University of California, Berkeley
Jacobs Institute for Design Innovation
MDes Degree Program

Design Frameworks DES INV 200
Syllabus (version e 1.5, September 20, 2024)
http://www.dubberly.com/courses/frameworks_2024_fall/

Frameworks 2024 Fall meets Wednesdays
3:30 - 5:00 pm, Jacobs room 310, discussion sections (breakouts)
5:00 - 5:30 pm, break
5:30 - 7:00 pm, Jacobs room 310, lecture + exercise (full group)

Faculty:
Barry Katz, bkatz@cca.edu,
Hugh Dubberly, hugh@dubberly.com
Kevin Ma (GSI/TA), kevinma1515@berkeley.edu

Design Frameworks is a seminar course (in contrast to a studio course).
Your work will be to read articles and make concept maps summarizing
them. Each class meeting, in the first session, we discuss two articles, one
on the history of design and technology and the other on ways of framing
design, e.g., design as art vs. science vs. politics, rhetoric, and more.

The goal is to become better at "framing" — engaging with a situation,
forming mental models of it, and representing those models. The course
seeks to expand your vocabulary, so that you think more broadly about
what-you-are-doing when you design and more easily share your thoughts.

Frameworks are what computer scientist Alan Kay has called "tools for
thinking." An evolving set of terms, methods, and frameworks form the
core of professional literacy, helping designers understand situations more
quickly and work with stakeholders more effectively.

Frameworks describe relationships in processes and systems that repeat.
We can represent these networks as graphs or other diagrams; and we can
apply known frameworks to help understand new situations.

In the second session, we will have a lecture related to the readings. Then,
we will explore a "model" commonly found in practice; discuss its origins
and implications; and apply the model in an in-class exercise.

At the end of the term, students will deliver a book of their concept maps
and a final project: a poster-size map proposing their own model of some
aspect of design (similar in scope to a term paper). Details follow.

How To Succeed

Design Frameworks is a fun and easy course. All you have to do is:
- Read 2 articles each week
- Make a concept map of each reading
- Show up for each class meeting
- Stay for the whole session and participate actively
- Make 2 short presentations on a reading, (one history, one theory)
- Compile your weekly concept maps into a booklet
- Make a model of an aspect of design in the form of a poster (final project)
- Turn in your work on-time

If you do those things with a reasonable amount of effort,
you will have a strong case for earning an "A" grade.

Grading

Weekly concept maps will receive a minus, check, or plus.
Assignments receiving a minus should be revised.

Course grades will be calculated as follows:
- 20% for in-class participation (discussions and exercises)
- 30% for 2 weekly concept maps and the final collection
- 20% for 2 presentations on readings (history and theory)
- 30% for the final project

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

Grade scale:
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

You may earn extra credit for:
- finding new models or frameworks and reporting on them
- reporting on examples of models applied in practice
- creating concept maps of additional readings

Course Policies

Missing more than 3 class meetings will result in failing the course.
(4/15 = 26%)

Participation is a key part of the course,
and to participate, you must attend — unless you are sick.
If you are sick and will miss a class, please alert us in advance.
Tardiness, ducking out, and unexcused absences will affect grades, too.

You should actively participate in discussions; ask questions, be skeptical,
challenge assumptions, offer your experience, suggest analogies.
If the faculty are not clear, please interrupt and ask for another explanation.

Universities rely on the free exchange of ideas.
We expect students to be critical and to debate.
We encourage you to disagree with us and correct our mistakes.

At the same time, we expect students to respect one another.
Not paying attention is the opposite of respecting one another.

The articles for weekly readings will be available on the internet.
You should complete all readings and related concept maps before class.

You must abide by the University of California's Academic Integrity Policy.

You may use AI, but you must cite your use of it. You may even use AI to
generate your concept maps; however, you must be able to show and explain
the process you use, including the prompt sequence.

Please note: This syllabus is a living document.
Some parts may change over the semester.

Office Hours

Instructors will be available from 5:00 - 5:30 for discussions.
Additional meetings can also be arranged as needed.

Organization Into Teams

In session 1, reading discussions will take place in 4 sections.
Each section will have ~13 students.
Kevin will post a list.

