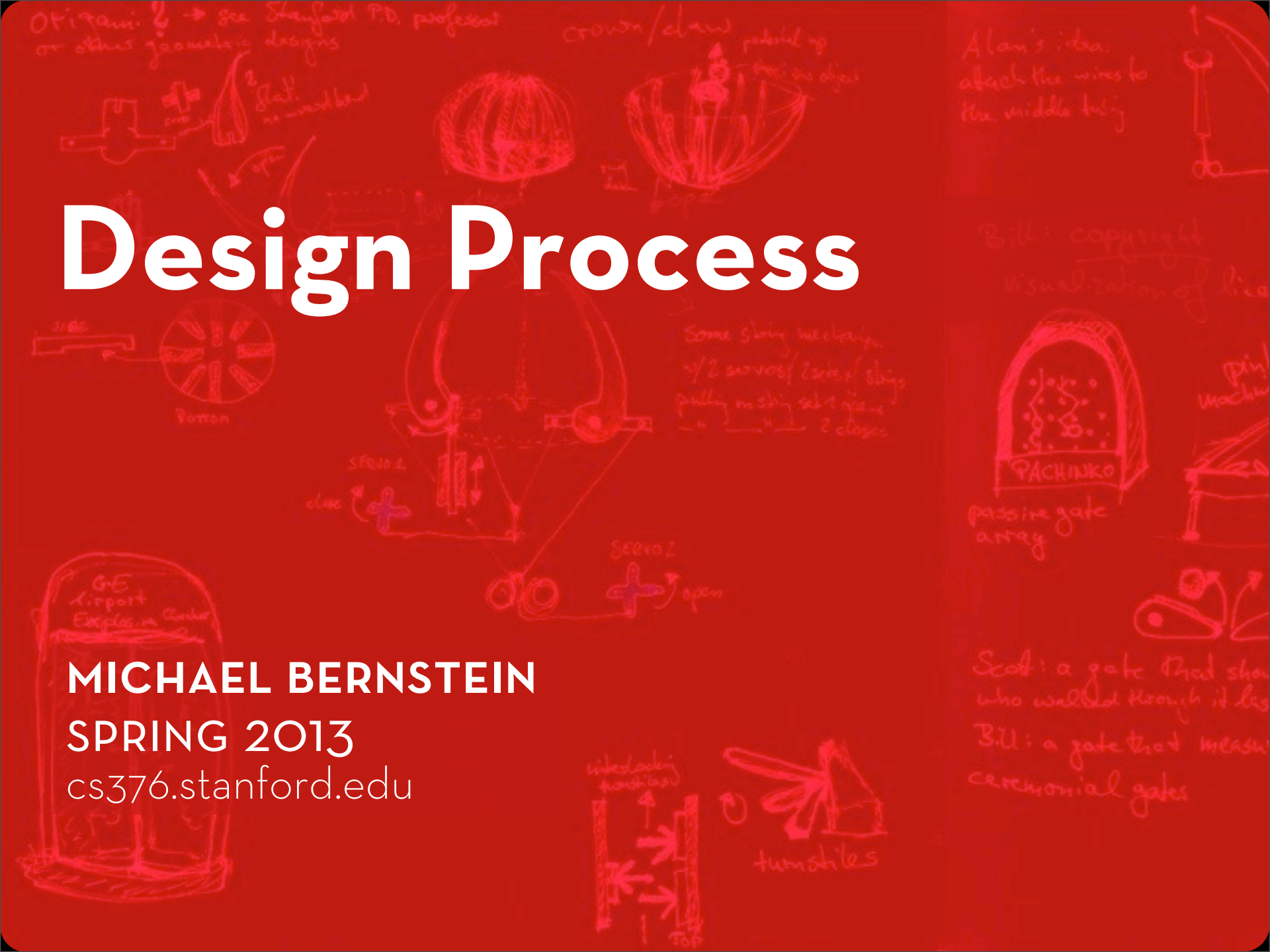
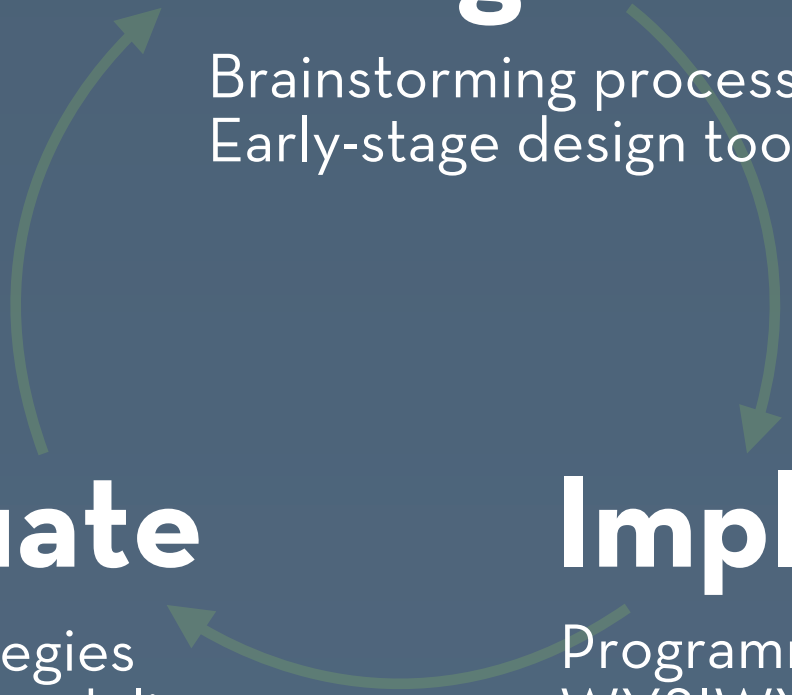

