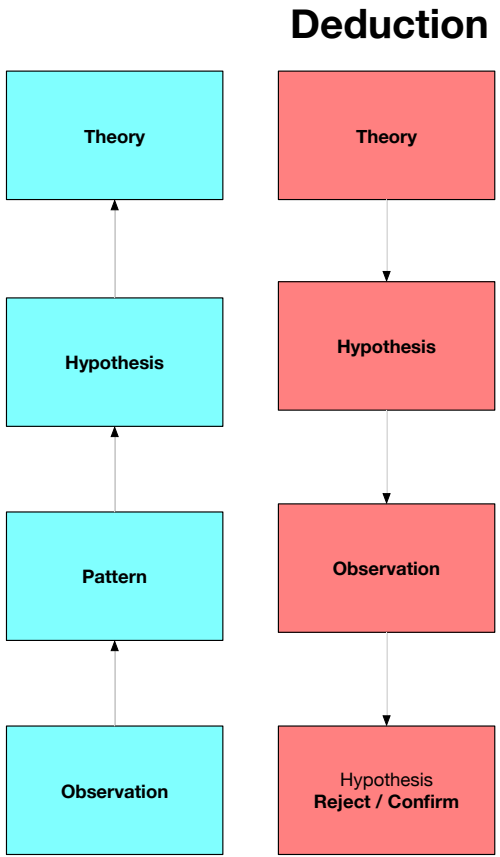
Design as a method

LIS 570

Lecture Agenda

- What is design
- What are design problems
- How to use design as a method
- Some paradigms of design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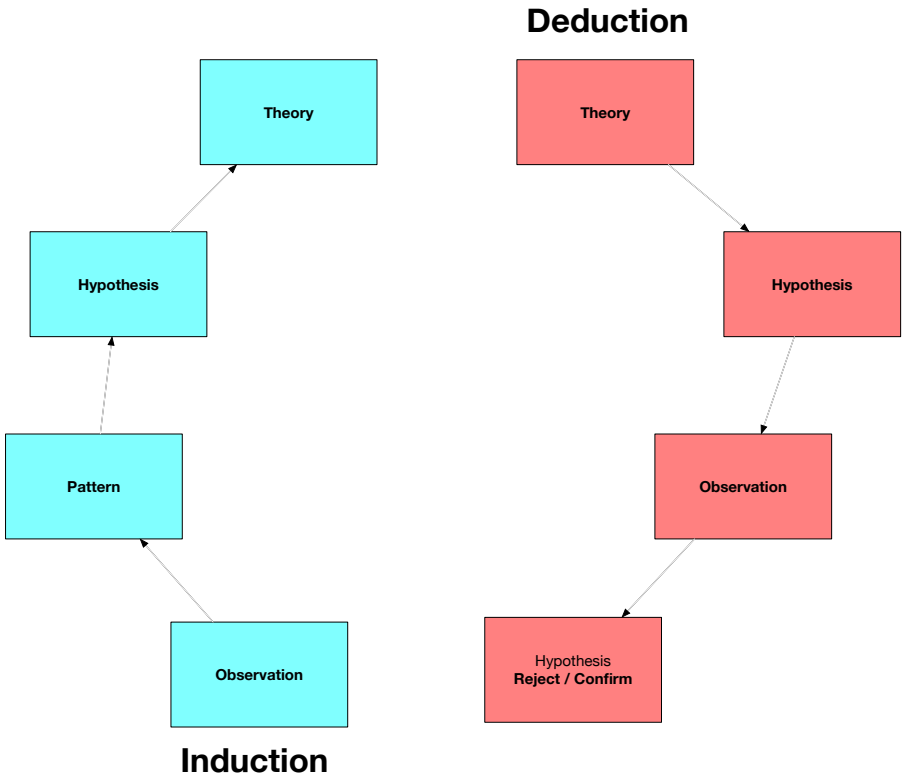
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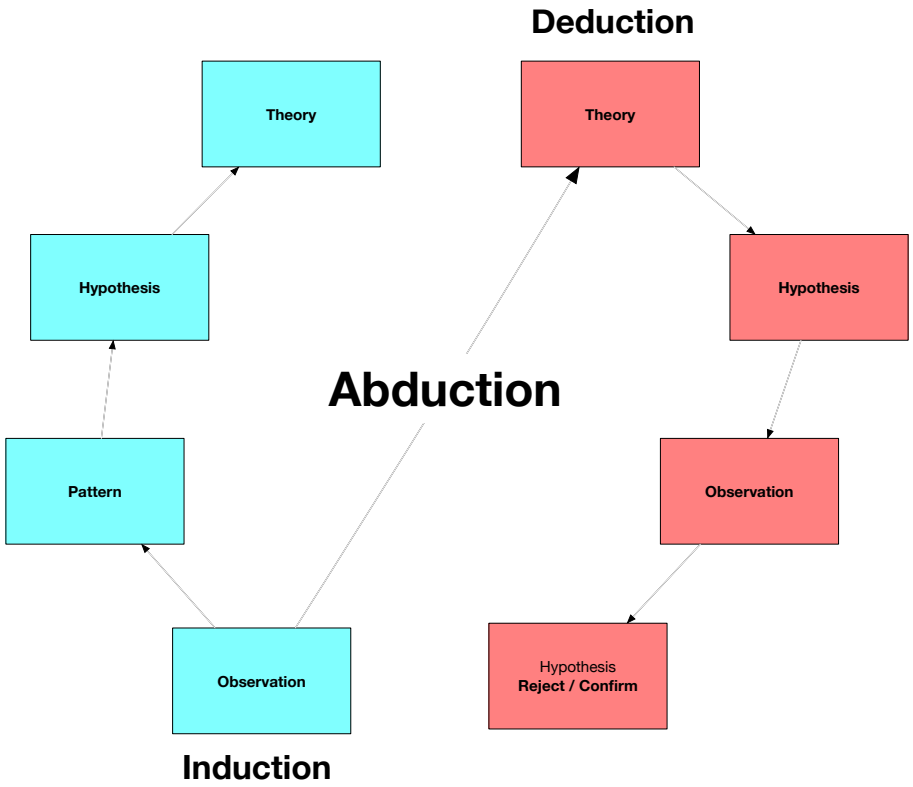
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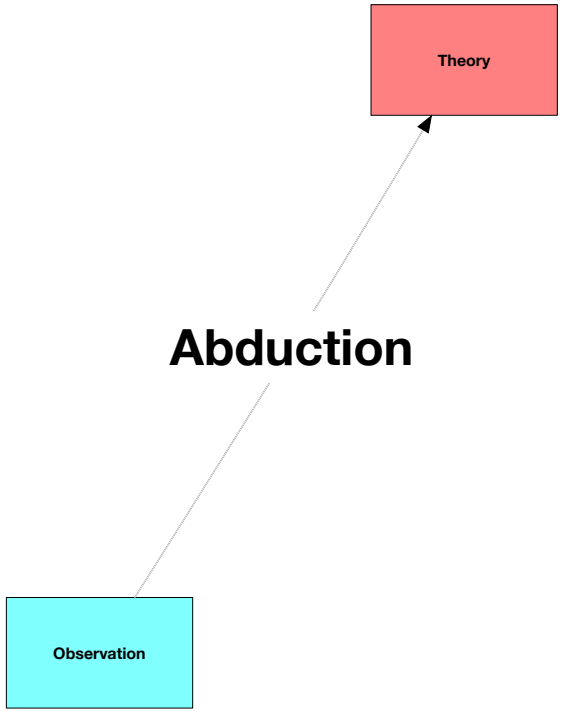
- Abductive logic “jumps” from observation to theory (explanation)
- Then tests or observes the theory in terms of its effectiveness
- Most of the time we’ve described “effectiveness” to mean explanation
- Designers often mean “effective” to solve problems
- Generalizability, triangulation, external validity all take on different meanings in this context…



What is design

What we typically think of graphical elements in digital design:

- Fonts, layouts, colors, templates

What LIS means by design

- Processes for **Generating** ideas
- Methods for **Evaluating** ideas
- Means of **Communicating** ideas

In short, design is about problem solving through the generation, evaluation, and communication of novel ideas…

Design as problem solving

Designers often think of two criteria for a worthy problem:

- Unknown entity in some situation (algorithm in math; violence in schools)
- Identifying and describing solutions are socially, economically, or intellectually valuable

Designers often frame problems around a definition, and a domain.