Each section will also have a room (the side rooms off 310).
The section leaders (Barry, Hugh, Kevin, Lingxiu) will rotate rooms,
so that each group interacts with each leader.

From week two, in each section,
one student will present the history reading,
and another will present the theory reading.
See below for the requirements for those presentations.
Over the semester, each student will make two presentations.
Kevin will post a schedule.

In session 2, each section will divide into 4 sub-sections.
Sub-sections will have 4-5 students.
Kevin will post a list.
We are being formal about sub-sections to save time in class.
The sub-sections will work together on in-class exercises.

###

Assignment 1: Weekly Reading Concept Maps

For the weekly readings (the one on history and the one on theory),
each week create a concept map describing the key ideas in each reading.

Start by reading the text;
highlight key ideas;
make a list of 12 to 24 terms (the main concepts) to include;
and build a structure linking the terms.
Be sure to label each of the links.

For more on making concept maps, see:
https://www.dubberly.com/wp-
content/uploads/2010/03/ddo_creating_concept_maps.pdf

Some readings feature clear models.
Make sure to include any key models in your diagram.
You may also include key passages from the readings;
be sure to use quote marks and include a citation.

Add a headline summarizing the key idea or point of the reading.
A sentence is more effective than a label.
Place the title in the upper left corner.
Include the article title and author as a subhead.
Also include your name and the date in small type in the lower left corner.

Format: 11x17 inches.

Save all your weekly maps!
You will need them for a final project — a booklet collecting all your maps.

Suggestions:
- Keep your maps neat, but don't obsess over the form;
  the content is what's important.
- Adobe Illustrator is a good tool, but you may use other drawing tools.
- Figma is also a good tool.
- Paint programs, such as Photoshop, are *not* the right tools.
- Plan to spend 1-2 hours on each reading and 1-2 hours on each map.

Due:
Each Wednesday, bring a printed version of your concept map to class.
There's a printer you can use in the MDes studio on the second floor.

Purpose:
- Practice analyzing, modeling, and representing.

###

Assignment 2: Reading Presentations

Each week, in each section, one student will present:
- a synopsis of the history or theory reading
- a brief biography of the author
- 3 questions to kick off group discussions

That means you will make 2 presentations to your group this semester.
(Kevin will post a schedule.)

The presentations should be:
- not more than 5 minutes in length
  (not more than 1 minute on any slide; some can be a lot less)
- at least 9 slides (not more than 12)
- each slide should have a headline (as a sentence, not just a one word title)
- each image should have a caption
- include images of the author (and their work if they are a designer)
- relevant quotes from them and from others about them
- images and quotes should list sources (citations)
- keep the graphic design simple; let your subject shine

Key slides are:
- 1. Title slide: large: article title + author name; small: your name + date
- 2. Background of the author in relation to the work
      (Focus on what might have led to this work)
- 3. Relevant influences and author's primary motivation
- 4. Major idea 1 from the reading
- 5. Major idea 2
- 6. Major idea 3
- 7. Critique + praise (What you question)
- 8. Most important part of your concept map of the reading
- 9. Three open-ended, provocative questions for discussion

Format:
Landscape format slides, 9x16 aspect ratio,
in Google Slides, Keynote, PDF, or Figma.
(Kevin will create a directory for uploading files.)

Extra credit for making a zoomable information space
that can be navigated serially and "random access".

Purpose:
- Kick-off the group discussion
- Add perspectives on the main reading

###

Assignment 3: Final Concept Map Booklet

Create a book summarizing the course.
At a minimum, include the concept maps you made for each reading.

Consider also including notes from discussions, lectures, and exercises.

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 discussions 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 feedback!
Check spelling and grammar.

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

A final version of the book (as a PDF) will be due on December 18.
(Kevin will create a directory for posting.)

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

###

Assignment 4: Final Project — Poster Diagram

Create your own new model of design-as-a-whole or an aspect-of-design. Any topic from the readings is fair game, e.g., design justice, speculative design, design principles, the space of design, your favorite design process. You may also propose other ideas that interest you.

Make a concept map representing your model at poster-size (22x34 inches).
Include a title and signature block.
Print 1 sheet on a plotter or 4 11x17 pages or 8 standard letter pages.