Design Process
MICHAEL BERNSTEIN
SPRING 2013
cs376.stanford.edu
PACHINKO
passive gate array
turnstiles

Design is not a static process.

It can be studied, supported and improved.



Recall: space of process improvements to design

Wizard-of-Oz Prototypes

- An iterative design methodology for user-friendly natural language office information applications [Kelley, TOIS '84]
  - *"Central to the methodology is an experimental simulation which I call the OZ paradigm, in which experimental participants are given the impression that they are interacting with a program that understands English as well as another human would."*

Recall: Wizard of Oz prototyping as an example

Participatory Design

[Schuler and Namioka '93]

- Developed in Scandinavia, and later ported to the United States design tradition
- Involve the eventual users deeply in the design process
  - Initial exploration
  - Problem definition
  - Develop and focus ideas
  - Evaluation

Recall: Participatory design as an example

Design as research

Design-oriented HCI

[Fallman, CHI '03]

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  - **Romantic**: "imaginative masterminds equipped with almost magical abilities of creation"
  - **Pragmatic**: design is a reaction to a context

Research through design

[Zimmerman, Forlizzi, and Evenson, CHI '07]

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  - Problems whose requirements are contradictory or unknown: no easy global optimum

Research through design

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- How can designers make contributions to HCI research?
- Interaction designers wrestle with **wicked problems** [Rittel and Webber, Policy Sciences '73]
  - Problems whose requirements are contradictory or unknown: no easy global optimum
- To solve wicked problems: integrate known facts, engineering opportunities, and user research to create a new perspective

Dispelling design as a ‘black art’

[Wolf et al., CHI ’06]

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  - Design judgment
  - Making of artifacts
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- Argument: this process is structured, not mysterious

The Power of Representation

[Norman, ’94; Simon, ’81]

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The Power of Representation

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Left side of room:

Number scrabble
A takes 8.
B takes 2.
A takes 4.
B takes 3.
A takes 5.

What should B do?

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Right side of room:

Tic-tac-toe

A	B	A
	A	
B		

What should B do?

The Power of Representation

[Norman, '94; Simon, '81]

- Number scrabble is re-encoded tic tac toe

4	9	2
3	5	7
8	1	6

- "The important point is that we can make marks or symbols that represent something else and then do our reasoning by using those marks."

