayles and Orland
How does parallel prototyping — as opposed to a serial approach — affect design performance?

PARALLEL

SERIAL
Task: Create an Ad

issue 11

Spring 2009: Space

As children some of you may have dreamed of becoming astronauts, or at least vied for a spot in Space Camp. Maybe you were inspired by the worlds of Flash Gordon or those created by Frank Lloyd Wright. In this issue of Ambidextrous, we tackle space and beyond in all of its frontiers.

An Ode to White Space
Ellen Lupton
Method (n=33)

Serial

Parallel

Final
Measures

• How would you measure which method is more successful?
Users clicked Parallel ads at a higher rate than serial ads.
Visitors from parallel ads spent more time on the client site.

Average time on client site per visitor (seconds):

- Parallel condition: 28 seconds
- Serial condition: 21 seconds

F(1,493) = 3.172, p = 0.076
Experts rated Parallel ads higher than Serial ads

Likert-scale rating (0-50)

Parallel condition: 24
Serial condition: 22

F(1, 5) = 7.948  
p < 0.05
Why Did Parallel Outperform Serial?
Comparison aids learning

SEPARATE CASES

Case #1
“Describe the solution.”

Case #2
“Describe the solution.”

COMPARISON CASES

Case #1
“Describe the parallels of these solutions”

Case #2

~3x

learning outcome

Solutions to a landlord-tenant lease

Gentner, Loewenstein, & Thompson, 2003
Fixation in serial

I tried to find a good idea, and then use that idea and keep improving it and getting feedback. So I pretty much stuck with the same idea.

-Serial participant
Parallel ads more diverse

(7 = very similar, 0 = not similar)

Parallel condition: 2.78
Serial condition: 3.18

F=181.853, p<0.001
The danger of critiquing one idea...
“the companies that want to see the most models in the least time are the most design-sensitive; the companies that want that one perfect model are the least design sensitive.”

-Michael Barry
The Purpose of Prototyping

1. Explore the design space
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The Purpose of Prototyping

1. Explore the design space
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Barrier to early testing

How can we get good feedback before a working version is available?
When building a prototype...

...stay here if possible!

Learning / Communication

Time
PROTOTYPING METHODS
Wizard of Oz
Wizard of Oz

Player

Embodied characters

Operator
Wizard of Oz

- An operator plays the role of “computer” and enters data “behind the scenes”

- Useful for designers to test the concept of an idea without actual implementation

- Often combined with mock-ups, paper prototypes and partially functional prototypes

- Examples
  - Context-awareness
  - Speech recognition
Simulating a “listening typewriter”

• Design a system that can automatically recognizes what the author dictates, and displays this on a screen

• However, speech recognition is not yet advanced enough (1983)

  • How do we determine the if a listening typewriter would be useful for composing letters?

  • **Wizard of oz**: users are told that they are interacting with a computer that recognizes their speech. In reality a person is manually typing in the words

(Gould et al. 1983)
Prototyping mattered for the Pilot
Prototyping mattered for the Pilot

• SANTA CLARA, California -- People thought Jeff Hawkins was crazy when they saw him taking notes, checking appointments, and synchronizing a small block of wood with his PC, pretending all the while that the block was a handheld computer.

• "If I wanted to check the calendar I'd take it out and press the wooden button.”
Paper prototyping
Hanmail

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<th>Column 3</th>
<th>Column 4</th>
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<td>Value 9</td>
<td>Value 10</td>
<td>Value 11</td>
<td>Value 12</td>
</tr>
</tbody>
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**Notes:**
- Note 1
- Note 2
- Note 3
MEMBER VERIFICATION SCREEN

Before any action can occur, a ZZ employee must verify that customer is actually insured.

Task specific tools include: All those Indy that you wouldn’t want to do while tracking customers. Email, to-do list, calendar.

- NO BUTTONS -

<table>
<thead>
<tr>
<th>EMAIL</th>
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<tbody>
<tr>
<td>TD-DO</td>
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<tr>
<td>CHAIN</td>
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**Graphics Needed:** Email icon, TD-DO icon, calendar icon.

Log in screen (Fill in fields)
Paper prototyping tools

- Paper, Cardboard, Transparencies
- Tape, Glue, Rubber Cement
- Pens, Pencils, Markers
- Scissors
- Plastic Tubes, Paper Cups, CD “Coasters”
- Anything that you can buy in an arts and crafts store
Paper Prototyping Videos

• Paper prototyping with mobile devices
  – http://www.youtube.com/watch?v=3fk0uWer6lQ
  – http://www.youtube.com/watch?v=-ao9BssNXHc

• Paper prototyping with websites
  – http://www.youtube.com/watch?v=55D2nCJ1HZQ
Hybrid prototypes

- If you are having trouble deciding...
Welcome to INKSeine!

INKSeine supports a creative virtuous cycle that you'll find in no other inking tool.

INKING is great for thinking!

Leonardo's helicopter was only some 400 years ahead of its time.

And he didn't even have a fancy pants tablet PC like you do.

INKSeine really helps you think with ink!

INKSeine also uses Microsoft's great search.
Hybrid prototype: InkSeine
Hybrid prototype: InkSeine
Hybrid prototype: InkSeine
PowerPoint prototyping
10 minute mockup prototyping

• http://www.youtube.com/watch?v=JjbeCkn0bJg
Choosing a prototyping method
Manage risk

• Start with what you know the least about
  – Formulate the question(s) you need answered

• Choose a method that’ll give you feedback
  – Every prototyping method has strengths and weaknesses

• Digest what you’ve learned, make changes

• Move on to the next thing you’re worried about
Start with your questions

• Some questions are general
  – Does this work flow support the business goals?
  – Why do people say they can’t find things?
  – How much flexibility do users need?

• Other questions are specific
  – Do people realizes it saves automatically?
  – What do they think of this feature?
  – Do they know what this icon means?
The rights of a prototype

- Should not be *required to be complete*
- Should be easy to change
- Gets to retire
General Tips

• If possible, try define your research questions first

• All prototyping methods are good
  – It totally depends on your situation

• Maximum feedback for minimum effort
  – What’s the simplest way I could mock up, simulate, fake…?