- Definition are variables of the problem
- Domain is the application space

Design as problem solving

Problem solving in design is "any goal-directed sequence of cognitive operations" (Anderson, 1980, p. 257)

- **Logic of operation**: requires understanding cognition about operations
- **Design Patterns:** Abstracting patterns from these operations that are typical of different sequences of events

Problem: How do you pour syrup on a waffle?

Forms of problems

Problems in design are typically described in terms of

- Structure (poorly formed vs well formed)
  - Well formed: How to build a drink holder compliant with cup diameter
  - Ill-formed: How to make roads more pedestrian friendly
- Domain specificity (abstract vs concrete particular)
- Complexity (simple vs multi-faceted)

Types of designers

Information Technology

- **Graphic designers** take information and find ways to present it in a way that efficiently engages people in understanding that information.
- **Interaction designers** envision new kinds of interactions with interactive technologies, usually as part of design consultancies. They usually work on contract, helping other companies envision new products.
- **Product designers/managers** investigate market opportunities and technical opportunities and design products that capitalize on those opportunities in a competitive landscape.
- **Software engineers** do many kinds of design. They design data structures, algorithms, and software architectures. Front end developers occasionally design user interfaces, unless they work in an organization that has dedicated user interface designers.
- **User experience designers** design and prototype user interfaces, defining the functionality, flow, layout, and overarching experiences that are possible in a product. In many bigger companies, UX designers determine what software engineers build.
- **User experience researchers** understand problems deeply so that designers can envision solutions to those problems or improve existing products.

Types of designers

Typical LIS technology adjacent design

- **Curriculum designers (educators, librarians)**
    a. Sequencing of courses
    b. Literacies / Competencies
    c. Conformance with external standards
- **Policy designers (administration, politicians)**
    a. Rules in form vs Rules in use
    b. Sanctions (for non-compliance)
    c. Regulatory compliance
- **Standards designers (W3C, ISO)**
    a. Internet protocols
    b. Syntax and semantics of digital objects
    c. Metadata, classification, and cataloguing schemas

What is a design method…?

Sequence of operations for problem solving…

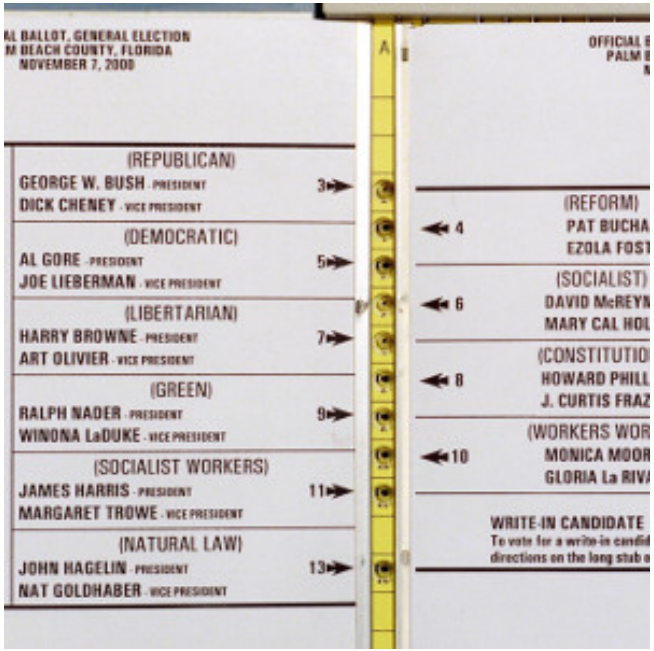
1. Problem definition
2. Requirements gathering
3. Problem elaboration and refinement
4. Prototype
5. Evaluation (analytical)
6. Formalize a set of specifications
7. Deployment
8. Evaluation (empirical)

What is a design method…?