Suggestions:
1. Start with a design theory text; consult other related texts.
Consider how other readings from the course might relate to your model.
(They do not all have to be addressed explicitly.)

2. Name your topic, and write a thesis sentence (i.e., a headline).
Consider how you will present your model to the class.
What's the main idea? What will you say about it? What story will you tell?
Start with a list of terms (concepts) and prioritize and link.

3. 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.

First Deliverable Due November 20.
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.

Second Deliverable Due December 11.
Create a candidate final version, print it, and bring it to class for critique.

A final version of the poster (as a PDF) will be due December 18.

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.

###

Weekly Schedule — Session1a: Readings on design + technology history

1	08.28	Bush, "As We May Think"
		- Memex
2	09.04	Shannon, "A Mathematical Model of Communications"
		- Information and communication defined formally
3	09.11	Sutherland, "Sketch Pad" + video
		- Direct and parametric modeling, design systems and libraries
4	09.18	Engelbart, "Augmenting Human Intellect," + The NLS Demo (video)
		- Augmentation (vs automation); also Ted Nelson's eulogy (video)
5	09.25	Kay, "User Conceptual Models"
		- The Dynabook and the potential of simulation in computing
6	10.02	Licklider, "The Computer as Communications Device"
		- Computer networks and their uses
7	10.09	Nelson, "Computer Lib/Dream Machines" + Xanadu and ZigZag (videos)
		- Hypertext and data structures
8	10.16	Cooper, "The Visible Language Workshop"
		- Origins of MIT's Media Lab
9	10.23	Suchman, "Plans and Situated Actions"
		- The contingent character of work, action, and interaction
10	10.30	Pask, "The Architectural Relevance of Cybernetics"
		- Cybernetics + The Colloquy of Mobiles
11	11.06	Morozov, "The Planning Machine"
		- Project Cybersyn
12	11.13	Mager, "TBD"
		- Service design
13	11.20	Yegge, "Yegge's Rant"
		- Platforms
	11.27	Thanksgiving Holiday (no class meeting)
		-
14	12.04	Bubeck et al., "Sparks of Artificial General Intelligence"
		- Generative AI (Gen AI)
15	12.11	Final Project Presentations
		-
	12.18	Finals Week, Concept map book due electronically
		-
	12.23?	Grades Due

Weekly Schedule — Session1b: Readings about design theory

1	08.28	Novak+Gowin, *Learning How to Learn*
		- Concept maps
2	09.04	Koberg+Bagnall, *Universal Traveler*
		- Design process
3	09.11	Star+Geismar, "Boundary Objects" + Hofstader, "Analogy" (video)
		- Shared mental models
4	09.18	Bonsiepe, "Interaction," + Verplank (video) + Gibson, "Affordances"
		- Models of interaction
5	09.25	Johnson+Henderson, "User Conceptual Models"
		- Defining an interface in terms of data objects
6	10.02	Simon, *The Sciences of the Artificial,* pgs 108-138
		- Satisfycing and problem spaces
7	10.09	Rittel, "On the Planning Crisis" + Buchanan, "Wicked Problems in Design…"
		- Wicked problems
8	10.16	Schön, "Design as a Reflective Conversation with the Situation"
		- Conversation, reflection, framing
9	10.23	Brown, "Design Thinking" + Jen "Design Thinking is Bullshit"
		- Design thinking
10	10.30	Meadows, "Thinking in Systems" + CLD video
		- Systems dynamics, feedback
11	11.06	Winner, "Do Artifacts Have Politics?"
		- Social-technical systems
12	11.13	Sterling on Stuart Brand, "Pace Layers"
		- Time scales
13	11.20	Costanza-Chock, "Design Justice"
		- Matrix of domination
	11.27	Thanksgiving Holiday (no class meeting)
		-
14	12.04	Dunne+Raby, "Speculative Everything"
		- Speculative design and the future cone
15	12.11	Final Project Presentations
		-
	12.18	Finals Week, Concept map book due electronically
		-
	12.23?	Grades Due

Weekly Schedule — Session 2a: Lectures
Please note: Speakers and topics are tentative and likely to change.

