

# SI 701

## Doctoral Foundations Seminar

### *Fall 2016 – version 1.1 (final)*

**Meets:** Wednesdays 1-4 PM, 1265 NQ  
**Instructor:** Paul Edwards  
**Office:** 4437 North Quad  
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**Syllabus subject to change. Most current version always [available here](#) and on CTools.**

### 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

- 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.
- Improve your ability to read, comprehend, and remember large bodies of diverse content. Refine critical analytical and evaluative skills.
- Increase your awareness of and ability to engage with 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.
- Develop the skill of presenting succinct summaries and commentaries orally and in writing.

- Understand and practice the writing requirements for scholarly communication, including clear and succinct synthesis of prior literature, critical commentary, and crisp, compelling presentation of your own ideas.
- Prepare classroom activities and lead discussions — vital skills for a teaching career.

## REQUIREMENTS AND ASSIGNMENTS

**Attendance and active participation in all class sessions (25 percent of grade).** 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.

**Weekly response papers (25 percent of grade).** Starting in week 2 (Sept. 14), each week you will write a 400-800 word review of the required reading. The purpose of these reviews is to train you in an important aspect of all academic writing, namely the literature review. Your review paper should be written in that style (see samples on Canvas), and should:

- summarize the argument(s) of the week's readings very succinctly (1-3 sentences per reading),
- discuss how the readings connect with each other and/or with previous weeks' readings, and
- offer a cogent critique of an **intellectual** aspect of the reading (argument, theoretical constructs, method, evidence). Please **don't** critique writing style or quality ("too long," "redundant"), or offer your feelings while reading it ("boring," "exciting," etc.)

These elements may be woven together. Further guidance will be provided in class.

You can skip one week of your choice (except when you are a discussant.). ***Your response paper is due no later than 8 a.m. each Wednesday, on Canvas. Optionally, you can revise your paper after class and turn in a new version showing your changes by 9 a.m. on Thursday.*** Your ten highest (out of eleven) grades on the short response papers will count.

**Writing formats.** For all writing assignments, please use a digital format that permits inline comments in the Canvas grading system. These include, but are not limited to PDF, Word, and Google Docs. Check with me if you're not sure.

**Serve as a lead discussant twice during the term (25 percent of grade; 12.5 percent for each session).** In addition to the usual response paper, discussion leaders prepare a lesson/discussion plan. This may include a short handout, a short lecture, a description of learning objectives, in-class exercises, and discussion questions. Maximum time for any presentation elements is 20 minutes, but other elements (discussion, exercises, games) may be added. Discussion leaders will meet with the instructor prior to the class session to assess the students' draft plan. Leaders take charge of the discussion, with significant involvement of the instructor. [Sign up for two weeks](#) (you can swap slots with other students later if need be).

**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 (as in any professional setting), you should paraphrase whenever possible.** This helps you process and understand what you have read. If the exact phrasing is so perfect and essential that you truly need to borrow another writer's words, you can quote them, but all quotations must be clearly marked and properly attributed. You may obtain copy editing or other technical assistance (e.g. grammar, English as a second language help), 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.** Any standard citation format is acceptable. What matters is that you provide sufficient detail for someone else to easily relocate your source, even years later. **URLs alone are never acceptable as citations,** because they change frequently and do not allow the reader to clearly identify the source without the extra step of visiting the link.

**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.

**You are responsible** for understanding what plagiarism is and how to avoid it. 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.

The best path to thinking and talking well “on your feet” is to prepare in advance. Please make notes on the readings and come to class ready to speak out frequently. If you have trouble with stage fright, are unused to speaking out in class, or feel like you can’t think fast enough to contribute, write out a few comments in advance. It helps to jump in early, so you don’t get “scooped” by another student or start to feel like your comments don’t fit with the thread of the discussion.

## 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 in digital form; please purchase or borrow these).

### Week 1 (September 7): Intro: Sciences of the Artificial

Edwards, “[How to Read a Book](#)”

Simon, Herbert, *The Sciences of the Artificial* (1996 3rd edition, MIT Press). Read the entire book, including the prefaces (but you can skim or omit Chapter 7). 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 14): Information Theory and Artificial Intelligence

**presenters: Brad and Jeremy**

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

Gleick, James, *The Information: A History, A Theory, A Flood* (Pantheon, 2011), Chapters 6 and 7

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

Chandler, Daniel, “[The Transmission Model of Communication](#)” (1994-2014)

### **Week 3 (September 21): Information and Action 1: Automatic and situated responses**

**presenters: Jiaqi, Brad, Carl**

Agre, P. E. and Chapman, D. 1990. "What are Plans For?" *Robotics and Autonomous Systems* 6 (1): 17-34

*Kahneman, D., Thinking, fast and slow. 2011: Macmillan.* Intro and Chapters 1-3.

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

### **Week 4 (September 28): Information and Action 2: Bounded rationality and organizations**

**presenters: Mohamed, Lia**

*Kahneman, D., Thinking, fast and slow. 2011: Macmillan.* Chapters 10-18.

Winter et al. (2011) "Beyond the organizational 'container': Conceptualizing 21st century sociotechnical work," *Information and Organization* 24, 250–269

### **Week 5 (October 5): Information and Action 3: Rational choice and non-standard utility**

**presenters: Allison, Danaja, Earnest**

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, 34.

### **Week 6 (October 12): The wisdom of crowds?**

**presenters: Mohamed, Heeryung, Elizabeth**

*Weinberger, D. 2012. Too Big to Know: Rethinking Knowledge Now That the Facts Aren't the Facts, Experts Are Everywhere, and the Smartest Person in the Room is the Room (Basic Books),* Prologue and Chapters 1-5.

