

# SI 701

## Doctoral Foundations Seminar

### Fall 2013, v1.0 (August 29, 2013)

**Meets:** Tuesdays, 8:30-11:30 AM, 1265 North Quad

**Instructor:** Paul Resnick

**Office:** 4344 North Quad

**Office hours:** Mondays 3-5PM or by appointment

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

**The most current version of this syllabus should always be available on the Ctools site for the course.**

#### 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.

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. Build connections between and among ideas from the different fields that constitute the systematic study of information.
2. Improve your ability to read, comprehend, and remember large bodies of diverse content. Refine critical analytical and evaluative skills.
3. Increase your awareness of and ability to engage with potentially useful concepts, theories, and literatures outside your own area of expertise.
4. 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. Develop the ability to present succinct summaries and commentaries orally and in writing.

5. Understand and practice the writing requirements for scholarly communication, including clear and succinct synthesis of prior literature, critical commentary, and crisp, compelling presentation of new and improved ideas of your own.
6. Improve your ability to prepare activities and lead discussion in a classroom setting.

## 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. I will assign a letter grade of A, B, C, or F each week that you are not the class leader. Your eight highest grades for the semester will count **(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. ***Your response paper is due no later than 8 a.m. each Tuesday, on CTools. After class, you are expected to make small revisions to your paper and turn in a redlined version showing your changes by 8 a.m. on Wednesday. Only the redlined version will be graded for correctness, but the original version will be graded for effort.*** Your ten highest grades on the short response papers will count. **(25 percent of grade)**.
3. **Serve as the lead discussant twice during the term.** The discussion leader (or leaders when two people share this role) prepares a lesson/discussion plan. This may include a short handout, a short lecture, a description of learning objectives, in-class exercises, and discussion questions. The discussion leader will meet with the instructor prior to the class session to assess the student's draft plan. The discussion leader leads the discussion, with significant involvement of the instructor. Sign up for two weeks at <https://docs.google.com/a/umich.edu/spreadsheet/ccc?key=0AksSf2Pqo50-dGRwQW5aQWMwQ05DVW80STluY05TYIE&usp=sharing> **(25 percent of grade; 12.5 percent for each session)**.
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. Work to achieve a grade of A or A-. Final grades of B+ or below are considered warning signs in PhD-level work.

## PLAGIARISM POLICY

Plagiarism is the use of another person's words or ideas without attribution to their source. In American intellectual culture, this is considered a form of cheating, dishonesty, and/or theft. At the University of Michigan and in professional settings generally, plagiarism is an extremely serious matter.

**In your writing for this course (and in most professional settings), please paraphrase whenever possible.** This helps you process and understand what you

have read. If truly necessary, you can quote published work, but quotations must be clearly marked and properly attributed. You may obtain copy editing assistance, and you may discuss your ideas with others — but all substantive writing and ideas must be your own or else be explicitly attributed to another, using a citation. The exact form of the citation is not important; what matters is that you provide sufficient detail for someone else to easily relocate your source, even years later (so URLs alone are insufficient).

**All cases of plagiarism will be reported immediately.** There will be no warnings, no second chances, no opportunity to rewrite. **Consequences can range from failing the assignment (a grade of zero) or failing the course to expulsion from the University.** For additional information about plagiarism, see the Rackham pamphlet on [Academic Integrity](#) and [Plagiarism: What It is and How to Recognize and Avoid It](#) from Indiana University. If you have the slightest doubt about whether you are using the words or ideas of others appropriately, please ask.

## 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 or discussion leader may “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 of people working as researchers and teachers. This is rarely easy or comfortable, but it is critical to your success as a scholar. Ironically, the best way to think and talk “on your feet” is to be well prepared. Please prepare notes on the readings and come to class ready to speak out frequently.

**Leading discussion:** twice during the term, you will help lead class discussion. See the requirements and assignments session. Sign up for two weeks at <https://docs.google.com/a/umich.edu/spreadsheet/ccc?key=0AksSf2Pqo50-dGRwQW5aQWMwQ05DVW80STluY05TYIE&usp=sharing>

## COURSE SCHEDULE

**Note:** Some readings may be added, dropped or replaced. Readings not linked directly will be available on CTools. **(Items in red will not be provided electronically; please look into borrowing or purchasing these).**

## Week 1 (September 3): Intro: Sciences of the Artificial

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:

Bush, Vannevar, "[As We May Think](#)," *The Atlantic Monthly* 176:1 (1945); pp 101-108

## Week 2 (September 10): Information Theory

### presenters:

Christian, Brian, *The Most Human Human: What Artificial Intelligence Teaches Us About Being Alive* (First Anchor Books, 2011). Pages 1-15 and 219-259.

Gleick, James. *The Information: A History, A Theory, A Flood*. Chapters 6 and 7.

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

Do the exercises in the Entropy Exercises word doc found in the folder for this week in Resources on CTools.

### Recommended:

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 3 (September 17): Information and Action 1: Automatic and situated responses

### presenters:

Nelson, R. R. and Winter, S. G. (1982) *An Evolutionary Theory of Economic Change*, Harvard University Press, Chapter 4, "Skills"

Kahneman, D., *Thinking, fast and slow*. 2011: Macmillan. Intro and Chapter 1.

Suchman, L., *Human-machine reconfigurations: Plans and situated actions*. 2007: Cambridge University Press. Intro and Chapter 1.