1	08.28	Hugh, on frameworks and models
2	09.04	Barry, on Shannon
3	09.11	Hugh: on connecting Shannon and Sutherland
4	09.18	Barry, on Engelbart
5	09.25	Hugh, inviting Tim Sheiner on "The Digital Machine"
		- (or Austin Henderson on Xerox PARC + Trillium)
6	10.02	Barry, on Licklider + ARPA
7	10.09	Hugh, on information architecture (IA) and data structures
8	10.16	Barry, on Muriel Cooper and the Media Lab?
9	10.23	Barry, on Lucy Suchman
10	10.30	Hugh, inviting TJ McLeish on "The Colloquy of Mobiles"
11	11.06	Hugh, on "Data- and AI-enabled Design"
12	11.13	Barry, on service design?
13	11.20	Hugh, on "platforms" + meta-design
	11.27	Thanksgiving Holiday (no class meeting)
14	12.04	Barry, on Turing and AI
15	12.11	Final Project Presentations
	12.18	Finals Week, Concept map book due electronically
	12.23?	Grades Due

Weekly Schedule — Session 2b: In-class Exercises

1	08.28	Draw how-you-make-toast, Cf., Tom Wujec
		- Concept maps, process maps, and node-link graphs
2	09.04	Make a structure from 2 sheets of paper to support 3 dictionaries
		- Double-diamond, bridge, SECI, iteration, (vs spaghetti + marshmallows)
3	09.11	Levels of abstraction in GUIs
		- binary and hex to text and color
4	09.18	Pin-the-tail-on-the-donkey competition + explain how thermostats works
		- Feedback
5	09.25	Explain how to use a clothes-washing machine
		- State diagrams and user-conceptual models
6	10.02	Create a 2x2-competitive map of juicers; also: organize scissors
		- Problem spaces, SWOT, t-SNEs
7	10.09	Create a map of technology
		- Information architecture
8	10.16	Create a map of types of design
		- Origins of MIT's Media Lab
9	10.23	Create a proposal for a service in 20 minutes (user, goal, concept, story)
		- DVF + Guy Kawasaki pitch template
10	10.30	Map the results of reintroducing wolves to Yellowstone
		- Stocks, flows, CLDs
11	11.06	Propose a digital twin for a patient with diabetes
		- Digital twins
12	11.13	Explain your country's national government's structures of change
		- Pace layers
13	11.20	Make a telegraph and network and send a message
		- Platforms and stacks
	11.27	Thanksgiving Holiday (no class meeting)
		-
14	12.04	Propose your own "Turing test" to identify humans
		- Future cone
15	12.11	Final Project Presentations
		-
	12.18	Finals Week, Concept map book due electronically
		-
	12.23?	Grades Due

Deferred:

Map the solar system to scale
- Measuring, data, models, analogy

Schedule by Week — Sessions 1a + 1b and 2a + 2b

Most class meetings will be organized following this agenda:

3:30	**Session 1, Readings Discussion**
	Full-class check-in on logistics and industry news (10-15 mins.)
4:15	Divide into 4 discussion groups of 13 and move to small rooms.
	Pass back previous week's concept maps (10 mins.)
5:00	1a: Student presents reading on history (5 mins.)
	Discussion (20 mins.)
5:30	1b: Student presents reading on theory (5 mins.)
	Discussion (20 mins.)
	Collect new concept maps (5 mins.)
5:00	**Break**
5:30	**Session 2, Presentation + Exercise**
	Introduce any guests
	2a Presentation (20 mins., but may vary depending on guest)
	Q&A (5 mins.)
6:00	Divide into 12 tables of working groups
	2b Exercise in small teams
7:00	**Adjourn**

1   08.28   "As We May Think," Bush, V., *Atlantic Monthly,* July 1945.
https://web.mit.edu/STS.035/www/PDFs/think.pdf

For fun, see the original online...
https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/
And see a reprint with images…
https://worrydream.com/refs/Bush_1945_-_As_We_May_Think_(Life_Magazine).pdf — reprint with images

Learning How to Learn, Novak, J., and Gowin, B., Cambridge University Press, 1984. Chapter 2, pgs 15-54.
http://www.dubberly.com/courses/design_theory_2017/01._a_Learning_How_To_Learn.pdf

