

# SI 701

## Doctoral Foundations Seminar

### Winter 2011, v1.2 (10 January 2011)

**Meets:** Mondays, 8:30-11:30 AM, 2185 North Quad

**Instructor:** Paul N. Edwards

**Office:** 3439 North Quad

**Office hour:** M 12:30-1:30 or by appointment

**Email:** [pne@umich.edu](mailto:pne@umich.edu)

**The most current version of this syllabus is always available [here](http://pne.people.si.umich.edu/PDF/701syll.pdf) (<http://pne.people.si.umich.edu/PDF/701syll.pdf>).**

#### COURSE OVERVIEW

SI 701 is the required seminar for first-year doctoral students. It presents a distinctive collection of important ideas about the use and value of information from psychology, information and library science, economics, archival science, computer science, sociology, law, history, and other disciplines. It distills concepts essential to the School of Information's unique perspective on information studies, and introduces students to bodies of literature that will be essential for further coursework at SI and for students' future careers. This semester's course is organized around the themes of people, information, and technology.

SI 701 is a reading-intensive discussion seminar that covers a large body of material. Emphasis is on understanding and being able to articulate the ideas expressed in the readings, both orally and in writing. Additionally, we will work to develop creative, constructive, and critical engagement: the ability to identify and imagine how concepts and methods from one area may apply to others, even while rigorously analyzing ideas, methods, and results to probe for problems, errors, and alternative hypotheses or representations.

#### OBJECTIVES

1. Become conversant with the ideas and literatures that are foundational for the study of information as practiced at the School of Information. Develop an understanding of the disciplinary origins of these ideas.
2. Acquire knowledge relevant to your own program of interdisciplinary research. Increase your awareness of potentially useful concepts, theories, and literatures outside your own area of expertise. Improve your ability to explain your research interests to others and learn to appreciate contributions from scholars and researchers outside your immediate area of interest.
3. Build connections between and among ideas from the different fields that constitute the systematic study of information.

4. Improve your ability to read, comprehend, and remember large bodies of diverse content. Refine critical analytical and evaluative skills. Develop the ability to present succinct summaries and commentaries orally and in writing.
5. Demonstrate aptitude for advanced study and research.

## REQUIREMENTS AND ASSIGNMENTS

1. **Attendance and active participation in all class sessions.** You are expected to attend all classes and to arrive in class on time and thoroughly prepared to participate actively in all discussions. (25 percent of grade).
2. **Weekly response papers.** Starting in week 2, each week you will write a 400-600 word response to the required reading (except for weeks in which you are leading discussions; see below.) The response paper should summarize the argument(s) of the week's readings very succinctly (1-3 sentences per reading) and discuss how the readings connect with each other and/or with previous weeks' readings. Summaries may be woven into the discussion. The paper should also include a cogent critique of some aspect of the reading. Two sample response papers from another course are available on CTools. ***Your response is due no later than 8 a.m. each Monday, on CTools.*** You have the option to skip one week of your choice, but you cannot pass the course without submitting at least 8 response papers. Response papers are graded on an A, B, C basis only (altogether 25 percent of grade).
3. **Serve as the lead discussant at least twice during the term.** Working in pairs, discussants prepare a short (10-20 minute) presentation and a one-page handout for the class. Each discussant also prepares (separately) a longer response paper (800-1200 words). (Each session 12.5 percent of grade.)
4. **Take-home final exam** (25 percent of grade).

**NB:** successful completion of the doctoral foundations seminar is a requirement for continuation in the PhD Program.

## DISCUSSIONS

**This is a discussion seminar. Its success depends on the commitment and involvement of all participants. You will be graded on both the regularity and the quality of your participation, including your responses to cold calls.**

**Cold calls:** to encourage full involvement and preparation, the professor will "cold call" students. This means that I will ask you a direct question on the readings. I will expect answers that demonstrate your knowledge of the material and your ability to draw interesting connections from them to other ideas and your own research. This practice is not intended to single out or embarrass anyone. Instead, its goal is to help you learn to think and talk "on your feet," a crucial skill required by almost any profession. This is rarely easy or comfortable, but it is critical to your success as a scholar. Please prepare notes on the readings and come to class ready to speak out frequently.

**Leading discussion:** at least twice during the term, you will help lead class discussion. This will involve:

- Writing a longer (800-1200 word) response paper.
- Meeting with the other student presenting in that session to prepare a one-page handout as an aid to class discussion. The handout should summarize key points of the readings and offer several interesting discussion questions. Discussion questions should focus on the concepts, theories, and methods from the readings. Two sample handouts from another course are available on CTools.
- Bring copies of the handout for everyone.
- At the beginning of that class session, presenters will jointly spend **no more than 20 minutes** outlining the themes from the readings and elaborating your discussion questions.

