INSC-573: Design Methods for Information Science

Spring 2018
Ph.D. Information Science
Information School
University of Washington

canvas: https://canvas.uw.edu/courses/1134722

Acquire theory, methods, and skills for design-based inquiry, focusing on making artifacts - technical, informational, managerial, or organizational - and devising courses of action that enable people to mobilize. Students develop knowledge for design in Information Science through practical application of design methods and scholarly investigation of selected literatures. 5 Credit hours.

Meeting times

Lecture Tuesday, 1:30–3:20, SAV 164
Studio Thursday, 1:30–3:20, SAV 164

Instructor

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Office hours: By appointment

Overview

The aim of this course is twofold. The first is to disentangle some of the major perspectives on design within three literatures: Library and Information Science, Information Systems, and Human-Computer Interaction. The second is to develop practical skills for a set of design methods. Accordingly, we will examine how designers, researchers, and scholars construct perspectives and pursue technical and social design.

Each week we will read, write, and design. Our Tuesday meeting will be devoted to close reading and discussion in seminar – here, we will engage theory. Our Thursday meeting will be devoted to the focused application of design method – here, we will make things.

As the quarter unfolds, we will develop our ability to bring together theory and practice so that each substantively and meaningfully informs the other and along the way you'll have opportunities to engage writing and design activities that are germane to your own research and scholarship.

Three texts will provide a theoretical foundation for the course. These texts will be supplemented with conceptual, empirical, and design-based papers from the information field. The papers are listed in the reading list below, and available on the course website.

Nelson, H., and Stolterman, E. (2012). *The Design Way: Intentional Change in an Unpredictable World: Foundations and Fundamentals of Design Competence* (2nd Edition). Cambridge, MA: MIT Press. [ISBN-13: 978-0262018173]

Schön, D. A. (1990). *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions*. San Francisco, CA: Jossey-Bass Publishers. [ISBN-13: 978-1555422202]

Simon, H. (1996). *Sciences of the Artificial* (3rd ed.). Cambridge, MA: MIT Press. [ISBN-13: 978-0262691918]

In addition, I recommend that you purchase the *Envisioning Cards*, available at the UW Bookstore. We will be using the cards in at least one studio activity, and they may be useful to you throughout the class and beyond.

Friedman, B., Nathan, L. P., Kane, S., and Lin, J. *Envisioning Cards*. University of Washington, Seattle, WA, USA, 2011.

Class Meetings, Activities, and Assessment

The class grade will comprise the following components. This is a graded course (decimal grades).

30% Weekly Writing Activities
30% Weekly Design Activities and Reflections
30% Design Project
10% Participation

We will follow a weekly pattern, to allow us to both develop a *conceptual appreciation* for design and to *practice skills* for using design methods and processes.

Weekly writing activities — To prepare for seminar you should read the assigned papers and, when requested, submit the writing activity. The objective of the writing activities is to prompt you to develop an understanding for the authors' views and to take a position on them. I will use your written responses to structure our seminars and you will have an opportunity to discuss your insights into the readings. Writing assignments are due at 9 A.M. on Mondays.

Seminar discussion — After reading closely, we will come together on Tuesdays to discuss theory. Our goal will be to thoroughly understand the authors' views.

Studio — On Thursdays we will pursue a design activity where we will analyze a problem and design a solution. We will focus on method, process, and technique. The class will end with a reflective discussion. Typically, following the studio you will prepare a short report or written reflection. The studio activities are intended to be narrow – often they are simplified models so that we can grabble with some of the complexities of design work.

Design Project — The design project will allow you to pursue a topic of your own framing. Past projects have included: (1) Supporting doctors in medical decision-making; (2) Designing a museum exhibit; (3) Collecting data through design-based activities; (4) Designing a new input device for people with motor difficulties; (5) Exploring how librarians' work can be understood as a form of design.

Class Participation — Engage. Participate. We can create a supportive and rewarding learning environment. Do these and other similar things:

1. Treat all with respect – be constructive in all discussions
2. Come to class prepared – read carefully and be ready for discussion
3. Be an active listener – be attentive, be engaged, use in-class technology with discretion
4. Help each other be successful – by, for example, asking questions, giving your views, and giving room for others to give their views
5. Challenge, build on, or clarify what others have done or said.

