

Information in Social Systems

Prof. Paul N. Edwards

Présentation de l'enseignement / Course topic

What is information? How do collections such as libraries, Wikipedia, or scientific data sets enhance the value of information? How do new sociotechnical systems, such as computer-supported collaborative work and social media (Facebook, Twitter, Google+, etc.), break from older forms — and with what effects?

This course explores how the core properties of information, people, and technologies co-create social order. The course provides a distinctive synthesis of important ideas about the use and value of information from psychology, information and library science, economics, computer science, sociology, political science, and history.

Objectifs pédagogiques / Teaching objectives

Students in this course will learn to :

- identify core properties of information that contribute to its value and are constraints and opportunities in management, policy, and social systems
- identify core properties of individuals and social systems that are constraints and opportunities in managing and using information resources
- recognize the different functions performed by information resources in different kinds of social systems, such as small groups, financial markets, administrative agencies, and cultural institutions
- identify core properties of information technologies that are constraints and opportunities in managing and using information resources
- understand some of the major implications of current shifts in social information processes, such as the rise of social media, crowdsourcing, « big data », and other trends

Students in this course will develop competence in the following skills :

- Close reading and interpretation of texts
- Self-expression and convincing argumentation in English
- Reasoning abilities
- Analysis and synthesis of complex materials, across multiple disciplines

Modalités d'évaluation / Assignments and grading

- 2 posts to the online class forum (~5000 characters each), 50% of the grade (25% per post).

Two discussion questions for the online forum will be posted each week for sessions 2 through 11. For each question, approximately 15 students (selected in advance) will participate in the online forum. Students will need to read the week's assignment in order to post. Each student will participate in two such forums (one in each half of the term).

- Final paper (~15,000 characters, about 8-10 pages), 50% of the grade

Details to be announced later in the course.

Plagiarism

I assume that you will do all the written assignments yourself, and that when you make use of the words and ideas of other writers, you will quote and cite them correctly. Nevertheless, we are obligated by SciencesPo policy to verify that you have done so. You are therefore required to process all assignments through the Urkund anti-plagiarism system. Please refer to the assignments for further details.

Plan du cours / Course schedule

Séance n°1 | 5 September | Introduction

An overview of the course. What is information? How does the long history of information technology influence our present, and affect our future?

Séance n°2 | 12 September | Why do we have libraries — and do we still need them?

What is a library? What sorts of collections do libraries contain? How do materials flow through them, and what sorts of processing do they do? In the age of the World Wide Web, do we still need libraries?

- Alex Wright, *Glut : Mastering Information through the Ages*, Chapters 8-10 (pp. 143-182)
- David Weinberger (2009), *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*, Prologue and Chapters 1-2 (pp. 1-42)

Séance n°3 | 19 September | Human Information Capabilities, I

Perception and memory. Cognition, emotion and habit as three broad categories of human information processing.

- John R. Anderson (2004). *Cognitive Psychology and Its Implications*, 6th ed., Ch. 2: "Perception," pp. 36-71
- Daniel L. Schacter (1996). *Searching for Memory: The brain, the mind, and the past*. Basic Books. Chapter 2 (pp. 39 – 71)

Séance n° 4 | 26 September | Human Information Capabilities, II

Learning, problem solving, and choice. Short term memory effects in problem solving. Transition from novice to expert. Heuristic search. Category formation. Uncertainty in decision making. Utility as a model of value in problem solving.

- John D. Bransford, Ann L. Brown, and Rodney R. Cocking, eds., *How People Learn: Brain, Mind, Experience, and School* (National Academies Press, 2000), Chapters 2-3 (pp. 31-78)
- Weinberger, *Too Big to Know*, Chapter 4 (pp. 47-68)

Séance n°5 | 3 October | Collective Memory

Mechanisms of collective and social memory. Collections such as personal records, archives, libraries, museums, databases and digital repositories. Systems and standards for information organization and retrieval (metadata, full-text searching, finding aids, links).

- K.E. Foote, "To Remember and Forget: Archives, Memory, and Culture," *The American Archivist* (1990): 378-92
- Stewart Brand, *The Clock of the Long Now* (Basic Books, 1999), pages 15-17, 36-41, 80-85, 102-113
- David Weinberger (2007), *Everything Is Miscellaneous: The Power of the New Digital Disorder*, Chapter 1 (pp. 1-12)

Recommended reading:

- Alex Wright, "[The Web Time Forgot](#)," *New York Times* (2008). Be sure to click the links to related graphics and video
- José van Dijck, *Mediated Memories in the Digital Age* (Stanford University Press: 2007), Chapter 1

Séance n°6 | 10 October | Designing Information Systems with People in Mind

Design: aesthetics, emotion, and habit. More detailed exploration of habit and emotion, including affordances, inarticulate capabilities, habit and emotion in the formation of values, aesthetics and usability, and stress-related resistance to change.