Design process

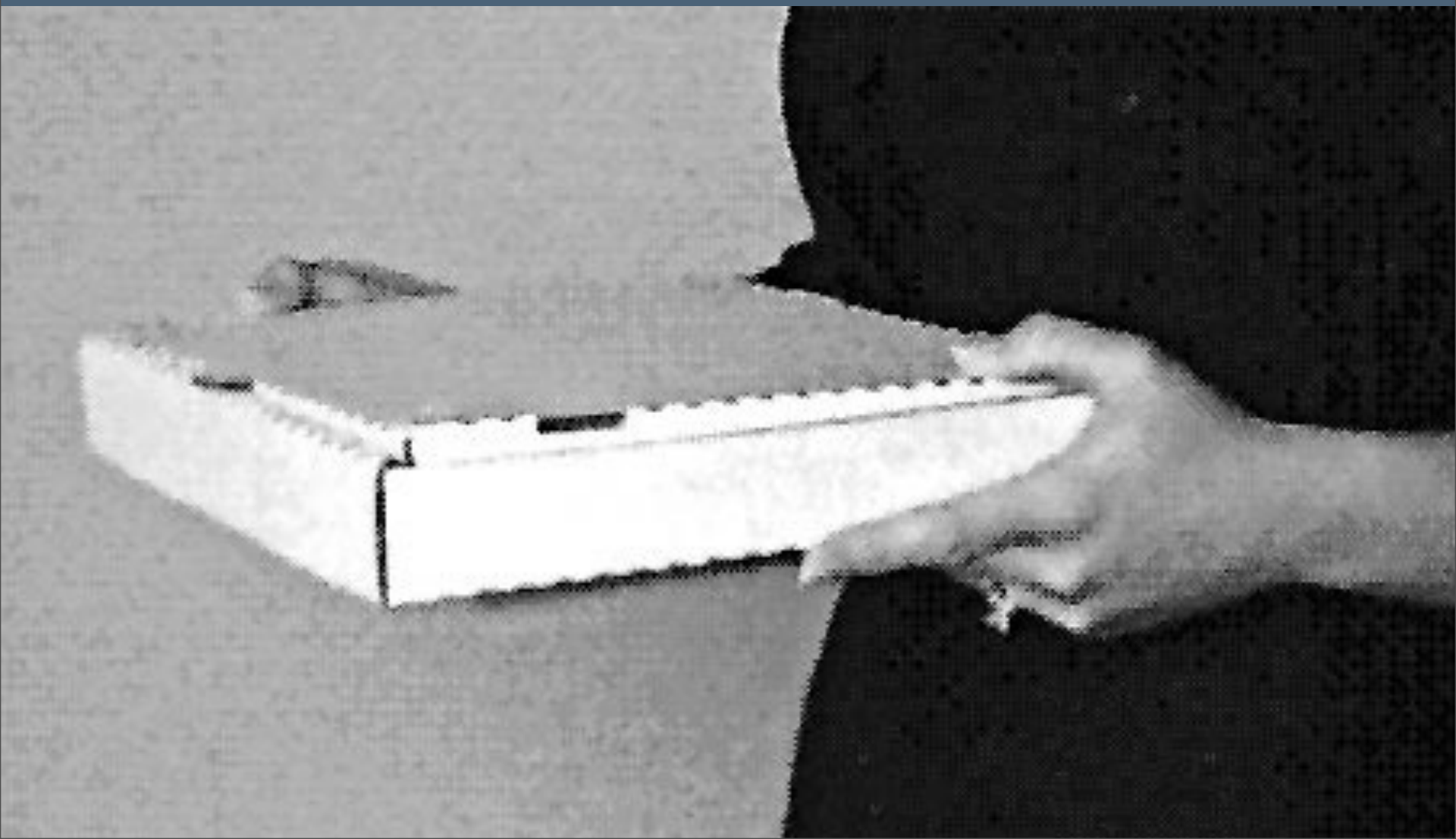
What do prototypes prototype?

[Houde and Hill, Handbook of HCI '97]

- **Role prototypes**: does the design support activities and tasks?
- **Look and feel prototypes**: what is the style and the form of the design?
- **Implementation prototypes:** how will the design be built or deployed?

What do prototypes prototype?

[Houde and Hill, Handbook of HCI '97]



Iterate on a design, or create parallel alternatives?

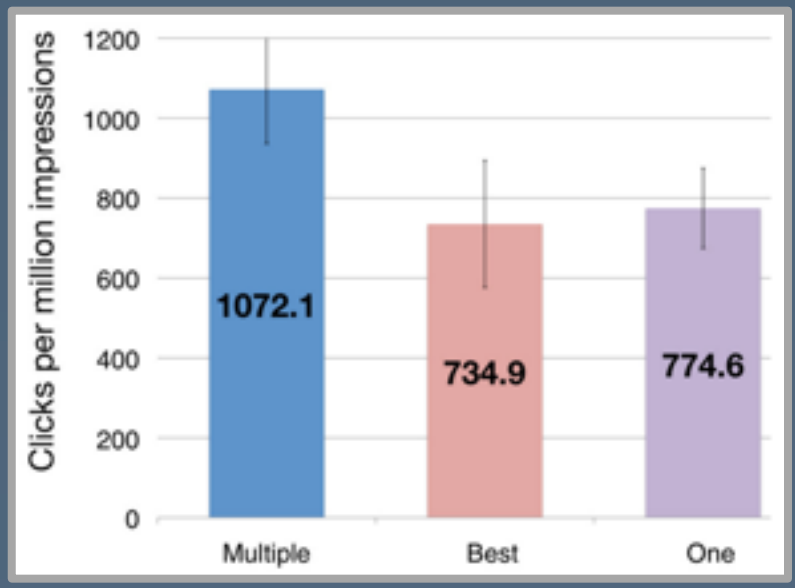
[Dow et al., TOCHI '10]

- Feedback on five iterations or five parallel alternatives
- Quality measured via ad clickthrough
- Designs generated in parallel condition had ~1/3 more clicks

Prototyping dynamics: share one, or share multiple?