Optional. At the end of the quarter, you may write an optional 2-3 paragraph personal statement on your contributions to the class. Your reflection could explore such things as how you have sought to improve the learning environment, your personal goals for participating, how your experiences contributed to our learning, and so on. You might focus on lessons learned and things that you will try in subsequent classes, and so on.

The Reading List

PDFs for all these readings are available on the course website.

About the readings – There are three categories of readings. The "read" readings should be read slowly and carefully, in the suggested order, prior to our seminar meeting on Tuesdays. These readings will be the focus for the week, so they should draw most of your attention. The "studio" readings, and there are only a few of them, should be read prior to our studio meeting. The "optional" readings are just that – *optional*. You are not expected to read the optional readings. I've included them in the reading list because they may be useful in your research and scholarship and I may draw upon aspects of them from time to time.

WEEK 1 Introductions and Questions

seminar

Introductions. Your questions. Definitions and disentangling design.

No required readings.

optional

The following papers introduce some of the literature on scenarios. We will be working with scenarios in this week's studio class and drawing upon some of the ideas found in these papers.

Bodker, S. (2000). Scenarios in user-centered design—setting the stage for reflections and action. *Interacting with Computers*, *13*, 61-75.

Carroll, J. M. (1999). Five Reasons for Scenario-Based Design. In *HICSS '99: Proceedings of the Thirty-Second Annual Hawaii International Conference on System Sciences*-Volume 3, 3051.

Carroll, J. M. (Ed.) (2000). Introduction to this Special Issue on "Scenario-based System Development." *Interacting with Computers*, *13*, 41-42.

Carroll, J. M. (2000). *Making Use: Scenario-Based Design of Human-Computer Interactions*. Cambridge, MA: MIT Press.

Nathan, L.P., Friedman, B., Klasjna, P.V., Kane, S.K., and Miller, J.K. (2008). Envisioning systemic effects on persons and society throughout interactive system design. *Proceedings of ACM Conference on Designing Interactive Systems (DIS'08)*, 1-10. New York: ACM Press.

Nathan, L. P., Klasnja, P. V., and Friedman, B. (2007). Value scenarios: a technique for envisioning systemic effects of new technologies. *Extended Abstracts of CHI 2007 Conference on Human Factors in Computing Systems*, 2585-2590. New York: ACM Press.

Rosson, M. B., and Carroll, J. M. (2002). *Usability Engineering: Scenario-based Development of Human-Computer Interaction*. New York: Morgan Kaufmann Publishers.

Stoop, J. (1990). Scenarios in the design process. *Applied Ergonomics*, *21*(4), 304-310.

Wack, P. (1985a). Scenarios: Uncharted waters ahead. *Harvard Business Review*, *63*(3), 71-89.

Wack, P. (1985b). Scenarios: Shooting the rapids. *Harvard Business Review*, *63*(6), 139-160.

Weidenhaupt, K., Pohl, K., Jarke, M., and Haumer, P. (1998). Scenarios in system development: current practice. *IEEE Software 15* (2), 34-45.

WEEK 2 Disentangling Design for the Information Field

seminar

We'll raise some enduring questions about design this week and begin to explore how design might be characterized and defined. We'll note that the disciplines that make up the Information Field engage "design" in different ways. And, so our goal for the quarter is disentangle the various conceptions of design in the Information Field.

Please read "Preserving wildness" by Wendell Berry very slowly. Berry, a noted American writer and environmentalist, presents a deeply human orientation on design. As you read pay particular attention to how Berry develops his perspective around a web of values and how Berry engages tensions. Also, please look for his three key questions. What are the questions? What do you think of them? How might these questions be useful, if at all, in your work?

In addition, please read Cross (1993) who puts forward some major distinctions related to "design" and "science" and gives us some issues to explore. I'll use some of his vocabulary to introduce the class. Notice particularly (1) the use of dichotomies to clarify the definition of design; (2) the notion of first generation methods (systematic, rationale, and scientific); (3) the notion of second generation methods (argumentative, participatory); and (4) the introduction of the terms "scientific design" (seeking to drive out intuitive approaches), "design science" (consider design to be a science), and "science of design" (the scientific study of design activity).

