## Chapter 2.7
# From Pragmatism to Interaction Design:
## A Sociotechnical Design Space

**Anders I. Mørch**
*University of Oslo, Norway*

## ABSTRACT

This article presents an approach to interaction design that is inspired by sociotechnical systems (STS) and grounded in sociocultural theory. The focus is on the early phases of the design process and in particular how theoretical ideas can stimulate design. It starts by surveying key works in theory-based design in HCI and CSCW. The notion of 'externalized design' of buildings has been adopted as a framework for how to incorporate conceptual (non-computational) artifacts in user interfaces. The framework is applied to the retrospective analysis of an interactive system developed by the author (Janus). The system was stimulated by the notion of reflection-in-action. A three-staged process provides gradual steps for translating reflection-in-action into a concrete user interface: 1) selection, 2) appropriation, and 3) translation. The article ends by discussing strengths and limitations of the approach, and identifies directions for further work. [Article copies are available for purchase from InfoSci-on-Demand.com]

## INTRODUCTION

This article introduces sociotechnical interaction design (STID), which integrates human-computer interface (HCI) design and the socio-cultural approach to research (Wertsch, 1991). Sociotechnical system (STS) design is interpreted to mean the integration of social and technical components by the application of social science theories to interaction design. STID is a method to express sociocultural ideas in interaction design, and to enhance communication of significant ideas of the past to students of today. This interest of mine was prompted by a retrospective analysis

of two interactive systems I have been involved in designing over a number of years, one of which is presented in this article. These systems were inspired by ideas of Pragmatism, a branch of early American social science that began in the late 19th century and is associated with the works of Charles S. Pierce, William James, John Dewey, George Herbert Mead (Rosenthal, Hausman & Anderson, 1999), and their followers like Donald Schön (Schön, 1983; 1987), among others. Pragmatism is applied research and continuous to be relevant to contemporary problems phased by society. It is also interdisciplinary, a perspective on research shared by many scholars today. For instance many of the early contributors were associated with several disciplines like philosophy, psychology, sociology, education, and urban design. Within each discipline and their intersections, they developed far-reaching insights, many of which are relevant to contemporary problems studied in these fields. It is beyond the scope of this article to go into the details of that work here (but I return to one theory later in the article).

The critical reader educated in interaction design might object to my use of theoretical ideas that originated in the pre-web era, and are not directly related to the knowledge-based society we live in today. At present, there are new forms of communication and information-sharing emerging, which extends face-to-face (f2f) interaction, as well as new tools to reflect online behavior. Some of this work will have the effect of rendering communities more transparent than they have been in the past, which may require new theories and models to be made. However, it does not mean that social science has to be reinvented. Human nature is still the main component of social interaction. An implication of this is that many of the significant theories developed by the American Pragmatists are highly relevant today. This is manifest in the application of these thinkers' and their followers' ideas to the problems society is facing today. An example is Dewey and Mead's ideas on education (Barnes, 2002; Schön, 1987).

Pragmatism has implications for practical action, collaboration, learning and design. In particular I claim the ideas contain insights that are useful to interaction designers in HCI, Computer Supported Cooperative Work (CSCW), and Computer Supported Collaborative Learning (CSCL). The claim is put forward as a worked out example in this article.

On the other hand, socio-technical systems (or STS) originated in an effort to study organization design by recognizing the importance of interaction between people and technology in the workplace. STS researchers study the various forms of interrelatedness of social and technical sub-systems. The term STS was coined in the 1960s by Fred Emery and Eric Trist, who were working as consultants at the Tavistock Institute in London. They have evolved the approach over many years, and together with colleagues made important contributions to multidisciplinary studies in organizations, e.g., (Bostrom & Heinen, 1977; Mumford, 2006; Trist, 1981/2004) and participatory design, e.g. (Nygaard, 1986). For example, Bostrom and Heinen identified what conditions caused information systems design of its time to fail and suggested to reframe the conditions in terms of STS to create a better fit between the technical and the social sub-systems (Bostrom & Heinen, 1977). STS was also influential (albeit in a different way) on the early work in participatory design (Schuler & Namioka 1993), in particular on Kristen Nygaard and his colleagues in Scandinavia. He contributed to STS by developing a conceptual framework for collaborative design of information systems for developers and users to work together (Nygaard, 1986).

Socio-technical systems are interpreted in the continuation of participatory design and extended to mean the evolutionary creation of web-based collaboration environments with a focus on the interaction between social and technical components (Ye & Fischer, 2007). Furthermore, the interaction between social and technical components is interpreted to mean the application of

13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/pragmatism-interaction-design/39740

# Related Content

Acceptance, Use, and Influence of Political Technologies among Youth Voters in the 2008 US Presidential Election
Lara Khansa, Tabitha Jamesand Deborah F. Cook (2010). *International Journal of E-Politics (pp. 1-21).*
www.irma-international.org/article/acceptance-use-influence-political-technologies/47197

Diasporizing the Digital Humanities: Displacing the Center and Periphery
Roopika Risam (2016). *International Journal of E-Politics (pp. 65-78).*
www.irma-international.org/article/diasporizing-the-digital-humanities/163146

Social Media as Technologies for Asynchronous Formal Writing and Synchronous Paragraph Writing in the South African Higher Education Context
Chaka Chaka (2016). *Social Media and Networking: Concepts, Methodologies, Tools, and Applications (pp. 504-532).*
www.irma-international.org/chapter/social-media-as-technologies-for-asynchronous-formal-writing-and-synchronous-paragraph-writing-in-the-south-african-higher-education-context/130386

Some Research Challenges for Studies of Virtual Communities Using On-Line Tells
Chris Kimble (2010). *International Journal of Virtual Communities and Social Networking (pp. 23-30).*
www.irma-international.org/article/some-research-challenges-studies-virtual/52987

Extending Social Network Diagrams for Large Scale Collaboration
I.T. Hawryszkiewycz (2012). *Handbook of Research on Business Social Networking: Organizational, Managerial, and Technological Dimensions  (pp. 1-13).*
www.irma-international.org/chapter/extending-social-network-diagrams-large/60302