[Dow et al., CHI '11]

- When getting feedback from a partner, designers would...
  - Share multiple: design and show three ads
  - Share best: design three and show one ad
  - Share one: design and show one ad



Ethnographic approach to design [Blomberg and Burrell, HCI Handbook '03]

- Qualitative research methods have matured into a core part of the HCI research toolkit
- A caution from Blomberg and Burrell:
  - "Insights from ethnographic studies do not map directly onto design specifications."
- Instead, ethnographies provide deep insight into the user population and practice

Implications for design?

[Dourish, CHI '06]

- If viewed as part of a design process, ethnography must produce actionable requirements for design and development

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- If viewed as part of a design process, ethnography must produce actionable requirements for design and development
- "Scenic fieldwork" in HCI ignores the analytic contribution of an ethnographer
  - It is (wrongly) viewed as a method rather than a perspective

Implications for design?

[Dourish, CHI '06]

- "Ethnography provides insight into the organization of social settings, but its goal is not simply to save the reader a trip; rather, it provides models for thinking about those settings and the work that goes on there."

Implications for design?

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- "Ethnography provides insight into the organization of social settings, but its goal is not simply to save the reader a trip; rather, it provides models for thinking about those settings and the work that goes on there."
- "The value of ethnography, then, is in the models it provides and the ways of thinking that it supports."

Crowds in the classroom

[Dow, Gerber and Wong, CHI '13]

- Reach beyond the class population for design project classes
  - Needfinding: read and mine social media
  - Ideation: brainstorming with Mechanical Turk
  - Testing: MindSwarms video feedback on ideas
  - Pitching: Kickstarter & IndieGoGo

Scaling the design studio

[Kulkarni and Klemmer, under review]

- How can we teach design to millions?

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Scaling the design studio

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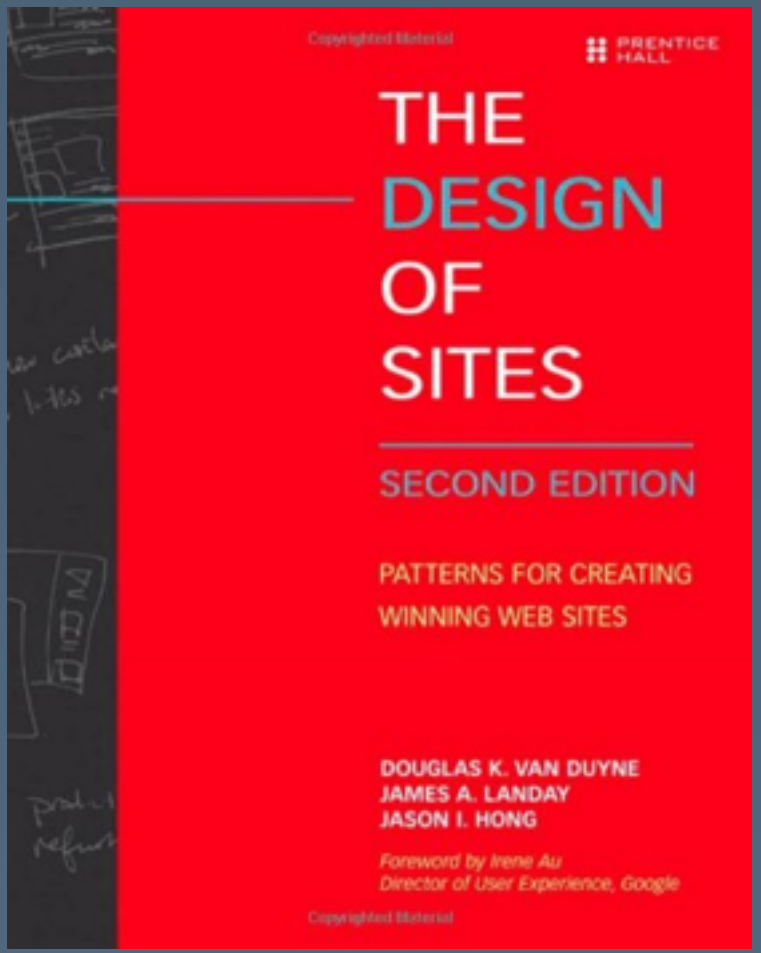
- How can we teach design to millions?
- Klemmer's HCI class on Coursera: thousands of submissions, thousands of students
- **Peer assessment**: training students to give calibrated feedback on each others' design assignments
- Now deployed to many other classes, including network science, science fiction, english...

Design resources

Design patterns

[van Duyne, Landay and Hong, '06]

- Web design, much like web software, can be characterized by successful design patterns
- Examples...
  - News mosaics
  - Distinctive HTML titles
  - Quick-flow checkout
  - Floating windows



Wednesday: pilot study exercise