During class we will browse a couple of early books on design, including "Design Methods" by Chris Jones, "Designing for People" by Henry Dreyfus, among others.

studio

read

Berry, W. (1987). Preserving wildness. *Home Economics* (pp. 137-151). New York: North Point Press.

Cross, N. (1993). Science and design methodology: A review. *Research in Engineering Design*, *5*, 63-69.

Rittel, H. W. J. & Webber, M. M. (1973). Dilemmas in general theory of planning. *Policy Sciences, 4*, 155-169.

WEEK 3 Technical Rationality

seminar

This week we will turn to Herbert Simon and begin to develop an understanding for his foundational position on design. Please read the first and third chapters of *The Science of the Artificial*, focusing on how Simon carves up the natural and artificial worlds.

As you read please consider how, if at all, the human mind and/or brain is artificial and pay special attention to the parable of the ant at the beginning of chapter 3. Is the parable convincing? What is the argument that the mind/brain is simple but that its complexity lies with the environment? Under what presumptions does Simon labor? What complexities does he ignore or sidestep? If you could ask Simon a question about his ant and the beach what would that question be? How specifically do the distinctions between the inner, outer, and interface work?

If you have doubts about the relevancy of technical rationality and Simon's foundational position, read Blackwell (2015), who presents an argument that information systems are nudging and shaping human action in profound ways. Iivair (2007) builds on Simon (1996), as many other researchers have. Read it as an example.

studio

No preparation. We will work at an interaction design problem, working within the perspective of "hierarchical decomposition."

read

Simon, H. A. (1996). Understanding the natural and artificial worlds. In *The Sciences of the Artificial* (chap. 1, pp. 1-24). Cambridge, MA: MIT Press.

Simon, H. A. (1996). The psychology of thinking: Embedding artifice in nature. In *The Sciences of the Artificial* (chap. 3, pp. 51-83). Cambridge, MA: MIT Press.

optional

Blackwell, A.F. (2015), "Interacting with an inferred world: The challenge of machine learning for humane computer interaction", paper presented at *Proc. of Critical Alternatives: The 5th Decennial Aarhus Conference*, Aarhus University Press, pp. 169-180.

Iivari, J. (2007). A paradigmatic analysis of information systems as a design science. *Scandinavian Journal of Information Systems*, *19*(2), 39-64.

Lane, D. M., Napier, H. A., Batsell, R. R., & Naman, J. L. (1993). Predicting the skilled use of hierarchical menus with the keystroke-level model. *Human-Computer Interaction, 8(2)*, 185-192.

WEEK 4 What is an Epistemology of Practice?

seminar

This week we turn to a new perspective, an epistemology of practice, and read the first two chapters of *Educating the Reflective Practitioner*, 1987, by Donald Schön.

As you read consider these questions: Do Schön and Simon address the same question or different questions? Why is Schön not satisfied with "instrumental problem solving?" How does Schön address his concerns through "epistemology" and what constitutes his approach?

The papers by Pakman (2000) and Waks (2001) introduce Schön's scholarship, offering a brief historical review.

The writing of David Pye on craftsmanship brings forward the artistic and humanistic aspects of design – in contrast to Simon's approach and, in some ways, perhaps more like Schön's.

studio No preparation.

read

Schön, D. A. (1987). Preparing professionals for the demands of practice. In *Educating the Reflective Practitioner* (Chapter 1, pp. 3-21). San Francisco, CA: Jossey-Bass Publishers.

Schön, D. A. (1987). Teaching artistry through reflection-in-action. In *Educating the Reflective Practitioner* (Chapter 2, pp. 22-43). San Francisco, CA: Jossey-Bass Publishers.

Optional

Clarke, R. I. (2018). Toward a design epistemology for librarianship. *The Library Quarterly*, *88*(1), 41–59.

Pakman, M. (2000). Thematic foreword: Reflective practices: The legacy Of Donald Schön. *Cybernetics & Human Knowing*, 7 (2-3), 5–8.