- Donald Norman (2005). *Emotional Design*, Ch. 1. "Attractive Things Work Better," pp. 17-34
- David T. Neal, Wendy Wood, and Jeffrey M. Quinn (2006). "Habits—A Repeat Performance," *Current Direction in Psychological Science* 15/4, 198-202
- Natalie Sebanz (2006). "It takes 2 to..." *Scientific American Mind*, pp. 52-57
- Daniela Petrelli and Steve Whittaker, "Family Memories in the Home: Contrasting Physical and Digital Mementos," *Personal and Ubiquitous Computing* 14, no. 2 (2010): 153-69

Séance n°7 | 17 October | Information Processing in Social Action, I

Common ground in communication. Information for coordination (benefits of concerted action, value of information, the nature of insurance). Complexity of reaching and maintaining shared understanding.

- G.M. Olson and J.S. Olson, "Distance Matters," *Human-Computer Interaction* 15, no. 2 (2000): 139-78.
- G.M. Olson, J.S. Olson, and G. Venolia, "What Still Matters About Distance," *Proceedings of the Human Computer Interaction Consortium* (2009)
- K. Nelson and R.R. Nelson, "On the Nature and Evolution of Human Know-How," *Research Policy* 31 (2002): 719-33.

Séance n°8 | 24 October | Information Processing in Social Action, II

Sense-making in social systems as cognition, habit and emotion. Information in collective decision making (rumors, wisdom of crowds/information pooling/costs & benefits of diversity). Breakdown and repair in perception and routine.

- Linda Argote, L. (1999) *Organizational Learning: Creating, Retaining, and Transferring Knowledge*, Kluwer Academic Publishers. Ch. 3: "Organizational Memory," 67-97
- Weinberger, *Too Big to Know*, Chapter 5 (pp. 69-92)
- Clay Shirky, *Here Comes Everybody: The Power of Organizing Without Organizations* (New York: Penguin Group USA, 2009), Chapter 7 (pp. 161-187)

Séance n°9 | 7 November | Distance Collaboration and Social Media

Distributed work. Social networks (collections of people; collections and people; flows.) Authority.

- Weinberger, *Too Big to Know*, Chapters 7-8 (pp. 121-172)
- Pam J. Hinds and D.E. Bailey. "Out of Sight, Out of Sync: Understanding Conflict in Distributed Teams." *Organization Science* (2003): pp. 615-632
- R.S. Geiger and D. Ribes, "The Work of Sustaining Order in Wikipedia: The Banning of a Vandal," *Proceedings of the 2010 ACM Conference on Computer Supported Cooperative Work* (2010), pp. 117-126

Séance n°10 | 14 November | The Changing Cost and Structure of Collecting, Storing, and Processing Information

Language, writing and printing as illustrations of the mutual determination of technological and social forces. Ever-declining costs of digital storage, processing and transmission. Technical and social sources. Social and economic consequences (new business models, new flows of information (email, blogosphere, ubicomp).

- Greg Downey (2001). "Virtual Webs, Physical Technologies, and Hidden Workers: The Spaces of Labor in Information Internetworks." *Technology and Culture* 42: 209-35
- Clay Shirky (2010), *Cognitive surplus : creativity and generosity in a connected age*, Chapters 5-6 (pp. 131-182)

Séance n°11 | 21 November | Knowledge Infrastructures

- Paul N. Edwards, 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: Lessons for New Scientific Cyberinfrastructures (Ann Arbor: Deep Blue, 2007). Focus especially on the sections "Dynamics" and "Tensions."
- Weinberger, *Too Big to Know*, Chapter 9 (pp. 173-196)
- Cyrus Farivar, *The Internet of Elsewhere: The Emergent Effects of a Wired World* (Rutgers University Press, 2011), Introduction (pp. 1-15)

Séance n°12 | 28 November | Conclusion: a conceptual map of information in social systems

Bibliographie / Bibliography

To buy (as a paper book, or as an ebook) :

David Weinberger, *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, New York : 2009)

All other readings are available online at <http://pne.people.si.umich.edu/PDF/ISS2012.zip> (caution: large file).