For a summary of how to make a concept map, see...
https://www.dubberly.com/wp content/uploads/2010/03/ddo_creating_concept_maps.pdf

For some example concept maps used in design, also see...
https://presentations.dubberly.com/concept_maps.pdf

Session 2 Lecture: Hugh, on frameworks and models

In-class Exercise: Draw how-you-make-toast
See Tom Wujec's TED Talk
https://www.ted.com/talks/tom_wujec_got_a_wicked_problem_first_tell_me_how_you_make_toast?subtitle=en

Concept maps, process maps, and node-link graphs

2 09.04   "The Mathematical Theory of Communication," Shannon and Weaver, 1948. (Feel free to skip all the math.)
https://www.dubberly.com/courses/design_theory_2017/03._a_Shannon.pdf

For fun: Maze video link TK

The Universal Traveler, Koberg, D., and Bagnall, J., pages 16-100.
http://www.dubberly.com/courses/perspectives_2023_fall/universal-traveler.pdf

For fun: "History of the Double Diamond," British Design Council, https://www.designcouncil.org.uk/our-resources/the-double-diamond/history-of-the-double-diamond/

Session 2 Lecture: Barry on Shannon

In-class Exercise: Make a structure from 2 sheets of paper to support 3 dictionaries

Double-diamond, bridge, SECI, iteration, (vs spaghetti + marshmallows)

3 09.11   "Sketchpad, A Man-Machine Graphical Communication System," Ivan Sutherland, MIT, 1963. Read Chapter 1, pages 17-29, also the abstract, pages 9-10. Chapters 6 and 7 are also worth a look.
https://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-574.pdf

Please also watch these Sketch Pad demo videos
https://www.youtube.com/watch?v=57wj8diYpgY&t=256s
https://www.youtube.com/watch?v=6orsmFndx_o

"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, pgs 387-414.
https://www.dubberly.com/courses/design_theory_2017/04._a_Star_Griesemer_1989.pdf

For fun: "Locating Value with Alignment Diagrams," Kalbach + Kahn.

http://www.piim.newschool.edu/journal/issues/2011/02/pdfs/ParsonsJournalForInformationMapping_Kalbach-James+Kahn-Paul.pdf

Session 2 Lecture: Hugh, on connecting Shannon and Sutherland

In-class Exercise: Levels of abstraction in GUIs,
from binary and hex to text and color

4   09.18   "Augmenting Human Intellect," Engelbart, 1962, pgs 4-12 + 30-35 + 42
https://worrydream.com/refs/Engelbart_1962_-_Augmenting_Human_Intellect_(typeset).pdf

The NLS Demo, 1968, (video)
Summary (5 min.) https://www.youtube.com/watch?v=B6rKUf9DWRI
Full demo, https://www.youtube.com/watch?v=yJDv-zdhzMY

Ted Nelson's eulogy for Engelbart, 2013, (video)
https://www.youtube.com/watch?v=yMjPqr1s-cg

"A Theory of Affordances," (Chapter 8) Gibson, 1979
https://courses.dubberly.com/design_theory_2017/04._b_Gibson%20Theory%20of%20Affordances.pdf

Interface: An Approach to Design, "From Material to Digital and Back,"
Bonsiepe, G., pgs 26-36
http://www.dubberly.com/courses/systems_2017_fall/05._Bonsiepe.pdf

"Interaction," Verplank, B.,
https://vimeo.com/83683447

For fun: "Human Computer Interaction," Laurel, B.,
Link-to-come

Session 2 Lecture: Barry, on Engelbart

In-class Exercise: Pin-the-tail-on-the-donkey competition +
explain how thermostats works

Feedback

5   09.25   "A Personal Computer for Children of All Ages," Kay, A., 1972.
https://mprove.de/diplom/gui/Kay72a.pdf

Supplemental reading:
"Personal Dynamic Media," Kay, Alan, and Goldberg,
Adele, *Computer,* 10(3):31–41. March 1977.
http://www.newmediareader.com/book_samples/nmr-26-kay.pdf

