

People, Technology, and work
School of Labor and Employment Relations
University of Illinois at Urbana-Champaign
Fall 2009

Professor Betty Barrett

125 LER

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Course Hours: Tuesdays, 6:00 – 9:00PM, Room 3001 BIF

Office Hours: 11:00 to 12:00 Tuesdays or by appointment

Course overview and objectives:

LIR 512 is focused at the intersection of social and technical systems in the context of historical and contemporary systems: production, social, biological, industrial and infrastructural. Understanding this intersection or point at which innovation is implemented is a critical value-add in today's dynamic business world.

In the course, readings will trace the course of change from craft production to mass production to knowledge-driven work systems. Early socio-technical systems experiments from the 1950s through the 1970s are examined, along with consideration of the implications for complex engineered systems and today's accelerating rates of technological change.

Systems thinking, systems architecture, and related systems principles will be introduced as a framework for analysis. A range of systems change initiatives will be introduced, such as lean production, six sigma, service systems, innovation networks, and others, illustrating their applications in different domains. Classes will feature a mix of case studies, class debates, lectures, and guest speaker presentations. Assessment will be based on short papers, active class participation, and a system analysis project.

Important themes from the class will provide a continued basis for discussion:

- sociotechnical theory
- systems thinking and theory
- collaboration theories
- workplace as system
- the embedded nature of culture and technology

Objectives

The class will provide the students an opportunity to explore through a systems lens the intersection/interface of the social and technical aspects of the workplace.

Students will acquire a thorough understanding of the interdependencies of a sociotechnical system and will be able to use this knowledge to analyze systems they encounter during their work lives.

The course will provide the participants with better understanding of the contributions of others in their workplace with different skill sets and expertise.

Students will acquire a new set of tools and techniques to address challenging issues such as technological innovation and multicultural and multidisciplinary interaction in the workplace.

Course materials

There is a Course Packet of required readings for each class session.. **Students are expected to be familiar with the readings so that they can participate fully in class discussion.**

Short reflections

Six short two to three page reflection papers will be submitted – one each in weeks two-seven of class. These papers offer students the opportunity to reflect on how one of each week's readings relates to their future careers. **Papers will be graded on their thoughtfulness and engagement with the issues or topics in the article. Students are expected to compare and contrast their own experiences with the content of the articles.**

The papers should be structured and carefully written i.e. proper spelling, grammar, citations and punctuation are expected. Please double space and leave one inch margins all around to allow space for comments. **The grades for these papers will be averaged and represent 30% of the grade.** The papers will receive points (one-five) based on the quality of the thought and analysis included.

Major Class Assignment

Students will select a system related to the industry, or organization they hope to be working on in their careers and complete a systems analysis. Each analysis will include:

- a description of the system or industry that contains the relevant demographics and statistics about that system
- a visual representation/map of the system that identifies and makes visual the critical components of the system
- identification of the *exogenous and endogenous variables* of the system
- a list of the critical stakeholders in the system and their major interests
- a description of the technology used in the system
- a description of the interdependencies between the socio and the technical aspects of the system
- a discussion of how you imagine (in your future professional role) you might interact with the system (each team member is expected to complete this item)

Students will prepare these analyses and present them to their classmates and invited guests during class on week eight on October 13. The presentations **must** include the components listed above. An outline of the presentation from each student is due in class in week six. The instructor will return these with comments the following week.

Students should approach this presentation as they would an executive presentation for an employer (it will serve as practice for presentations later in your studies or careers) This means appropriate business casual dress, use of presentation technology, and appropriate materials. The presentation should be polished and coherent. The student may use the presentation media of their choice so long as it can be integrated into the BIF system. Pay attention to the details of appropriate design of the slides or presentation materials. Each presentation is expected to be 10-15 minutes. Prepare to take a few questions at the end. In addition to the in class presentation, each student will submit copies of their presentations, bibliography of sources, and a brief written summary of their presentation that includes important materials that did not fit into the time allowed for the presentation.

The system analysis project will represent 50% of the grade. The grade will be awarded based two components; 1) on how well students fulfill the content requirements (see below) and 2) presentation skills, clarity, enthusiasm, and use of technology.

Class participation

Students are vital element of the system of the class. Their participation will support and sustain the dialogue in the class since they are considered to have stakeholder status equal to the presenters, professors, or guests. Participation is 20 % of the grade. Participation is understood to mean commenting on readings, ideas, and themes from readings, in class exercises and other materials. In addition students are expected to participate in class exercises, and other collaborative efforts.

Schedule and Readings

Readings for this class have been carefully selected to provide a theoretical base for using sociotechnical systems theory. The readings fit into the broad thematic areas identified as core to the course (sociotechnical theory, systems thinking and theory, collaboration theories, workplace as system, the embedded nature of culture and technology, and technology update).

Session 1: Aug. 25: Why are sociotechnical systems important to you?

