Interaction Design primer

Spring 2015

Reid Simmons
Illah Nourbakhsh

Design

What is design?

Herb Simon:
activity that seeks to Change Existing Situations Into Preferred Ones
Hot Topics in Design

- Human-Centered Design
- Community-Centered Design
- Service Design
- Interaction Design
Pentad Activity

- Pick one research question, brainstorm a specific experiment
- Fill out all 5 Pentad categories
- [5 minutes]
The Cycle of Engagement

Allocation of Involvement
Face engagement
Acquaintanceship
Engagements among unacquainted
Communication boundaries
Regulation of mutual involvement
Uncontained participation
Situational Proprieties
Tightness and Looseness

Tang, Approaching and Leave-Taking

John Tang, Approaching and Leave-Taking: Negotiating Contact in Computer-Mediated Communication

Openings consist of:
contact initiation: mutually recognizing an attempt to initiate contact
greetings: establishing each person’s identity and that a conversation has started
topic initiation: introducing the first topic

Closings consist of:
topic termination: mutually recognizing that the topic discussion has ended
leave-taking: reaffirming each other’s acquaintance before breaking contact
contact termination: ending the connection that was enabling the conversation
Tang, Attention Commitment

Table 1. Comparing and Contrasting How Openings and Closings Are Accomplished

<table>
<thead>
<tr>
<th></th>
<th>Openings</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contact Initiation</td>
<td>Greetings</td>
<td>Topic Initiation</td>
<td>Topic Termination</td>
<td>Leaves-Taking</td>
<td>Contact Termination</td>
</tr>
<tr>
<td>Face-to-face</td>
<td>On approach</td>
<td>1st exchange</td>
<td>2nd to last exchange</td>
<td>Last exchange</td>
<td>Withdrawal</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td>Dial,Ring, answer</td>
<td>“Hello”, 1st exchange</td>
<td>2nd to last exchange</td>
<td>Last exchange</td>
<td>Hang up</td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>Build list selection, IM provap</td>
<td>1st response</td>
<td>IM exchange</td>
<td>2nd to last exchange</td>
<td>Last exchange</td>
<td>Close window</td>
</tr>
<tr>
<td>DCP</td>
<td>Menu pick, shared text interface</td>
<td>Text exchange</td>
<td>Text or video exchange</td>
<td>2nd to last exchange</td>
<td>Last exchange</td>
<td>Close window</td>
</tr>
<tr>
<td>Mootage</td>
<td>Menu pick, video phone call</td>
<td>1st exchange</td>
<td>2nd or 3rd exchange</td>
<td>2nd to last exchange</td>
<td>Last exchange</td>
<td>Close window</td>
</tr>
<tr>
<td>Awareness</td>
<td>Contact Later Contact Provision</td>
<td>Contact Provision/Int exchange</td>
<td>Contact Provision/IM exchange</td>
<td>Last exchange</td>
<td>Goodbye, interface</td>
<td>Please wait window closed</td>
</tr>
</tbody>
</table>

Grey: attention commitment onset

Engagement Design Activity

- Pick another research question, imagine a specific experiment
- Fill out every engagement phase with at least one vignette
- [5 minutes]
DiSalvo, Buchanan and design

Carl DiSalvo:

The special role of Architecture and robotics…

DiSalvo: formalizing Product

Four dimensions:
  Materiality
  Expression
  Function
  Form
DiSalvo: formalizing Product

Materiality

DiSalvo: formalizing Product

Expression – Tatsuya Matsui
“Today, we are using technology to further an agenda of destruction and violence, which is why—more than ever—we need to rethink its role in our society and make sure that it is only used to better humanity. By creating Posy, I hope to unleash a weapon of peace—a reminder that one small robot’s step is a giant leap toward a peaceful and equitable future for all.”

—Tatsuya Matsui
DiSalvo: formalizing Product

Function

Form as organization of all other dimensions
An Analytical Cross of Interaction
Prof. Dick Buchanan, from Burke, Barnlund, etc.

<table>
<thead>
<tr>
<th>Interaction (product &amp; user) [entitative/directional]</th>
<th>Topic (product &amp; designer) [familial]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material (product) [reductive/geometric]</td>
<td>Gaia: product &amp; cosmos [dialectic, metaphysical]</td>
</tr>
</tbody>
</table>

Cross Activity

- Pick your third research question.
  Imagine a robot and experiment.
- Fill out all four cross categories.
- [5 minutes]
IDEO Create process

CREATE: GOALS

Frameworks and Brainstorming

BRAINSTORM NEW SOLUTIONS

• P. 12

• P. 15
Brainstorming Practice

• Pick your favorite research question.
• Choose a framework, draw your context (3 minutes)
• Spend 5 minutes brainstorming at least 20 totally different experiments.

Storyboarding / Sketching - Robot250
Storyboarding Practice

• Pick one of your ideas
• Using the Robot250 Storyboard template questions, fill out all four columns with pictures only.
• [5 minutes]

Design Patterns - Kahn et al.

“Light on two sides of every room.”
Alexander Design Patterns

1. Patterns should be at the ideal level of abstraction

Alexander Design Patterns

2. Patterns as part of a pattern language (compositional modularity)
Alexander Design Patterns

3 Hierarchical nature of patterns

Alexander Design Patterns

4 Patterns are abstraction representations of human physical, morphological interaction with the world.
Alexander Design Patterns

HRI versions...

The Initial Introduction: convention, acknowledgment
Didactic Communication: minimal responsiveness option
In Motion Together: physical synchrony
Personal Interests and History: from didactic to substantive relational
Recovering from Mistakes: maintain social affiliation
Reciprocal Turn-Taking: timing, awareness of fairness
Physical Intimacy: “will you give me a hug?”
Claiming Unfair Treatment or Wrongful Harms: “that's not fair”

Systems Engineering

• Needs Gathering
• Requirements Definition
• Risk Identification
• Risk Retirement
Warning: The ‘Wicked Problem’*

Problem Identification
Every solution exposes new aspects of the problem.

Satisficing
There is no clear stopping criterion nor right or wrong.

Uniqueness
Each problem is embedded in a distinct physical and social context making its solution totally novel.

*Horst Rittel