Supplemental videos:
Alan Kay, 1986, "The Dynabook—Past Present and Future," see 33:00
https://www.youtube.com/watch?v=GMDphyKrAE8

Alan Kay, 1996, "Dynabook: The Complete Story," see 50:00
https://www.youtube.com/watch?v=IwL3yXdupv0&t=1337s

User Conceptual Models, Johnson, J. and Henderson, A., 2012.
Please read pages 5-36, (Chapters 1-4).
https://courses.dubberly.com/frameworks_2024_fall/Conceptual-Models-Core-to-Good-Design.pdf

Supplemental reading:
"Conceptual Models: Begin by Designing What to Design," Johnson and Henderson, *Interactions*, 2002.
https://courses.dubberly.com/frameworks_2024_fall/Conceptual_ModelsInteractionsPaper.pdf

Supplemental video:
"Conceptual Models: Core to Good Design," at Stanford, Terry Winograd's introduction is worth a look
https://www.youtube.com/watch?v=i_DWYYZD31w

Session 2 Lecture: Hugh, inviting Tim Sheiner on "The Digital Machine"

In-class Exercise: Explain how to use a clothes-washing machine

State diagrams and user-conceptual models

6   10.02   "The Computer as a Communications Device," Licklider, JCR + Taylor, B.
https://worrydream.com/refs/Licklider_1968_-_The_Computer_as_Communication_Device.pdf

The Sciences of the Artificial, Simon, H., pgs 108-138.
http://www.dubberly.com/courses/design_theory_2017/07._a_The_Sciences_of_the_Artificial.pdf

The full book is here: https://monoskop.org/images/9/9c/Simon_Herbert_A_The_Sciences_of_the_Artificial_3rd_ed.pdf

Session 2 Lecture: Barry, on Licklider + ARPA

In-class Exercise: Create a 2x2-competitive map of juicers;
also: organize scissors

Problem spaces, SWOT, t-SNEs

7   10.09   "A File Structure for The Complex, The Changing and the Indeterminate,"
T. H. Nelson, ACM 20th National Conference Proceedings, 1965.
https://csis.pace.edu/~marchese/CS835/Lec3/nelson.pdf

Supplemental reading:
Computer Lib/Dream Machines, Nelson, T., 1974, pdf pages 48-49
https://worrydream.com/refs/Nelson_T_1974_-_Computer_Lib,_Dream_Machines.pdf

Supplemental videos:
Xanadu Space
https://www.youtube.com/watch?v=1yLNGUeHapA&t=2s

ZigZag Data Structures
https://www.youtube.com/watch?v=n22A-Say7do&t=2s

"On the Planning Crisis," Rittel, H., (1972): 390–396.
http://www.dubberly.com/courses/design_theory_2017/08._b_Rittel:_
On_the_Planning_Crisis.pdf

"Wicked Problems in Design Thinking," Buchanan, R.,
https://web.mit.edu/jrankin/www/engin_as_lib_art/Design_thinking.pdf

Session 2 Lecture: Hugh, on information architecture (IA) and data structures

In-class Exercise: Create a map of technology

Information architecture

8   10.16   "Computers and Design," Cooper, M., *Design Quarterly,* 1986.
https://courses.dubberly.com/frameworks_2024_fall/Computing%20+%20D
esign%20History/Design%20Quarterly%201989/Design_Quarterly_142_Co
mputers_and_Design_Muriel_Cooper.pdf

See also: Print 1962, and DQ 1968.
https://courses.dubberly.com/frameworks_2024_fall/Computing%20+%20D
esign%20History/

The Reflective Practitioner, Schön, D., Chapter 3, "Design as a Reflective
Conversation with the Situation," pgs 76-104.
https://www.dubberly.com/courses/design_theory_2017/09._b_Design_as_
Reflection.pdf

For fun: "The Design Process," Schön, D., *Varieties of Thinking,*
Ch. 7, pgs 110-140.
https://www.dubberly.com/courses/design_theory_2017/09._a_The_
Design_Process.pdf

Session 2 Lecture: Barry on Muriel Cooper and the Media Lab?