Pry, D. (1964/1982). *The Nature and Aesthetics of Design*. London: Herbert Press.

Waks, L. J. (2001). Donald Schon's philosophy of design and design education. *International Journal of Technology and Design Education*, *11*, 37-51.

WEEK 5 Reflection-in-Action

seminar Read Schön (1987, chap. 3). As you read, please pay close attention to the vocabulary and the language that Schön develops: "talkback," "problems encountered," "discipline," "framing and reframing," "move," "implication," "appreciations," "consequences," "shifts in stance," "involvement," "rigor." What do these terms mean? How do they construct a view of design? How does Schön's language compare to Simon? How might you use Schön's language, if at all, in your own work?

studio To be discussed. Likely an expert designer will join us in class. We will ask him or her to engage a design problem and we will observe, exploring the question: Do we see reflection-in-action when we observe expert performance?

read

Schön, D. A. (1991). The design process as reflection-in-action. In *Educating the Reflective Practitioner* (chap. 3, pp. 44 -79). San Francisco, CA: Jossey-Bass Publishers.

WEEK 6 Co-Design

seminar This week we will explore methods which bring together designers and stakeholders into a process that is called cooperative design (co-design). Muller (2002) provides an excellent introduction to this perspective and Sanders & Stappers (2008) discuss a design space of methods for co-design.

For a historical analysis of the development of the Participatory Design read Floyd, Mehl, Reisin, Schmidt, and Wolf (1989).

studio No preparation. We will examine the Value Sensitive Action Reflection Model (Yoo, Huldtgren, Woelfer, Hendry & Hendry, 2013), which draws on Schön (1987) and Sanders & Stappers (2008), and practice using the Envisioning Cards (Friedman, Nathan, Kane, Lin, 2011).

read

Muller, M. J. (2002). Participatory design: The third space in HCI. In J. A. Jacko and A. Sears (Eds.), *The Human Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications*. Mahwah, NJ: Lawrence Erlbaum.

Yoo, D., Huldtgren, A., Woelfer, J. P., Hendry, D. G., and Friedman, B. (2013). A value sensitive action-reflection model: Evolving a co-design space with stakeholder and designer prompts. Proceedings of CHI 2013. New York, NY: ACM Press.

Sanders, E., and Stappers, P. (2008) Co-creation and the new landscapes of design, CoDesign, *4*(1), pp. 5-18.

DiSalvo, C., Lodato, T., Fries, L., Schechter, B., and Barnwell, T. (2011). The collective articulation of issues as design practice. *CoDesign*, *7*(3-4), 185-197.

optional

Ehn, P., and Kyng, M. (1991). Cardboard computers: Mocking-it-up or Hands-on the future. In J. Greenbaum and M. Kyng (Eds.), *Design at work: Cooperative design of computer systems.* Hillsdale, NJ: Lawrence Erlbaum.

Bodker, S., and Gronbeak, K. (1991). Cooperative prototyping: Users and designers in mutual activity. *International Journal of Man-Machine Studies*, *34*, 453-478.

Friedman, B., Nathan, L. P., Kane, S., and Lin, J. *Envisioning Cards*. University of Washington, Seattle, WA, USA, 2011.

Friedman, B., and Hendry, D. G. (2012). The Envisioning Cards: A toolkit for catalyzing humanistic and technical imagination. In E. H. Chi & K. Höök (Eds.), Proceedings of the 30th Annual SIGCHI Conference on Human Factors in Computing Systems (CHI '12) (pp. 1145-1148). New York, NY: ACM Press.

Floyd, C., Mehl, W., Reisin, F., Schmidt, G., and Wolf, G. (1989). Out of Scandinavia: Alternative approaches to software design and system development. *Human-Computer Inter., 4*(4), 253-349.

Spinuzzi, C. (2002). A Scandinavian Challenge, a US Response: Methodological Assumptions in Scandinavian and US Prototyping Approaches. In *Proc. SigDoc 2002* (pp. 208-215). New York: ACM Press.

Binder, T., De Michelis, G., Ehn, P., Jacucci, G., Linde, P., and Wagner, I. (2011). *Design Things*. Cambridge, MA: MIT Press.