Eric L. Trist, 1981, The Sociotechnical Perspective: The Evolution of Sociotechnical Systems as a Conceptual Framework and as an Action Research Program, in *Perspectives on Organization Design and Behavior*, Andrew VandeVen and William Joyce, (eds), Chapter 2, pp 19-31., pp 39-75.

Lisl Klein, 1993, On the Collaboration Between Social Scientists and Engineers; Dynamics and Models, from *The Social Engagement of Social Science*, Volume 2, pp 369 -384.

Dominique Vinck, 2003, Social Technical complexity: Redesigning a Shielding Wall from Everyday Engineering, pp13-27.

Session 2: Sep. 1: What theory must you know to understand the foundations of sociotechnical systems ?

Frederick Taylor, 1911, *Scientific Management*, Chapter 1, pp 5-29

Joan Woodward, 1965, *Industrial Organization: Theory and Practice*, (Chapter 3), pp 35 – 49.

Matthew B. Crawford, 2009, *The Separation of Thinking from Doing*, (Chapter 2) pp 37-53, *Shop Class as Soulcraft: An Inquiry into the Value of Work*, Penguin Press, NY,NY.

Session 3: Sep. 8: How do I use knowledge of work organization systems?

****Selection of final projects complete**

Cutcher-Gershenfeld, et al., 1998, *Knowledge-Driven Work: Unexpected Lessons from Japanese and United States Work Practices*, Chapter 1, pp 3-17.

Larry Hirschhorn, Phillip Noble, and Thomas Rankin, 2001, *Sociotechnical Systems in an Age of Mass Customization*, *Journal of Engineering and Technology Management* V 18, pp 241-252.

Thomas P. Hughes, 2004, *Human-Built World: How to Think about Technology and Culture*, Chapter 4, Technology as Systems, Controls, and Information pp. 78-109.

Session 4: Sep. 15: How does the development of a technology change my work?

Steven H. Appelbaum, 1997, Socio-technical systems theory: an intervention strategy for organizational development, Management Decisions, (35/6) pp 452 – 463

Thomas P Hughes, *Edison and Electric Light*, in *The Social Shaping of Technology*, second edition, (eds.) Donald MacKenzie and Judy Wajcman, 2002, Open University Press, London, England, pp50 -63

Wagner James Au, 2008, *Avatar as Entrepreneur*, Chapter 9 The Making of Second Life: Notes from a New World, HarperCollins Publishers, New York NY., pp142-162

Session 5: Sep. 22: How do I analyze the systems around me?

Paul Adler, New Technologies, New Skills, *California Management Review*, Vol. XXIX, Number 1, Fall 1986, pp 9-28.

Donald Tapscott and Anthony D. Williams, *The Global Plant Floor, in Wikinomics: How Mass Collaboration Changes Everything*, 2006 Penguin Books, New York, NY pp213-238

(optional audio interview with Donald Tapscott)
<http://www.npr.org/templates/story/story.php?storyId=6711038>

Alice M. Sapienza, Discerning and Assessing Organizational Culture from Managing Scientists: Leadership Strategies in Scientific Research, 2004, Wiley-Liss, pp.196- 221.

Session 6: Sep. 29: How will knowledge of sociotechnical systems help me implement change and innovation?

****System project outline due and additional information about presentation grading will be handed out.**

Saul Rubenstein and Thomas Kochan, 2001, *Learning from Saturn*, Chapter 2, pp 13-39.

Harald Rohracher, 2001, *Managing the Technological Transition to Sustainable Construction of Buildings: A Socio-Technical Perspective*, *Technology Analysis and Strategic Management*, V 13, No. 1.

Frits Pil and Takahiro Fujimoto, Lean and reflective production: the dynamic nature of production models, in *International Journal of Production Research*, Vol. 45, No. 16, 15 August 2007, pp. 3741-3761

Session 7: Oct. 6: What is the future of sociotechnical systems?

****System project outline comments returned**

Donald Tapscott and Anthony D. Williams, *The Wiki Workplace, in Wikinomics: How Mass Collaboration Changes Everything*, 2006 Penguin Books, New York, NY pp239-267

Alice M. Sapienza, *Leading Change from Managing Scientists: Leadership Strategies in Scientific Research*, 2004, Wiley-Liss, pp.222-240.

Further articles to be determined and distributed in Session 6

Session 8: Oct. 13: Final Student Presentations

If you chose to make handouts for those who attend, please bring copies for the class or we can copy them, if you get them to us 24 hours ahead.

Attire for this session is *business casual*. You will be presenting before your class mates and possibly, other guests.

Each person will make a 10-12 minute presentation of their system analysis using appropriate technology and covering the following items.

- a description of the system or industry that contains the relevant demographics and statistics about that system
- a visual representation/map of the system that identifies and makes visual the critical components of the system
- identification of the *exogenous and endogenous variables* of the system
- a list of the critical stakeholders in the system and their major interests
- a description of the technology used in the system
- a description of the interdependencies between the socio and the technical aspects of the system

The time allotted for each presentation is quite brief. Focus on clear images and careful wording for materials. This means you must organize your material and practice your presentation in order to finish effectively in the allotted time.