Northeastern University, MFA IDV, Spring 2022

ARTG 6110 -02 Information Design Theory and Critical Thinking
Syllabus
http://www.dubberly.com/courses/design_theory_2022_spring/
Hugh Dubberly, email: hugh@dubberly.com
Liz Kantak, TA, email: kantak.e@northeastern.edu

Weekly Schedule

0	W	1/19	Intro
1	W	1/26	Novak/Gowin + Dubberly
2	W	2/02	Saussure + Peirce
3	W	2/09	Shannon + Buchanan
4	W	2/16	Star + Gibson
5	W	2/23	Johnson + Dourish
6	W	3/02	Alexander + Dubberly — tentative workshop 3/05-06
7	W	3/09	Simon + Pask
	W	3/16	Spring Break
8	W	3/23	Dubberly + Rittel
9	W	3/30	Schön + Schön
10	W	4/06	Winner / Project proposal due
11	W	4/13	Review Final Project Draft — tentative workshop 4/16-17
12	W	4/20	Review Final Project Draft
13	W	4/27	Final Presentation (last class meeting)
14	W	5/04	Book + Poster due (no class meeting)
	T	5/10	Grades due

The class will meet weekly, from 12:00 – 1:00 pm ET, Wednesdays (W),

Description

This seminar course examines theoretical foundations and models of design as it relates to information visualization and delivery. Students will evaluate concepts and models through readings, diagramming exercises, discussions, and writing. The course meets 1 hour each week on-line; in addition there will be a two-day online workshop (3 hours each day) the first weekend of the semester. We will also have two two-day, in-person workshops later in the semester, likely 3/05-06 and 4/16-17, but those dates are tentative.

Objectives

In this course, students will learn
- what conceptual models are and their theoretical basis
  (in semiotics, linguistics, sociology, etc.)
- ways to represent models and understand the shape of information
- the role of models in the design process and collaboration
- greater facility in making, reasoning with, and arguing through models
- a theoretical foundation for design practice

Process

Students will read a series of articles and create diagrams representing the main concepts described in each article. Students will then synthesize what they have learned to create new models of their own, presented as a poster-size, composite diagram (a "concept map").

The outcome of the course will be two sets of pieces:
- 1. A collection of diagrams of concepts from the readings (e.g., Saussure's model of a sign, Peirce's model of a sign, etc). These diagrams should be collected together at the end of the course in a presentation book.
- 2. A series of models of design as understood by the student:
- a. A first concept map, providing a baseline — the point from which we are starting.
- b. An intermediate map after the first set of readings.
- c. A series of preparatory sketches, leading to a candidate presented at the last workshop.
- d. A final map (poster) including refinements based on feedback in the last workshop —
    the equivalent of a final "paper".

Requirements

Students should be enrolled in the IDV MFA program or have permission of the instructor.

Grad students from other disciplines and mature undergrads are encouraged to participate.

Rules and Conditions

Attendance: Because of the small number of class meetings, no unexcused absence will be allowed. Tardiness and unexcused absences will lead to C, D, and F grades.

Reading assignments and class discussions: There will be reading assignments each week, available on the internet. You are expected to complete all readings and related diagrams, before class. You are also expected to actively participate in discussions.

Assignments: Most classes include a concept map assignment. They are due 10:00 pm the night before class. Late delivery of assignments will affect your grade in the following way: for each day that you are late, the grade declines by one letter.

Integrity: You are requested to abide by Northeastern University's Academic Integrity Policy at: http://www.northeastern.edu/osccr/academic-integrity-policy/

The use of email: for effective email communication, please review http://hbswk.hbs.edu/archive/4438.html

Grading

Weekly assignments will be graded plus/check/minus. Assignments receiving a minus should be revised.

The overall course grade will be calculated as follows:
- 20% for in-class participation
- 20% for weekly concept maps (models)
- 20% for concept book (with all models)
- 20% for preparatory sketches and draft final project
- 20% for final project: concept map "poster"

In-class participation is affected by contributing to discussions and critiques; missed readings and lack of preparation will also be noted. Participation will be summed and can shift the overall grade by one letter. No incomplete will be given, except in extenuating and unforeseen circumstances, and you must have already completed a substantial portion of the course, with passing grades.