Davidoff, S., Lee, M. K, Dey, A. K., and Zimmerman, J. (2007). Rapidly exploring application design through speed dating. In *Proc. UbiComp 2007* (pp. 429-446). Berlin Heidebert: Springer-Verlag.

Ehn, P. (2008). Design things: Challenges to design thinking in the tradition of participatory design? In *PDC 08: Proceedings of the tenth conference on Participatory design*, New York, NY, USA, 2008. ACM.

Sanders, E. B. –N., and William, C. T. (2001). Harnessing people's creativity: Ideation and expression through visual communication. In *Focus Groups: Supporting Effective Product Development*. Langford J and McDonagh-Philp D (Eds.) Taylor and Francis.

Sanders, E. B.-N., and Westerlund, B. (2011). Experiencing, exploring and experimenting in and with co-design spaces. In *Nordic Design Research Conference* (pp. 1-5).

Prahalad, C. K., and Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, *18* (2), 5-14.

IDEO Method Cards. 51 Ways to Inspire Design. (2003). *IDEO*. San Francisco, CA: William Stout Architectural Books.

Beguin, P. (2003). Design as a mutual learning process between users and designers. *Interacting with Computers*, *15*, 709-730.

Steen, M, Manschot, M., and De Koning, N. (2011). Benefits of co-design in service design projects. *International Journal of Design*, *5*, 53-60.

Tohidi, M., Buxton, W., Baecker, R., and Sellen, A. (2006). User sketches: A quick, inexpensive, and effective way to elicit more reflective user feedback. In *Proc. NordiCHI'06* (pp. 105-114). New York: ACM Press.

Tohidi, M., Buxton, W., Baecker, R., and Sellen, A. (2006). Getting the right design and the design right: Testing many is better than one. In *Proc. CHI'06* (pp. 1243-1252). New York: ACM Press.

WEEK 7 Science of Design

seminar

The previous chapters in Simon's book set up the argument for Chapter 5, namely that professional practice needs a science of design. That is to say, "the proper study of mankind is the science of design, not only as a professional component of a technical education but as a core

discipline for every liberally educated person" (p. 138). This view has been extremely influential. As you read, first, please pay careful attention the educational components of a curriculum on the science of design and, second, consider Schön's position: What would he have to say about the curriculum? Given the current themes and debates in the Information Field, what do you think of Simon's proposal? The optional readings this week explore how Simon's curriculum might be taken up by other disciplines.

studio To come.

read

Simon, H. A. (1996). The science of design: Creating the artificial. In *The Sciences of the Artificial* (Chapter 5, pp. 111-138). Cambridge, MA: MIT Press.

optional

Blackwell, A.F. (2015), "Interacting with an inferred world: The challenge of machine learning for humane computer interaction", paper presented at *Proc. of Critical Alternatives: The 5th Decennial Aarhus Conference*, Aarhus University Press, pp. 169-180.

Carroll, J. (1997). Human-computer interaction: Psychology as a science of design. *Annual Review of Psychology*, *48*, 61-83.

Iivari, J. (2007). A paradigmatic analysis of information systems as a design science. *Scandinavian Journal of Information Systems*, *19*(2), 39-64.

Bratteteig, T. (2007). Design research in informatics: A comment to Iivari. *Scandinavian Journal of Information Systems*, *19*(2), 65-74.

March, S. T., and Storey, V. C. (2008). Design science in the information systems discipline: An introduction to the special issue of design science research. *MIS Quarterly*, *32*, 725-730.

Hevner, A. R., March, S. T., Park, J., and Ram, S. (2004). Design science in information systems research. *MIS Quarterly*, *28*, 75-105.

WEEK 8 Sensibilities, Commitments, and Positions on Design

seminar

This week is ***exceptional*** – rather than reading a little slowly and carefully, we'll read a lot. Please read the ten papers in the "read" list. I understand that it will likely be difficult to read all this material – as I said, it's an exceptional week.

Our aim is to explore the terrain of "design" in the information field. To do this we will read a selection of papers, some from Information Systems, some from Library and Information Science, and some from the field of Human-Computer Interaction. These papers will introduce some questions, issues, and perspectives, which we'll be engaging throughout the quarter.

