

# Sociotechnical Theory and Communities of Practice

**Andrew Wenn**

*Victoria University, Australia*

## INTRODUCTION

Communities of practice (CoPs), by their nature, are social entities. Such communities may be large or small, geographically dispersed or located within a confined region. Essentially, communities of practice consist of members who chose to come together because they have a passionate dedication to sharing knowledge and a desire to develop their own and other's capabilities (Wenger & Snyder, 2000). No matter what type of CoP (collocated or virtual; intra or interorganizational) communication is one of the prime desiderata. Thus, it is highly likely that technology of some form will be involved. For instance, a virtual community of practice may use e-mail or a more sophisticated groupware application to keep in touch. CoPs within a knowledge management environment will certainly have access to technology.

To understand the workings of such communities requires a theory that enables us to deal at the levels of the individual, the group, and the larger world in which the community is embedded (Lave, 1988). Any such theory must be able to account for the role of technology within the community as well as its social aspects.

## BACKGROUND

### Sociotechnical Theory

As the compound word *sociotechnical* indicates, it is, according to Coakes (2002), a combination of two ideas or paradigms—the social and the technical. It is an attempt to provide a view of technology, organizations, and people that is more holistic and less biased than either could be on its own. Furthermore, “[s]ociotechnical perspectives can be characterised as holistic, and whilst not being panoptic in character, take a more encompassing view of the organization, its stakeholders in knowledge and

the environment in which it operates, than [many other perspectives] ...which are limited by their origins and paradigms” (p. 4).

Information systems, as with knowledge management systems, should not be seen as technology in isolation; they consist of humans, technological, and social artifacts linked in networks of relationships. These networks are called sociotechnical networks. The strong emphasis on the human or social side is considered an important factor in any information system (Clarke et al., 2003). There are several sociotechnical approaches that could be used. One, derived from the work of the Tavistock Institute (Coakes, 2002; Mumford, 2003), is concerned with highlighting the moral and ethical issues associated with the work environment and aims to enhance worker involvement in change within this environment. Mumford (2003), whose focus is on the application of sociotechnical principles to the systems design process, remarks that both the social (human) needs and the technical must be given equal weight where possible.

Another approach that is seeing increased use in information systems is that of Actor-Network Theory (ANT) (Callon, 1986; Law & Callon, 1992; Tatnall, 2003; Wenn, 2003). The emphasis of ANT is on the interplay between the social and the material, how they come together and are coproduced, and the relationships that develop between them (Callon, 1986). In ANT, the social and the technical are often called human and nonhuman actants, or more often, just actants (Latour, 1987). The term *actant* was deliberately chosen so that the social and the technical can be treated in equal fashion. It uses a semiotic approach whereby actors and actions are seen as network effects, and the relationships between actors are traced through the strategies, practices, and negotiations employed within the network. ANT does not seek explanatory factors for innovations but describes and constructs theories of actions that arise from technical and social negotiations. Unlike the ap-

proach of the Tavistock Institute, ANT does not specifically focus on the moral and ethical issues—it prefers neutrality—it does, however, enable us to see how networks of associations arise. Thus, it would seem to have much to offer for understanding the complexities of communities, both in their internal practices and the boundary work (Star & Griesemer, 1989) required from communities wishing to maintain their connections with the outside world (Wenger, 1998).

## **FUTURE TRENDS**

As more is learned about the way knowledge claims are constructed, the methods by which local orderings shape such claims and how these are transmitted to other communities of practice either internal or external to the organization the more it becomes apparent that our understanding of such practices cannot be described by a hard and fast theory (Turnbull, 2000). Sociotechnical theories often assume that categories of social and technical are firmly fixed. One recent proposal is that sociotechnical approaches should also pay more attention to the way society and technology co-construct each other (Misa, Brey & Feenberg, 2003). Co-construction is the idea that technologies, society, and culture interact deeply and mutually affect each other (Misa, 2003). Another promising approach is that employing Foucault's (1986) concept of heterotopian sites recently employed by Liff and Steward (2003) to analyze the communities of users that gather at cybercafés.