Grade scale from the Academic Catalogue:
A = Outstanding achievement, A– = Less so
B = Good achievement, B+ = More so, B– = Less so
C = Satisfactory achievement, C+ = More so, C– = Less so
D = Poor achievement
F = Failure

Criteria for Models (also used in grading)

Fit
Does the model "fit" observations? (Are they "congruent"?)
Does the representation "fit" the model?
Do representation and model have similar structures?
Are all the elements in the model explicit in the representation?

Least Means
Could the model be represented in a simpler way?
What can be removed without changing the meaning? (Remove decoration.)
Could conventional symbols or other standard patterns make reading easier?

Consistency
Are the means of representation consistent?
Similar forms should represent similar functions or similar content.
Likewise, similar functions or similar content should be represented by similar forms.
Are all elements (nodes) and their connections (links) labeled?

Contrast
What about the model should appear to be most important?
Does the most important thing appear most important? (Not everything is equally important.
Important elements of the model should stand out in the representation. One way to achieve
contrast is through scale, making more important items larger than less important items.)

Hierarchy
How do the elements of the model appear to fit together?
Is the structure of the model clearly visible?
Do we know where to look first?
Can we find a clear path through the model?
The final test of the model (and representation) is with the audience.
Does the audience understand it?
Do they agree with it?
Do they agree that they agree?
Will they act on it?

Sign Posts
Does the plate include the necessary meta-data? (author, date, assignment)
Does the plate have a clear title?
Does the plate include necessary citations?

Assignment 1: Getting Started

Readings:
- *Learning How To Learn*, pages 15 - 54.
- "Creating Concept Maps,"
- "Models of Models,"

Project:
Create a concept map of your mental model of "design".
Include the terms you feel are relevant; explain how they are linked.
Use what you learned from the first two readings to make the map.
The map is your "concept" of design; there is no right or wrong answer.

Requirements:
- Title, your name, date, assignment
- Label all the links; nodes do not need to be in ovals.
- Check spelling and grammar.
- Upload a PDF version here:
https://drive.google.com/drive/folders/1wDgA_v6EMbeahlxr61XrkK4qUcsJPij7

Format:
- 11" x 17", landscape orientation, printed, black + white,
- Use Helvetica Regular 10/12 as the main font, upper and lowercase.
- You may add other type sizes, styles, and even color, but do so sparingly.

Suggestions:
- Consider this a sketch; don't think of this as a typography exercise.
- Keep it neat, but don't obsess over the form; the content is what's important.
- Adobe Illustrator is a good tool, but other drawing tools may be used.
- Paint programs, such as Photoshop, are not the right tools.
- Plan to spend 1-2 hours on the readings and 3 - 4 hours on the map.

Due:
Saturday, January 22, 12:00 pm.

Purpose:
- Introduce concept mapping and begin discussions about models.
- Provide a baseline "snapshot" of your model of design.

###

Weekly Assignments

For *each* weekly reading, create a concept map —
a simple diagram illustrating the key concepts and their relationships.

Start by reading the text; highlight key ideas;
make a list of terms to include;
build a structure linking them.

Some readings feature clear models, (e.g., Shannon).
Make sure to include any key models in your diagram.
Save your diagram as a PDF.

Don't forget a title, your name, date, assignment, citations.

Save all your diagrams!
You will need them for your book at the end of the class.

It's a good idea to develop a design language (style sheet)
and page template right at the beginning of the course,
so that your diagrams appear to be part of a family.

Requirements:
- Title, your name, date, assignment
- Label all the links; nodes do not need to be in ovals.
- Check spelling and grammar.
- Upload a PDF version here:
https://drive.google.com/drive/folders/1wDgA_v6EMbeahlxr61XrkK4qUcsJPij7

Format:
- 11" x 17", landscape orientation, printed, black + white,
- Use Helvetica Regular 10/12 as the main font, upper and lowercase.
- You may add other type sizes, styles, and even color, but do so sparingly.