As you read, please consider how assumptions and presuppositions about "science" are used in these papers. Perhaps you will find that some authors seek to "scientise" design. Other authors may resist some aspects of science when characterizing design; instead, they may focus on intuition, craftsmanship, or artistry. Nigel Cross (1999, 2001) discusses this tension in terms of "Design Discipline" and "Design Science" and we shall encounter it, at least in one form or another, repeatedly as we read and compare Simon (1995) and Schön (1990).

Relatedly, consider the varying terms and definitions: "scientific design" (Cross, 1993); "design science" (Cross, 1993); "science of design" (Cross, 1993); "design research" (Cross, 1999); "design discipline" (Cross, 2001); Conservative, Romantic, and Pragmatic accounts of design (Fallman, 2003); "research-oriented design" (Fallman, 2007); "research through design" (Zimmerman, Forlizzi & Evenson, 2007; Zimmerman, Stolterman & Forlizzi, 2010; Gaver 2012); "participatory design," "social design," "design of publics" (Bjogvinsson, Ehn & Hillgren, 2012; DiSalvo, Lodato, Fries, Schechter, and Barnwell, 2011); and "associative," "speculative," and "critical design" (Malpass, 2013).

Other kinds of design:

- ability-based design (Wobbrock, Kane, Gajos, Harada, & Froehlich, 2011)
- adversarial design (Marttilla, 2011; DiSalvo, 2012)
- collapse informatics (Tomlinson et al., 2013)
- contestational design and surreptitious communication design (Hirsh, 2008; Hirsh, 2016)
- critical design (Barab et al., 2004; Malpass, 2013; Bardzell, Bardzell, \& Stolterman, 2014)
- design activism (Fuad-Luke, 2009, Thorpe 2007
- feminist design (Bardzell, 2010; Rode, 2011)
- empowered design (Marsden, 2008)
- ludic design (Blythe et al., 2010)
- positive computing (Calvo & Peters, 2014)
- postcolonial computing (Irani, Vertesi, Dourish, Philip, & Grinter, 2010; Philip, Irani, & Dourish, 2012)
- privacy by design (Koops & Leenes, 2014)
- reflective design (Sengers et al, 2005)
- sustainable interaction design (Blevis, 2007; Nathan, 2012)
- systems for human benefit (Venable, Pries-Heje, Bunker, & Russo, 2011)
- value sensitive design (Friedman, Hendry, and Borning, 2018; Friedman & Hendry, forthcoming).

read

Note: List to be updated based on interests

Feinberg, M. (2012a). Information studies, the humanities, and design research: Interdisciplinary opportunities. *Proceedings of iConference 2012* (pp. 18-24). New York: ACM Press.

Feinberg, M. (2012b). Synthetic ethos: The believability of collections at the intersection of classification and curation. *The Information Society: An International Journal*, *28* (5), 329-339.

Clarke, R. I. (2015). Beyond buildings: A design-based approach to future librarianship. In Eden, B. (ed.) *Leading the 21st-Century Academic Library: Successful Strategies for Envisioning and Realizing Preferred Futures*. Lanham, MD: Scarecrow Press.

Fallman, D. (2007). Why research-oriented design isn't design-oriented research: On the tensions between design and research in an implicit design discipline. *Knowledge, Technology & Policy*, *20*, 193-200.

Zimmerman, J., Stolterman, J., and Forlizzi, J. (2010). An analysis and critique of research through design: Towards a formalization of a research approach. *Proceedings of DIS'2012* (pp. 310-319). New York: ACM Press.

Gaver, W. (2012). What should we expect from research through design? *Proceedings of CHI'2012* (pp. 937-946). New York: ACM Press.

Nunamaker, J. F., Chen, M., and Purdin, T. D. M. (1990-91). Systems development in information systems research. *Journal of Management Information Systems*, *7* (3), 89-92.

Bjogvinsson, E., Ehn, P., and Hillgren, P-A. (2012). Design things and design thinking: Contemporary participatory design challenges. *Design Issues*, *28* (3), 101-116.

Malpass, M. (2013). Between wit and reason: Defining associative, speculative, and critical design in practice. *Design and Culture*, *5*(3), 333-356.

