

The Science of Socio-Technical Systems in iSchools

ABSTRACT

This workshop builds on and extends an effort begun in 2005 that led to the 2008 Summer Research Institute of the Consortium for the Science of Socio-Technical Systems (CSST). This Research Institute, supported by the National Science Foundation and held at the University of Michigan, brought together a diverse set of researchers, including the fields of science and technology studies, human-computer interaction, management and organizational studies, library and information science, sociology, social informatics, and computer science, to begin exploring and framing a future research agenda centered on socio-technical research. We now propose a workshop as a follow-on to the 2009 iConference to invite iSchool faculty and students to join the emerging CSST network and work to tailor its broad goals to both reflect and support the research being pursued within the greater iSchool community. We see this workshop as continuing and expanding on the 2008 Summer Research Institute.

General Terms

Socio-Technical Systems, iSchools, Library and Information Science, Social Informatics, CSCW, HCI, Sociology, Computer Science.

Keywords

Socio-Technical Systems, Science, iSchools.

1. INTRODUCTION

The relationship between the social and technological dimensions of scholarship in the iSchools is rekindling interest in, as well as prompting an extension of, a socio-technical approach. Such an approach treats information, social actions, and technological elements as interdependent and co-evolving, and actively investigates the collective phenomenon rather than individual components of it.

Socio-technical systems theory traces its early roots to the Tavistock tradition and the work of Trist, Emery and colleagues in the early 1950s [2,5,6]. This work has since influenced a large number of research communities, many of whom comprise iSchool faculties including scholars of library and information science, organizational studies, medical informatics, social informatics, computer-supported cooperative work, human-computer interaction, participatory design, science and technology studies, and computer science. The broad diffusion of the socio-technical perspective among these research communities has fostered both conceptual and methodological diversity. Consequently, different disciplines have become relatively isolated from one another, thus creating barriers for the integration and advancement of work in this area.

Empirical research of a socio-technical nature is diverse. Bates' [1] examination of the phenomenological gap between how the indexer of information and the user of information manage categories at different depths and use different information retrieval heuristics is one example of a socio-technical research problem. Though this work is centered on the domain of

information retrieval, it concludes with an understanding that IR designs must consider the human, database and domain elements, all of which have advanced in a decidedly socio-technical direction in the past ten years. Sawyer, Crowston, Wigand & Allbritton [4] contrasted how the adoption of information and communication technologies by real estate consumers and real-estate agents altered the social relationships and transactional costs associated with buying a house. Their examination of the lower levels of technological disintermediation in the real estate industry, compared with other industries like insurance, is an example of socio-technical research that contributes to work across the many domains in integrated in iSchools. These are two examples of a growing corpus of work that examines the boundary between the social and the technical in an information context. Much of this work is being produced by iCaucus faculty.

In 2005, a group of researchers came together under the banner of the Consortium for the Science of Socio-Technical Systems (CSST) to provide a venue to break down communication barriers and foster integrated research agendas among scholars interested in a socio-technical perspective. In July 2008, the consortium, sponsored by the National Science Foundation (NSF), organized the 2008 Summer Research Institute of the Consortium for the Science of Socio-Technical Systems (CSST), a week-long seminar-style conference held at the University of Michigan. The goal of this inaugural collaboration was to further define a science of socio-technical systems and to begin to explore and frame a research agenda. The institute included 13 senior faculty and 31 junior faculty and advanced doctoral students, and included representation from the iSchools at University of California-Berkeley, University of California-Irvine, University of California-Los Angeles, Carnegie Mellon University, Georgia Institute of Technology, University of Illinois, Indiana University, University of Maryland, University of Michigan, University of North Carolina, The Pennsylvania State University, University of Pittsburgh, Syracuse University, and University of Washington.

Key results from that effort include the identification of an invisible college of cross-generational researchers, the creation of a wiki summarizing current grand challenges within the socio-technical community, a repository of core papers representing the socio-technical perspective, and the development and maintenance of a Facebook group called "Researchers of the Socio-Technical."

We now propose a workshop to follow the 2009 iConference to expand the extant CSST network. This proposal and the resulting workshop specifically target interested iSchool faculty and students as contributors to the discussion of an integrative research agenda for socio-technical studies.

2. SOCIAL SIGNIFICANCE OF WORKSHOP

Global economic upheaval framed by socially disconnected financial management practices, financial information obfuscation, volatile commodity prices, and an increasing need for energy define the grand social setting for this workshop. It is a

time of unique peril and opportunity that will draw upon iSchool disciplines for solutions. The iSchool perspective includes the Library and Information Science community's long standing role shepherding information for job creation, business development and community needs assessment to the general public. Research into information needs and uses, the development and study of collaborative information systems and the bridging of the digital divide further frame the contributions of iSchool members to the navigation of troubled global waters.