Suggestions:
- Keep it neat, but don't obsess over the form; the content is what's important.
- Adobe Illustrator is a good tool, but other drawing tools may be used.
- Paint programs, such as Photoshop, are not the right tools.
- Plan to spend 1-2 hours on the readings and 3 - 4 hours on the map.

Due:
Each Tuesday, by10:00 pm.

###

Weekly Readings available at http://www.dubberly.com/courses/design_theory_2017/

1 1/22   *Learning How To Learn,* Novak, J., and Gowin, B., Cambridge University Press, 1984. Chapter 2, pages 15-54.

"Creating Concept Maps," Dubberly, H., 2010.

"Models of Models," Dubberly, H., 2009.

2 2/02   *Course in General Linguistics,* de Saussure, F., McGraw-Hill, 1959, pages 1-17, 65-122.

Philosophical Writings of Peirce, edited by Buchler, J., Dover, 1955. pages 98-119, 269-289.

3 2/09   "The Mathematical Theory of Communication," Shannon, C. and Weaver, W., University of Illinois, 1964, pages 31-35. [Skip the equations.]

Role of the Reader, Eco, Umberto, "Introduction," Indiana, 1979, pages 3-15.

"Design Ethics," Buchanan, R., Encyclopedia of Science, Technology, and Ethics, 2005, pages 504-509.

4 2/16   "Institutional Ecology and 'Translation" of Boundary Objects: Amateurs and Professionals In Berkeley's Museum of Vertebrate Zoology, 1907-39," Star, S. and Griesemer, J., Social Studies of Science, 1989, pages 387-414.

"The Theory of Affordances," Gibson, James J., The Ecological Approach to Visual Perception, Chapter 8, pages 127-144.

5 2/23   *Conceptual Models: Core to Good Design*, Johnson, J., and Henderson, A., Morgan & Claypool, 2012. Chapter 4.

"What We Talk About When We Talk About Context," Dourish, P.

6 3/02   *Notes on the Synthesis of Form,* Alexander, C., Harvard, 1964, Chapter 6, pages 73-83.

"The Analysis-Synthesis Bridge Model," Dubberly, et al., 2008.
"Designing as learning—or 'knowledge creation'—the SECI model," Dubberly and Evenson, 2013.

7   3/09   *The Sciences of the Artificial*, Simon, H., MIT Press, 2001, Chapter 5, "The Science of Design," pages 111-138.

             "The Architectural Relevance of Cybernetics", Pask, G., *Architectural Design*, Sept. 1969, pages 494-496.

8   3/23   "Why Horst W. J. Rittel Matters," Rith, C. and Dubberly, H., *Design Issues*, Vol. 22, No. 4, Autumn, 2006. [No diagram required.]

             "On the Planning Crisis: Systems Analysis of the 'First and Second Generations'." Rittel, H., Bedrifts Økonomen. 8 (1972): 390–396.

             See also, "Dilemmas In A General Theory Of Planning," also by Rittel. [No diagram required.]

9   3/30   "The Design Process," Schön, D., in Varieties of Thinking, edited by Howard, V. A., Routledge, 1990, Chapter 7, pages 110-140.

             The Reflective Practitioner, Schön, D., Chapter 3, "Design as a Reflective Conversation with the Situation," pages 76-104.

10   4/06   "Do Artifacts Have Politics?" Winner, L., *Daeddalus*, Vol. 109, No. 1, pages 121-136, 1980.

             Final project proposals due no later than 4/06.

             ###

Presentations on Individual Readings

Each week, during our online meeting,
one student will present a summary of one of the following readings.
A slide presentation with 6 to 12 slides would be about right.

You all would benefit from reading all these articles.

- Gui Bonsiepe, "Design and Democracy," *Design Issues*, Vol. 22, No. 2, Spring, 2006.