### Recommended:

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

Miller, G.A. "[The Magical Number Seven, Plus or Minus Two: some limits on our capacity for processing information.](#)" *Psychological Review* 63 (1956), 81-97  
John Anderson, *Cognitive Psychology and its Implications*, chapters 5, 7, 9  
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

#### **Week 4 (September 24): Information and Action 2: Boundedly rational choice**

##### **presenters:**

March, J. and Simon, H. A., *Organizations* (original 1958, 2nd ed. 1993), ch. 6  
*Kahneman, D., Thinking, fast and slow. 2011: Macmillan. Chapter 10-18.*

#### **Week 5 (October 1): Information and Action 3: Rational choice with non-standard utility functions and non-standard weighting of outcome probabilities**

##### **presenters:**

Akerlof, G. A. and Kranton, R. E., "Identity and the Economics of Organizations," *Journal of Economic Perspectives* 19:1 (2005), 9-32  
*Kahneman, D., Thinking, fast and slow. 2011: Macmillan. Chapters 25-31.*

#### **Week 6 (October 8): Strategic Thinking and Coordination**

##### **presenters:**

Schelling, T.C., "Bargaining, communication, and limited war." **Conflict Resolution**, 1957. 1(1): p. 19-36.  
Easley, D. and Kleinberg, J. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*, Chapter 6, Games. (I strongly encourage you to do some of the exercises at the back of the chapter to cement your understanding.)  
Camerer, C. F., *Behavioral Game Theory: Experiments in Strategic Interaction*, Chapter 1, Introduction, pages 1-25.

##### **Recommended:**

Krupka, E.L. and R.A. Weber, "Identifying social norms using coordination games: Why does dictator game sharing vary?" **Journal of the European Economic Association**, 2013. 11(3): p. 495-524.

#### **October 15 — NO CLASS (Fall break)**

#### **Week 7 (October 22): Information and Communication**

##### **presenters:**

- 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
- Suchman, L., *Human-machine reconfigurations: Plans and situated actions*. 2007: Cambridge University Press. Chapter 6.
- Hutchins, E., "[How a Cockpit Remembers Its Speeds](#)," *Cognitive Science* 19:3 (1995) 265-288

### **Week 8 (October 29): Information aggregation and collective decision-making**

#### **presenters:**

- March, J. and Simon, H. A., *Organizations* (original 1958, 2nd ed. 1993), ch. 7
- Easley, D. and Kleinberg, J. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*, Chapter 16, [Information Cascades](#).
- Wolfers, Justin, and Eric Zitzewitz. 2004. "Prediction Markets." *Journal of Economic Perspectives*, 18(2): 107–126.

### **Week 9 (November 5): Information processing in organizations and communities of practice**

#### **presenters:**

- Nelson, R. R. and Winter, S. G. (1982) *An Evolutionary Theory of Economic Change* (Harvard University Press), Chapter 5 "Organizational Capabilities and Behavior"
- Wenger, E. *Communities of Practice*, Vignettes I and II, Chapters 1-3 (pp. 18-38, 51-99)
- Weick, K. (1995) *Sensemaking in Organizations*, Chapter 1 "The Nature of Sensemaking" (pp. 1-16)
- Recommended:**
- Weick, K. (1995) *Sensemaking in Organizations*, Chapter 2 "Seven Properties of Sensemaking" (pp. 17-62)

### **Week 10 (November 12): Information acquisition and diffusion**

#### **presenters:**

- Pirolli, P. and S. Card (1999) "Information Foraging," *Psychological Review* 106:4, pp. 643-75
- Granovetter, Mark S. (1973). "[The Strength of Weak Ties](#)," *American Journal of Sociology* 78(6): 1360-1380.
- Easley, D. and Kleinberg, J. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*, Chapter 18, [Power Laws and Rich-Get-Richer Phenomena](#) (Skip sections on advanced material.)

Easley, D. and Kleinberg, J. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*, Chapter 3, Strong and Weak Ties; Chapter 19, Cascading Behavior in Networks (Skip sections on advanced material.)

### **Week 11 (November 19) Automated Information Retrieval and Classification of Unstructured Text**

Manning, C.D., P. Raghavan and H. Schütze (2008) [Introduction to Information Retrieval](#), Cambridge University Press, Chapters 1, 2, 6, 8, 13. You can view as HTML, download individual chapters, or download the entire book.

#### **Recommended:**

Manning, C.D., P. Raghavan and H. Schütze (2008) [Introduction to Information Retrieval](#), Cambridge University Press, Chapters 19-21.

**November 26, NO CLASS (Instructor at a conference in Japan; Thanksgiving week)**

### **Week 12 (December 3): Human-assisted Structuring and Classification**

#### **presenters:**

Malone, T.W., K.R. Grant, F.A. Turbak, S.A. Brobst, and M.D. Cohen, *Intelligent information-sharing systems*. Communications of the ACM, 1987. **30**(5): p. 390-402.

**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.**

#### **Recommended:**

Andersen, J. (2008), [The concept of genre in information studies](#). *Annual Review of Information Science and Technology*, 42: 339–367.

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

Ruthven, I. (2008), [Interactive information retrieval](#). *Annual Review of Information Science and Technology*, 42: 43–91.

### **Week 13 (December 10): Information Infrastructure (plus a little Retrospective Sensemaking about course themes)**

#### **presenters:**

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).

Edwards, Paul N., *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming* (MIT Press, 2010), [Introduction and Ch. 1](#)

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?