In many ways, Socio-Technical Systems Research builds upon traditional iSchool disciplines in a 21st century, technology mediated context. Virtual libraries, global information sharing and distributed work mediated through technology are all examinable from a Socio-Technical perspective. For example, to the extent that information sharing and collaboration may be made richer and more like face to face collaboration, the goals of this workshop will contribute to reduced travel requirements and fossil fuel consumption. Smaller contributions are likely to be more immediate and possibly more impactful in the short run.

3. GOALS FOR iSCHOOL WORKSHOP

Three goals motivate the proposal for this workshop:

- 1) To articulate a set of principles to guide research in the science of socio-technical systems within the iSchool context
- 2) To identify commonalities across the represented disciplines relative to the socio-technical perspective
- 3) To further define the constituency of researchers who share socio-technical interests.

3.1 Articulation of Principles

The workshop seeks to articulate the commonalities across scholarly disciplines pursuing the science of socio-technical systems. The definition of principles is a well-recognized mechanism for providing navigational waypoints for researchers, without constraining their scholarship, teaching or service work. The definition of principles recognizes that existing societies, consortiums and institutions are the scholarly homes for participants.

3.2 Identification of Commonalities

The workshop will identify the common methods, research contexts, and research agenda items across participants and their scholarly communities. Focusing on what is shared will serve to further define what is meant by the science of socio-technical systems.

3.3 Definition of a Science of Socio-Technical Systems Constituency

Ribes & Finholt [3] articulated a distinction between traditional notions of community and the construct of constituency in the context of systems development. Eschewing the often conflated term 'community', they define constituencies as shorthand for issues of inquiry, representation, conclusion and mandate. The organizers of the proposed workshop seek to define issues of inquiry for an inclusive constituency of socio-technical systems researchers, recognizing that workshop participants will find their home communities in diverse organizations and academic departments. Of equal importance is the initiation of a discussion

regarding how a constituency of socio-technical researchers should frame their research relative to the conventions of specific generative disciplines. We expect iCaucus members can contribute valuable insights on this matter.

4. WORKSHOP AGENDA AND PROCESS

The workshop will commence with brief talks (approx. 5 minutes each) by eight senior faculty members each representing a core scholarly tradition from which the science of socio-technical systems draws: library science, science and technology studies, computer-supported cooperative work, human-computer interaction, organizational studies, sociology, communication, and computer science. A tentative slate of opening speakers has been prepared, though the workshop organizers welcome recommendations from the iCaucus upon acceptance of our proposal.

The remainder of the agenda follows a trajectory of idea generation and integration protocols:

Table 1: Workshop Agenda

Duration	Topic
45 minutes	8 overview presentations
1 Hour	Round tables organized to construct a diagram of the scholarly lineage from the home constituencies represented to the science of the Science of Socio-Technical Systems. This may include STS, HCI/CSCW, OCIS, LIS, Social Informatics, Sociology & Computer Science The roundtable format will use presentations as probes to identify salient socio-technical research that is being done by members of the iSchool community
1 Hour	Group discussion to collaboratively identify means/mechanisms of developing CSST community with iSchool participation
½ Hour	Framing agenda for the 2009 Summer Research Institute on the Science of Socio-Technical Systems.

5. EXPECTED OUTCOMES

We anticipate at least three outcomes from this workshop:

1. Increased awareness of, and connections between scholars employing and developing socio-technical principles and outcomes.
2. Continued development of a research agenda regarding socio-technical principles, issues and questions inclusive of a broad set of disciplinary perspectives.
3. Identification of a core set of materials to represent the intellectual and empirical aspects of socio-technical scholarship.
4. Publication of workshop participant position papers.

6. CONCLUSION

Development and use of today's complex information systems are engendering a renewed interest in a socio-technical approach. Recently, the Consortium for the Science of Socio-Technical

Systems (CSST) sketched a research agenda centered on a socio-technical approach, and now proposes a workshop at the iSchools Conference, where a large portion of CSST participants find their scholarly homes. This workshop seeks to identify and strengthen a constituency of socio-technical researchers, to solidify an integrated research agenda for future collaboration, and to define a core set of texts to represent the socio-technical position. Moreover, this workshop will provide an opportunity for iSchool faculty, administration and students to contribute to the agenda of the 2009 Summer Research Institute for the Science of Socio-Technical Systems.

7. REFERENCES

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