- Tim Brown, "Design Thinking," *HBR*

- Jay Doblin, "A Short, Grandiose Theory of Design"

- Charles Eames, Interview + Model

- Dieter Rams, 10 Principles

- Victor Papanek, *Design for the Real World*, Chapter 1

- Paul Rand, "Design and the Play Instinct"

- Massimo Vignelli, *The Vignelli Canon,*

- Beatrice Ward, "The Crystal Goblet,"

- Kees Dorst, "Design beyond Design," *She-Ji*, Tongji University, 2019.

- Chris Conley, "The Core Competencies of Design:
  The Basis of a Broadly Applicable Discipline"

- Mark Weiser, et al., "Calm Tech Design Principles" https://calmtech.com/index.html

We will assign individuals to articles and select presentation dates
during the first class.

###

Concept Map Book Assignment

Project:
Create a book summarizing the course.
At a minimum, include the concept maps you made for each reading.
Consider also including notes from the workshop.

Format:
- 11" x 17", landscape orientation
- Include a cover with title, your name, date, assignment
- Also include a table of contents (TOC)
- Ensure that the diagrams share a common visual language (style, template)

Suggestions:
1. Complete your weekly assignments —
a diagram illustrating the key concepts from each reading.

2. Make any revisions you need based on written feedback, in-class discussion, and
discussion with your peers and the TA. (Look at their work! Borrow what makes sense—
and cut information that's extra.)

3. User "test" your diagrams with at least one other person. Get feed back!
Check spelling and grammar.

4. Compile your diagrams in a "presentation book".

First Deliverable Due:
A draft PDF version is due, Tuesday, April 13, 10:00 pm.
This is an interim check-in on the book.
A final version of the book (as a PDF) will be due at the end of the course.

Purpose:
- Create a reference piece that you can use later.

###

Final Assignment: Poster Diagram

Project:
Create a model of an aspect of design. For example, your model might describe what design is or how designing is done — a concept map or a process map. You may extend your original concept map of design — or you may start a new map.

Format:
- Represent your model in the form of a poster — that is, a large diagram.
- 22" x 34" (plotter print or 4 11x17 pages or 8 standard letter pages)
- Include a title and signature block.

Suggestions:
1. You may want to start with a design theory text,
e.g. *Design for the Real World* or *Notes on the Synthesis of Form*.

2. Consider who the "actors" are in your model. What are their goals? What do they value? (That is, what do they want to conserve? change?) How do they interact? (What is exchanged? How does the process start? stop?) What is the context of their interaction? What else is involved? (e.g., tools, boundary objects, methods)

3. Also consider how the readings might relate to your model. (They do not all have to be explicitly addressed, but it might make sense to address at least one of them.)

4. Consider this a writing exercise and a sketch, not a typography exercise, but give basic typographic structure to your model. Keep it neat and simple.

5. Consider how you will present your model to the class. What will you say about it? What's the main idea? What's the story you want to tell?

First Deliverable Due:
Write a short proposal (less than one page); include: title, brief description of your approach and model (the story), and also your inspiration or sources.
Please send your proposal to me as soon as you can, but no later than April 6.

Second Deliverable Due:
Post a draft on Tuesday, April 12, by 10:00 pm.
A final version of the poster (as a PDF) will be due at the end of the course.

Purpose:
- Provide an opportunity to synthesize what you've learned.
- Extend your thinking into new areas.
- Show how your model of design has changed over the semester.

###

Women whose writing is relevant to design practice

Design Theory + Design Studies

Bell, Genevieve, "Why we need a cybernetic future."
Churchill, Elizabeth, "Designing with Data:
    Improving the User Experience with A/B Testing."
Evenson, Shelley, https://www.researchgate.net/profile/Shelley-Evenson
Forlizzi, Jodi, "The product service ecology: Using a systems approach in design"
Helfand, Jessica, "Design Observer," various essays.
Ju, Wendy, https://www.wendyju.com/
Lupton, Ellen, various books and essays.
Mager, Birgit, "Designing Services with Innovative Methods."
Perlman, Chee, various essays.
Suchman, Lucy. "Plans and situated actions."
Yelavich, Susan, various essays.
Wodtke, Christina, several books.