## COURSE SCHEDULE

**Note:** Some readings may be added, dropped or replaced. Readings not linked directly will be available on CTools.

### Week 1 (January 10): Where We're Going

Weinberger, David, *Everything is Miscellaneous* ([Prologue](#) and [Chapter 1](#))  
 Anderson, Chris, "[The Long Tail](#)," *Wired* 12.10  
*The Economist* special report, "The Data Deluge" (Feb. 27, 2010)  
 Hey, Tansley, and Tolle (eds.), [The Fourth Paradigm: Data-Intensive Scientific Discovery](#) (2009). Read the Foreword and "Jim Gray on e-Science." Then read *at least* four chapters (your choice) from *each* of sections 3 and 4 ("Scientific Infrastructure" and "Scholarly Communication"), for a total of 8 chapters.

### Week 2 (January 17): **NO CLASS (MLK day)**

### Week 3 (January 24): Where We're Coming From: History of Information Systems

**presenters: Adam & Chrysta**

SI 500, "[Learning Objectives](#)." We will revisit these at the end of the course. For this session, ask yourself whether you understand each of the objectives. If not, what would you need to know or learn in order to understand them?  
 Alex Wright, *Glut: Mastering Information Through the Ages* (Cornell University Press, 2008). Read the whole book *except* ch 2-3.  
 JoAnne Yates, "Business Use of Information Technology During the Industrial Age" (CTools)  
 Bush, Vannevar, "[As We May Think](#)," *The Atlantic Monthly* 176:1 (1945); pp 101-108  
 Licklider, J.C.R., "Libraries of the Future," excerpt in Mark Stefik, ed., *Internet Dreams* (MIT Press, 1996), 23-32.

## Week 4 (January 31): Classics/Information Theory

**presenters: Yang & Karina**

Weaver, Warren, "[Recent Contributions to The Mathematical Theory of Communication](#)," *Scientific American*, 1949.

Miller, G.A. "[The Magical Number Seven, Plus or Minus Two: some limits on our capacity for processing information.](#)" *Psychological Review* 63, March 1956, 81-97

Allen Newell, "Intellectual Issues in the History of Artificial Intelligence," in F. Machlup and U. Mansfield (eds.), *The Study of Information— Interdisciplinary Messages*, John Wiley & Sons, 1983, 187-227

Simon, Herbert, *Sciences of the Artificial* (1995 3rd edition). Read the entire book, including the prefaces. Originally published in 1969, this book is a founding document of complex systems theory and an important precursor of the iSchool movement. Describing parallel structures in economies, organizations, individual psychology, and artificial intelligence, Simon builds a case for the existence of cross-cutting principles useful in analyzing, and designing, information-laden artifacts and social systems.

### Recommended:

de Solla Price, Derek J. (1965) "Networks of Scientific Papers," *Science* 149(3683): 510-515

Shannon, Claude E. "[A mathematical theory of communication](#)," *Bell System Technical Journal*, vol. 27, pp. 379-423 and 623-656, July and October, 1948.

## Week 5 (February 7): Psychology and Communication

**presenters: Rayoung & Stanley**

John Anderson, *Cognitive Psychology and its Implications*, chapters 5-7, 9

Clark, H.E., "Meaning and Understanding," from H.E. Clark, *Using Language* (Cambridge University Press, 1996), 125-154

Clark, H.E. and Brennan, S.E., "Grounding in Communication," in L.B. Resnick, J. M. Levine, and S.D. Teasley (eds), *Perspectives on Socially Shared Cognition* (1991), 127-149

Hutchins, E., "[How a Cockpit Remembers Its Speeds](#)," *Cognitive Science* 19:3 (1995) 265-288

### Recommended:

Agre and Chapman (1987), "What are Plans For?" (CTools)

John Anderson, *Cognitive Psychology and its Implications*, chapter 2

## Week 6 (Feb. 14): Individuals and Organizations

presenters: Will & ??

- March, J. and Simon, H. A., *Organizations* (original 1958, 2nd ed. 1993), Intro, Ch.1, ch. 6
- Nelson, R. R. and Winter, S. G. (1982) *An Evolutionary Theory of Economic Change*, Harvard University Press, Chapter 4, "Skills"
- Camerer, C. F. and Malmendier, U., "Behavioral Economics of Organizations," in Peter Diamond and Hannu Vartiainen, eds., *Behavioral Economics and Its Applications* (Princeton University Press, 2007), 235-290
- Akerlof, G. A. and Kranton, R. E., "Identity and the Economics of Organizations," *Journal of Economic Perspectives* 19:1 (2005), 9-32

## Week 7 (Feb. 21): Organizational Communication/Organizational Memory

presenters: Will & Chrysta

- March, J. and Simon, H. A., *Organizations* (original 1958, 2nd ed. 1993), ch. 7
- Nelson, R. R. and Winter, S. G. (1982) *An Evolutionary Theory of Economic Change* (Harvard University Press), Chapter 5 "Organizational Capabilities and Behavior"
- Argote, L. (1999) *Organizational Learning: Creating, Retaining, and Transferring Knowledge*, Kluwer Academic Publishers. Chapter 3 "Organizational Memory," 67-97.
- Brown, John Seely and Paul Duguid, *The Social Life of Information* (Harvard Business School Press, 2000/2002), Preface, Intro, and Chapters 1, 4, and 6. Ch. 1 (p 1-33); Chapter 4, Practice Makes Process, pp. 91-116; Ch 6, "Innovating Organization, Husbanding Knowledge, pp. 147-72; Afterword: Beyond Information, 243-52.  
**Available via NetLibrary: <http://www.netLibrary.com/>** If you have trouble with authentication, access this via Mirlyn.