In-class Exercise: Create a map of types of design

Spaces of design + design processes + design principles

9	10.23	"Design Thinking," Brown, T., HBR https://readings.design/PDF/Tim%20Brown,%20Design%20Thinking.pdf

"Why Design Thinking is Bullshit," Jen, N., 2018.
https://www.itsnicethat.com/articles/natasha-jen-pentagram-graphicdesign-230218

Video TK

Plans and Situated Actions, Suchman, L., excerpt TK

Session 2 Lecture: Barry, on Lucy Suchman

In-class Exercise: Create a proposal for a service in 20 minutes
(start with user, goal, concept/technology, story)

DVF + Guy Kawasaki pitch template

10	10.30	"The Architectural Relevance of Cybernetics," Pask, G. https://www.dubberly.com/courses/design_theory_2017/10._a_Pask_Cybernetics.pdf

Thinking in Systems, Chapter 1, "The Basics," Meadows, D., pgs 11-34.
https://wtf.tw/ref/meadows.pdf

For fun: "General Systems Theory: The Skeleton of Science, Boulding, K.
https://www.panarchy.org/boulding/systems.1956.html

Session 2 Lecture: Hugh, inviting TJ McLeish on "The Colloquy of Mobiles"

In-class Exercise: Map the results of reintroducing wolves to Yellowstone

Stocks, flows, CLDs

11	11.06	"The Planning Machine," Morozov, I., *The New Yorker*, October 6, 2014. https://www.newyorker.com/magazine/2014/10/13/planning-machine

"Do Artifacts Have Politics," Winner, L.
https://www.jstor.org/stable/20024652?seq=3

For fun: "Do Categories Have Politics," Suchman, L.
https://www.researchgate.net/publication/213799662_Do_Categories_Have
_Politics_The_LanguageAction_Perspective_Reconsidered

Session 2 Lecture: Hugh, on "Data- and AI-enabled Design"

In-class Exercise: Propose a digital twin for a patient with diabetes

Digital twins

12	11.13	Service Design piece TK, Mager, B.

"Pace Layers," Sterling, B.,
https://courses.dubberly.com/frameworks_2024_spring/Pace_Layers_Bruce
_Sterling.pdf

"How Buildings Learn," Brand, S.
https://courses.dubberly.com/frameworks_2024_spring/How_Buildings_Lea
rn_Stewart_Brand.pdf

"Shearing Layers," Duffy, F.
Link-to-come

"The Theory of Affordances," in *The Ecological Approach to Visual
Perception,* Chapter 8, Gibson, J. J., pgs 127-144
https://www.dubberly.com/courses/design_theory_2017/04._b_Gibson%20
Theory%20of%20Affordances.pdf

For fun: "What We Talk About When We Talk About Context," Dourish, P.,
https://www.dubberly.com/courses/design_theory_2017/05._b_Dourish_
Context.pdf

"Affordance, Conventions, and Design," Norman, D.,
https://dl.acm.org/doi/pdf/10.1145/301153.301168

Session 2 Lecture: Barry, on service design?

In-class Exercise: Explain your country's national government's
structures of change

Pace layers

13	11.20	"Yegge's Rant," Yegge, S.

https://gist.github.com/chitchcock/1281611

Design Justice, Costanza- Chock, Sasha, pgs 1-68.
https://library.oapen.org/viewer/web/viewer.html?file=/bitstream/handle/

20.500.12657/43542/external_content.pdf

For fun: *Design for the Real World*, Papanek, Victor, pgs 14-95.
https://monoskop.org/images/f/f8/Papanek_Victor_
Design_for_the_Real_World.pdf

Title-to-come, Jacobs, J.
Link-to-come

Session 2 Lecture: Hugh, on "platforms" + meta-design

In-class Exercise: Make a telegraph and network and send a message

Platforms and stacks

| | 11.27 | Thanksgiving Holiday (no class meeting) |

14 12.04   "Sparks of Artificial General Intelligence," Bubeck et al.,
https://arxiv.org/abs/2303.12712

"Design as Critique," Dunne, A., and Raby, F., *Speculative Everything*.
http://www.dubberly.com/courses/frameworks_2024_spring/