Howison, J. and K. Crowston (2014) "Collaboration Through Superposition: How the IT Artifact as an Object of Collaboration Affords Technical Interdependence Without Organizational Interdependence." *MIS Quarterly* 38(1): 29-50.

Rothschild, D. (2009) "Forecasting Elections: Comparing Prediction Markets, Polls, and Their Biases." *Public Opinion Quarterly* 73(5): 895-916. In conjunction with this paper, take a quick look at the [Iowa US Presidential Election Market](#) for 2016 (the election is just three weeks away!)

### **Week 7 (October 19): Social networks, power laws, and information diffusion** **Guest instructor: Prof. Cliff Lampe**

**presenters: Lia, Danaja**

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*, Chapters 3, 18, and 19. (Skip sections on advanced material.)

## **Week 8 (October 26): Information and Communication**

**presenters: Rasha, Jiaqi**

- 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
- Olson, G.M., and J.S. Olson. 2000. "Distance Matters." *Human-Computer Interaction* 15 (2): 139-78. By two founders of the School of Information, this was a very important paper when published. **Read all figures and tables carefully**, digging into the paper for anything you don't understand. **Skim the rest.**
- Cummings, J. N. "Geography is Alive and Well in Virtual Teams." *Communications of the ACM* 54:8 (2011): 24-26
- Treem, J.W. and P.M. Leonardi. "Social Media Use in Organizations: Exploring the Affordances of Visibility, Editability, Persistence, and Association." *Communication Yearbook* 36 (2013), 143-189.

## **Week 9 (November 2): Communities of practice, sociotechnical capital, and computer-mediated communication**

**presenters: Heeryung, Harman, Elizabeth**

- Wenger-Trayner, E. and B. (2015) "[Communities of practice: a brief introduction](#)" and "[Frequently asked questions: Communities, networks and social learning](#)." Read all entries in the FAQ, and look at some of the comments.
- Resnick, P (2002) "[Beyond Bowling Together: SocioTechnical Capital](#)," in *Human-Computer Interaction in the New Millennium*, ed. J. Carroll, 647-670 (pre-publication version)
- Walther, J. B. (2011). Theories of computer-mediated communication and interpersonal relations. *The handbook of interpersonal communication*, 4, 443-479

### **Recommended:**

Weick, K. (1995) *Sensemaking in Organizations*, Chapters 1-2 (pp.1-62)

## **Week 10 (November 9): Strategic thinking and coordination: game theory**

**presenters: Rasha, Zhewei**

- Scheve, Tom, "[How Game Theory Works](#)," howstuffworks.com. (NB: this site's characterization of game theory is not always entirely accurate, but it does provide an engaging introduction to the main ideas.)
- Schelling, T.C., "Bargaining, communication, and limited war." *Conflict Resolution*, 1957. 1(1): p. 19-36.
- Camerer, C. F., *Behavioral Game Theory: Experiments in Strategic Interaction*, Chapter 1: Introduction, pages 1-25.

Easley, D. and Kleinberg, J. *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*, Chapter 6 (pages 139-156 only). I strongly encourage you to do some of the exercises at the back of the chapter to cement your understanding.

### **Week 11 (November 16): Data**

**presenters: Allison, Zhewei**

Rosenberg, D. (2013) "Data Before the Fact," in *Raw Data is an Oxymoron*, ed. Lisa Gitelman (MIT Press), 15-40  
Strasser, Bruno and Paul N. Edwards (forthcoming 2017), "Big Data is the Answer... but what is the Question?", *Osiris* special issue on *Histories of Data*  
Howison, J, A Wiggins, and K Crowston (2011) "Validity Issues in the Use of Social Network Analysis With Digital Trace Data," *Journal of the Association for Information Systems* 12:12, 767-97

**Choose one** of the following:

- (a) Cohen et al. (2016) "[Using Big Data to Estimate Consumer Surplus: The Case of Uber](#)," NBER Working Paper 22627, National Bureau of Economic Research. This paper gets into some fairly technical economics; the point of having you read it is not to grasp those details, but rather to see what economists can do now that was simply not possible before datasets of this type were available.
- (b) Lazer, D, R Kennedy, G King, and A Vespignani (2014) "The Parable of Google Flu: Traps in Big Data Analysis." *Science*. After you read this, also look through Shaman, J, A Karspeck, W Yang, J Tamerius, and M Lipsitch (2013) "Real-Time Influenza Forecasts During the 2012-2013 Season." *Nature Communications* 4. This article was written by the team that won a CDC prize for a better way to predict flu trends. There's no need to track the details; just get an overall understanding of what this team did to improve on Google Flu Trends' previous performance. Finally, read [this brief news release](#) about the CDC prize.

— **November 23: no class (full class session on Sept 7 instead)** —

### **Week 12 (November 30): Classification and its consequences**

**presenters: Jeremy, Harman**

Bowker, Geoffrey C., & Star, Susan Leigh (1999) *Sorting Things Out: Classification and its Consequences*. Cambridge, MA: MIT Press. Read the Intro, Chapters 1-4, 6-8, and 10.

### **Week 13 (December 7): Knowledge infrastructures**

**presenters: Earnest, Carl**

Weinberger, D. (2012) *Too Big to Know: Rethinking Knowledge Now That the Facts Aren't the Facts, Experts Are Everywhere, and the Smartest Person in the Room is the Room* (Basic Books), Chapters 6, 7, and 9.  
Edwards, Paul N., *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming* (MIT Press, 2010), [Introduction and Ch. 1](#)