**February 28: Winter Break — NO CLASS**

## Week 8 (March 7): Computer Supported Cooperative Work

- J.C.R. Licklider, "[Man-Computer Symbiosis](#)" (1960)
- Grudin, Jonathan, "A Moving Target: The Evolution of HCI" (2008)
- Heath, C. and P. Luff (1991) "Collaborative activity and technological design: Task coordination in London Underground control rooms." *ECSCW '91. Proceedings of the Second European Conference on Computer Supported Cooperative Work*, eds. L. Bannon, M. Robinson and K. Schmidt, Kluwer Academic Publishers, 65-80
- Grudin, Jonathan, "Groupware and Social Dynamics: Eight Challenges for Developers," *Communications of the ACM* 37:1 (1994), 92-105.

- Ackerman, M.S. (2000). "The intellectual challenge of CSCW: The gap between social requirements and technical feasibility." *Human-Computer Interaction*, 15 (2/3), 179-203.
- Olson, G.M., & Olson, J.S. (2000) "Distance matters." *Human-Computer Interaction*, 15, 139-179
- Kittur, A., Kraut, R. E. (2008). "[Harnessing the Wisdom of Crowds in Wikipedia: Quality Through Coordination.](#)" *CSCW 2008: Proceedings of the ACM Conference on Computer-Supported Cooperative Work*. ACM Press.

### **Recommended:**

Sears and Jacko, "Future Trends in HCI" (2008)

### **Week 9 (March 14): Information Use: Social Networks**

- Granovetter, Mark S. (1973). "[The Strength of Weak Ties](#)," *American Journal of Sociology* 78(6): 1360-1380.
- Benkler, Yochai (2006) *The Wealth of Networks*. Read the entire book, but focus especially on pp. 1-128 and 356-474 (the Introduction; Part One; Chapter 10 of Part Two; and Part Three.)

### **Week 10 (March 21): Information Seeking, Search and Retrieval**

- Case, D. O. (2006), [Information behavior](#). *Annual Review of Information Science and Technology*, 40: 293–327.
- Kuhlthau, C. (2003). Chapter 3, "The information search process." In *Seeking Meaning*, 2nd Edition, Westport, CT: Libraries Unlimited. 29-52
- Pirolli, P. and S. Card (1999) "Information Foraging," *Psychological Review* 106:4, pp. 643-75
- Ruthven, I. (2008), [Interactive information retrieval](#). *Annual Review of Information Science and Technology*, 42: 43–91.
- Manning, C.D., P. Raghavan and H. Schütze (2008) [Introduction to Information Retrieval](#), Cambridge University Press, Chapters 1, 2, 6, 8, 9, 19, 20, 21. You can view as HTML, download individual chapters, or download the entire book.

### **Week 11 (March 28): Classifying and Representing Information**

- Hutchins, W.J. (1978) "The Concept of 'Aboutness' in Subject Indexing," *ASLIB Proceedings* 30: 172-181.
- Bowker, Geoffrey C., & Star, Susan Leigh. (1999). *Sorting Things Out: classification and its consequences*. Cambridge, MA: MIT Press. Read the Intro, Chapters 1-4 and 6-10.
- Andersen, J. (2008), [The concept of genre in information studies](#). *Annual Review of Information Science and Technology*, 42: 339–367.

### **Week 12 (April 4): Infrastructure**

- Edwards, Paul N., Steven J. Jackson, Geoffrey C. Bowker, and Cory P. Knobel, *Understanding Infrastructure: Dynamics, Tensions, and Design*. Report of the NSF

Workshop on History & Theory of Infrastructure (Ann Arbor: Deep Blue, 2007), <http://hdl.handle.net/2027.42/49353>  
Abbate, Janet (1996) *Inventing the Internet* (Cambridge, MA: MIT Press). Chapters 1 (7-43), 3-5 (73-180). Focus especially on Ch. 5.

### **Week 13 (April 11): Generalized Design and Information Technology**

Donald Norman (1990, second edition 2002), *The Design of Everyday Things*. This book is easy to skim: please skim it all, but read chapters 3, 4, 6, and 7 more carefully.

Lidwell, W., K. Holden, & J. Butler (2010 revised edition), *Universal Principles of Design*. Rockport Publishers. Read at least 50 of the entries, including Affordance, Archetypes, Chunking, Cognitive Dissonance, Constraint, Cost-Benefit, Depth of Processing, Hierarchy, Interference Effects, Performance Load, Redundancy, Signal-to-Noise Ratio, Wayfinding.

### **Week 14 (April 18): Conclusion**

SI 500, "[Learning Objectives](#)." Be prepared to expand on at least 10 of the Learning Objectives during class discussion: what does it mean? Why is it important to know this? Origins of the concept(s)? What literatures are relevant? Connection with other learning objectives? Also — which of the LOs do you least understand, and why? What would you need to know in order to grasp it better? Where would you turn first to learn more?