1. Problem definition
2. Requirements gathering: Interview, ethnography, co-design
3. Problem elaboration and refinement : literature review, content analysis
4. Prototype
5. Evaluation (analytical) : UX methods - walkthrough, cognitive model, card sort, etc
6. Formalize a set of specifications
7. Deployment
8. Evaluation (empirical) : Interview, ethnography, survey

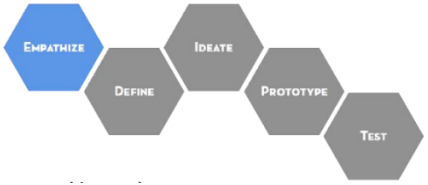
What is a design method…?

1. Problem definition: Voting ballots are confusing
2. Requirements gathering: Interview voters about their experience voting
3. Problem elaboration and refinement : Read literature on history of ballot design
4. Prototype: Build a new ballot based on interview and previous versions
5. Evaluation (analytical) : Conduct experiment with voters and ballot counters
6. Formalize a set of specifications: Determine code / regulations for ballot being used in a particular jurisdiction
7. Deployment: Put ballot into practice
8. Evaluation (empirical) : Watch 2024 elections


AL BALLOT, GENERAL ELECTION
M BEACH COUNTY, FLORIDA
NOVEMBER 7, 2000
(REPUBLICAN)
GEORGE W. BUSH - PRESIDENT
DICK CHENEY - VICE PRESIDENT
3
(DEMOCRATIC)
AL GORE - PRESIDENT
JOE LIEBERMAN - VICE PRESIDENT
5
(LIBERTARIAN)
HARRY BROWNE - PRESIDENT
ART OLIVIER - VICE PRESIDENT
7
(GREEN)
RALPH NADER - PRESIDENT
WINONA LaDUKE - VICE PRESIDENT
9
(SOCIALIST WORKERS)
JAMES HARRIS - PRESIDENT
MARGARET TROWE - VICE PRESIDENT
11
(NATURAL LAW)
JOHN HAGELIN - PRESIDENT
NAT GOLDHABER - VICE PRESIDENT
13
A
OFFICIAL
PALM
(REFORM)
4
PAT BUCHA
EZOLA FOST
(SOCIALIST)
6
DAVID McREYN
MARY CAL HOL
(CONSTITUTIO
8
HOWARD PHILL
J. CURTIS FRAZ
(WORKERS WOR
10
MONICA MOOR
GLORIA La RIV
WRITE-IN CANDIDATE
To vote for a write-in candid
directions on the long stub

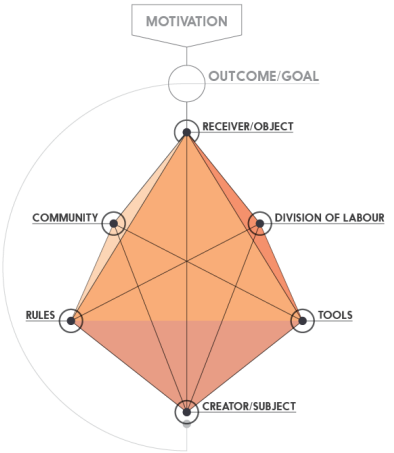
Design Paradigms (Human-centered)

Human Centered: “First try to analyze the problem you are solving, *then* generate ideas, then *test* those ideas with the people who have the problem you are solving.”



Participatory: Extends HCD so that users are not just consulted, but included in design activities throughout the requirements, prototype and evaluation stages.

Activity-centered design: “focuses less on problems or people's needs and more on what they *do*, ensuring that what you design integrates well into the complex fabric of an activity”



Further reading on design …

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- Kolko, J. (2010). Abductive thinking and sensemaking: The drivers of design synthesis. Design Issues, 26(1), 15-28.
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