Session 2 Lecture: Barry, on Turing and AI

In-class Exercise: Propose and test your own "Turing test" to identify humans

Future cone

15 12.11   Student presentations
Assignment 4 — Final Project: Poster Diagram

     12.18   Concept map collection (booklet) due electronically
Revised poster diagram due electronically

###

In-class Exercise 1: Draw how you make toast

Black sharpie, copier paper

First iteration:
One person, one page, no words
Group, post-it notes, no talking

Share out and sort by heating method;
then sort by number of nodes

Second iteration:
Group, post-it notes, no talking

Share out and sort by number of nodes

Cf. Tom Wujec: How to Draw Making Toast
https://www.ted.com/talks/tom_wujec_got_a_wicked_problem_first_tell_me_how_you_ma
ke_toast?language=en

###

In-class Exercise 2: Make a structure from 2 sheets of paper to support 3 dictionaries
AKA the Dictionary / Paper Challenge

Materials:
- A ream of standard copier paper (8.5 x 11 inches).
- Three office dictionaries weighing a total of about 10 pounds
- A ruler
- A clock with a second hand
- A white board for recording

Project:
Using just two sheets of paper,
create a structure to support all three dictionaries.

The goal is for the dictionaries to be as high off the surface of a desk as possible.
The structure must be stable enough to stand for at least 30 seconds.

Tape, string, glue, and other materials or fastener are not allowed.

You have 30 minutes.

Suggestions:
Experiment and iterate!
You can only use two sheets of paper at a time.
But you can have as many attempts (and as much paper) as you like.

Reflection:
For the next class, reflect on the dictionary / paper challenge:
- What happened?
- What was the process?
- How might we diagram it?
- What shape might you represent what happened?

Purpose:
- Exercise the design process.
- Reflect on the process in order to build a mental model.
- Make representations of the process.

###

In-class Exercise 3: Map the solar system to scale

Each team chooses a planet and calculates its distance at a scale of
One team marks a scale on Le Roy Ave.
Find the right location for your planet.
Leave one person

Cf. Video https://www.youtube.com/watch?v=zR3Igc3Rhfg

In-class Exercise 4: Feedback Exercises

1. Pin-the-tail-on-the-donkey competition by reading sectins

2. Explain how thermostats works

TK

Cf.

In-class Exercise 5: Washing Machine User Conceptual Model

TK

Cf.

In-class Exercise 6: Represent a Solution Space for Juicers

Project:
Select a common object or tool.

Find at least 5 examples.
Take photographs (or find photos).
Enlarge or shrink the images so that they are pretty much the same size.

Arrange the photos in a 2D plane.

Consider a logic for your arrangement.
How are the objects related?
How are they different?
What are the "dimensions" of this "solution space"?

Add a title in the top left.
List the relevant dimensions.
Include your name.
Bring a print to class.

Purpose:
- Understand the concept of solution space
- See artifacts as part of a continuum or manifold of possibilities

###

In-class Exercise 7: Create a map of technology

TK

Cf. Map from last year

In-class Exercise 8: Create a map of types of design

TK

Cf. Spreadsheet

In-class Exercise 9: Create a proposal for a service in 20 minutes

Start by defining:
- users
- their goals
- a concept + core technology
- story

Consider the DVF model.

Create a presentation describing your proposal.
Use Guy Kawasaki's pitch template.

Cf. DVF collection.

In-class Exercise 10: Wolves return to Yellowstone

Watch the video; map the system with your team; share out.

Cf. BBC documentary etc.

In-class Exercise 11: Propose a digital twin for a patient with diabetes

TK

In-class Exercise 12: Explain your country's national government's structures of change

TK

In-class Exercise 13: Telegraph + Message Sending

Find a partner.

Create a device and system to send a message.
Could be a telegraph.
Or flags.
Or lights.

Cannot be shouting.
Cannot be writing the message.

Also create a code.
Represent your code in a code sheet or code table.
Your code should include all the Roman letters (uppercase).
And it will need a space.

Consider if you need any other "special characters".

Practice sending one-sentence messages,
e.g., "See the dog run."

In class you will be given a message to send as a test.

Purpose:
- Understand what a platform is and how to program it.
- Understand coding and communicating.

###

In-class Exercise 14: Propose your own "Turing Test" to identify humans

TK

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