Bardzell, J., Bardzell, S., and Stolterman, E. (2014). Reading critical designs: supporting reasoned interpretations of critical design. In *Proc. CHI'14* (pp. 1951-1960). New York, ACM Press.

optional

Schrader, P. (1970). The films of Charles Eames. *Film Quarterly*, *23*(3), 2-19.

Eames, C. & Eames, R. (1958/1991). The Eames Report April 1958. *Design Issues*, *7*(2), 63-75.

Eames, C. (Director) & Eames, R. (Director). (1953). *A Communication Primer* [16 mm film; length: 21:26 min.]. (Available at http://www.archive.org/details/communications_primer)

Jersey, B., Cohn, J., Servan-Schreiber, C., Franco, J., Charles Eames, et al. (2011). *Eames: The architect and the painter* [DVD video; length: 82:00 min]. New York: First Run Features.

Library of Congress. *The Work of Charles & Ray Eames: A Legacy of Invention*, http://www.loc.gov/exhibits/eames/.

Stolterman, E. (2008). The nature of design practice and implications for interaction design research. *International Journal of Design*, *2*, 55-65.

Brown, T. (2008). Design thinking. *Harvard Business Review*, *86*(6), 84-92.

Kolko, J. (2015). Design thinking comes of age. *Harvard Business Review*, https://hbr.org/2015/09/design-thinking-comes-of-age

Brown, T. (2015) When Everyone Is Doing Design Thinking, Is It Still a Competitive Advantage? *Harvard Business Review*, https://hbr.org/2015/08/when-everyone-is-doing-design-thinking-is-it-still-a-competitive-advantage

Cross, N. (1999). Design research: A disciplined conversation. *Design Issues,* 15(2), 5-10.

Cross, N. (2001). Designerly ways of knowing: Design discipline versus design science. *Design Issues*, 17(3), 49-55.

Goel V. and Pirolli, P. (1992). The structure of design problem spaces. *Cognitive Science*, *16*, 395-429.

Snyder, J., Heckman, R., and Scialdone, M. (2009). Information studios: Integrating arts-based learning into the education of information professionals. *Journal of the American Society for Information Science and Technology*, *60* (9), 1923-1932.

other

Irani, L., Vertesi, J., Dourish, P., Philip, K., & Grinter, R. E. (2010). Postcolonial computing: a lens on design and development. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. New York: ACM.

Barab, S. A., Thomas, M. K., Dodge, T., Squire, K., & Newell, M. (2004). Critical design ethnography: Designing for change. Anthropology & Education Quarterly, 35(2), 254-268.

Bardzell, S. (2010). Feminist HCI: taking stock and outlining an agenda for design. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. New York: ACM.

Fuad-Luke, A. (2013). Design activism: beautiful strangeness for a sustainable world. Routledge.

Sengers, P., Boehner, K., David, S., & Kaye, J. J. (2005). Reflective Design. In: Proceedings of the 4th Decennial Conference on Critical Computing: Between Sense and Sensibility. New York: ACM.

Marttila, T. (2011). Designing Anti-Activism: Apocalypse faster!. Nordes. (4).

WEEK 9 Design Foundations

seminar To finish our reading, we'll step back and consider an analysis of design foundations by Harold Nelson and Erik Stolterman. We'll examine two dimensions, namely the "Ultimate Particular" and "Service."

studio To be decided

read

Nelson, H., and Stolterman, E. (2012). The ultimate particular. In *The Design Way: Intentional Change in an Unpredictable World: Foundations and Fundamentals of Design Competence* (2nd Edition) (pp. 27-40). Cambridge, MA: MIT Press.

Nelson, H., and Stolterman, E. (2012). Service. In *The Design Way: Intentional Change in an Unpredictable World: Foundations and Fundamentals of Design Competence* (2nd Edition) (pp. 41-56). Cambridge, MA: MIT Press.

WEEK 10 Design Expo and Presentations

session 1 Details to be determined

session 2 Details to be determined

read Berry, W. (1987). Preserving wildness. *Home Economics* (pp. 137-151). New York: North Point Press.

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