Social Critique

Bardzell, Shaowen. "Feminist HCI: Taking Stock and Outlining an Agenda for Design."
Bush, Corlann Gee. "Women and the Assessment of Technology:
    To Think, to Be; to Unthink, to Free" in *Machina Ex Dea*.
Butler, Judith. "Gender Trouble: Feminism and the subversion of identity."
Butler, Octavia E, "Race futures, black science fiction"
Costanza-Chock, Sasha, "Design Justice: Community-Led Practices…"
Cowan, Ruth Schwartz. "More Work for Mother."
Forlano, Laura. "Invisible Algorithms, Invisible Politics."
Haraway, Donna Jeanne. "The companion species manifesto:
    Dogs, people, and significant otherness."
Merchant, Carolyn. "The Death of Nature."
Nardi, Bonnie and H. R. Ekbia. "Heteromation, and Other Stories
    of Computing and Capitalism"
Wajcman, Judy, "Pressed for Time."
Zuboff, Shoshana, "Surveillance Capitalism."

Additional Books and Resources on Design Theory

- Helen Armstrong, *Graphic Design Theory: Readings From The Field*,
  also *Digital Design Theory: Readings From The Field*.

- David Brody, *Design Studies Reader*

- Meredith Davis, *Graphic Design Theory (Graphic Design In Context)*.

- Kees Dorst, *Notes on Design: How Creative Practice Works*.

- Daniel Jackson, *Design by Concept: A New Way to Think About Software*.

- Bryan Lawson, *How Designers Think: The Design Process Demystified*.

- Harold G. Nelson + Erik Stolterman, *The Design Way*.

- Don Norman, *The Design of Everyday Things*.

- Sharon Helmer Poggenpohl, *Design Theory To Go*.

- Johan Redström, *Making Design Theory*.

- Peter Rowe, *Design Thinking*.

- Bruce M. Tharp and Stephanie M. Tharp, *Discursive Design:
  Critical, Speculative, and Alternative Things*.

- Terry Winograd and Fernando Flores, *Understanding Computers and Cognition:
  A New Foundation for Design*.

- Brett Victor, http://worrydream.com/refs/

- James M. Smart, http://www.foresightguide.com/

- Paul Kahn, "Locating Value with Alignment Diagrams"

- Paul Kahn, "Seeing the Differences: The Nine Functions of Information Design"

- Richard Buchanan, *Design Issues* (design journal)

- Ken Friedman, *Shi-Ji* (design journal)

Other Authors Relevant to Design Theory

- Roland Barthes

- Michel Foucault

- Steve Heller

- Bruno Latour — actor-network theory

- Robert Pirsig — quality

- Edward Deming + Walter Shewhart — quality management

Other Resources

- Eames feedback video

- Bill Verplank video

- Manuel Lima history of human knowledge video (trees vs networks)
  https://www.ted.com/talks/manuel_lima_a_visual_history_of_human_knowledge
  NB: Chinese sub-titles
  see also: https://www.youtube.com/watch?v=yOxh5v2qCek (circles)

- Dieter Rams film

- Douglas Engelbart, "Mother of All Demos"

Topics

What is the design process?
  - Double diamond, bridge, SECI, feedback, waterfall, agile

What is "good" design? Or more broadly, what is "quality"?
  - What criteria and principles are key?
  - What projects and artifacts exemplify "good" or "quality"?
  - Which designers do you respect? Why?
  - Which books are important for designers? Why?

What do designers design?
  - What is the "space of design"?
  - Design types: product, graphic, interaction, service, systems
  - How are "products" changing?
  - Frames: craft/making, art/appearance, science/problems, politics/framing
  - Dimensions: Jay Doblin model, "Balanced Innovation" model

Design as conversation
  - The social-political nature of designing:
    The role of models in framing, arguing, and collaborating
  - Design rationale

Aesthetics + style

Behavioral economics

De-colonization

Design methods

Design thinking

Ethics + responsibility

Research + co-design + meta-design

Systems thinking

"The shape of information" — primitives: array, matrix, tree, web (graph)
Related ideas: necessary + sufficient; MECE; CIPU
Other frameworks: AEIOU, 80/20, SWOT, MAYA, VUCA, etc.

###