## **CONCLUSION**

Sociotechnical approaches such as that arising from the work of the Tavistock Group or Actor-Network Theory have much to offer when it comes to understanding communities of practice, particularly ones that arise in information or knowledge based organizations. In such situations, consideration needs to be given to how individuals, groups, and technological artifacts interact to the mutual benefit of all concerned. It is through an understanding of these interactions and the processes of co-construction that we will be able to make more productive use of communities of practice.

## **REFERENCES**

- Callon, M. (1986). Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieuc Bay. In J. Law (Ed.), *Power, action and belief* (pp. 197-234). London: Routledge and Kegan Paul.
- Clarke, S., Coakes, E., Hunter, M. G., & Wenn, A. (Eds.). (2003). *Socio-technical and human cognition elements of information systems*. Hershey, PA: Information Science.
- Coakes, E. (2002). Knowledge management: a sociotechnical perspective. In E. Coakes, D. Willis, & S. Clarke (Eds.), *Knowledge management in the sociotechnical world* (pp. 4-14). London: Springer-Verlag.
- Foucault, M. (1986). Of other spaces. *Diacritics*, 16(1), 22-27.
- Latour, B. (1987). *Science in action*. Cambridge, MA: Harvard University Press.
- Lave, J. (1988). *Cognition in practice: Mind, mathematics, and culture in everyday life*. Cambridge, UK: Cambridge University Press.
- Law, J., & Callon, M. (1992). The life and death of an aircraft: A network analysis of technical change. In W. E. Bijker (Ed.), *Shaping technologybuilding society: Studies in sociotechnical change* (pp. 21-52). Cambridge, MA: MIT Press.
- Liff, S., & Steward, F. (2003). Shaping e-access in the cybercafé: Networks, boundaries and heterotopian innovation. *New Media & Society*, 5(3), 313-334.
- Misa, T. J. (2003). The compelling tangle of modernity and technology. In T. J. Misa, P. Brey, & A. Feenberg (Eds.), *Modernity and technology* (pp. 1-30). Cambridge, MA: MIT Press.
- Misa, T. J., Brey, P., & Feenberg, A. (Eds.). (2003). *Modernity and technology*. Cambridge, MA: MIT Press.
- Mumford, E. (2003). *Redesigning human systems*. Hershey, PA: Information Science.
- Star, S. L., & Griesemer, J. (1989). Institutional Ecology, "translations" and boundary objects:

1 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/sociotechnical-theory-communities-practice/10536](http://www.igi-global.com/chapter/sociotechnical-theory-communities-practice/10536)

## Related Content

---

### Thinking in Virtual Spaces: Impacts of Virtual Reality on the Undergraduate Interior Design Process

Elizabeth Poberand Matt Cook (2019). *International Journal of Virtual and Augmented Reality* (pp. 23-40).

[www.irma-international.org/article/thinking-in-virtual-spaces/239896](http://www.irma-international.org/article/thinking-in-virtual-spaces/239896)

### Strategies for Virtual Work

Paul Jacksonand Jane E. Klobas (2008). *Encyclopedia of Networked and Virtual Organizations* (pp. 1535-1541).

[www.irma-international.org/chapter/strategies-virtual-work/17789](http://www.irma-international.org/chapter/strategies-virtual-work/17789)

### Mutual Value in Business Relationships

Rita de Cássia Pereira, Carlo Gabriel Porto Belliniand Fernando Bins Luce (2008). *Encyclopedia of Networked and Virtual Organizations* (pp. 971-981).

[www.irma-international.org/chapter/mutual-value-business-relationships/17714](http://www.irma-international.org/chapter/mutual-value-business-relationships/17714)

### Problem Solving in Teams in Virtual Environments Using Creative Thinking

Aditya Jayadas (2019). *International Journal of Virtual and Augmented Reality* (pp. 41-53).

[www.irma-international.org/article/problem-solving-in-teams-in-virtual-environments-using-creative-thinking/239897](http://www.irma-international.org/article/problem-solving-in-teams-in-virtual-environments-using-creative-thinking/239897)

### Using a Design Science Research Approach in Human-Computer Interaction (HCI) Project: Experiences, Lessons and Future Directions

Muhammad Nazrul Islam (2017). *International Journal of Virtual and Augmented Reality* (pp. 42-59).

[www.irma-international.org/article/using-a-design-science-research-approach-in-human-computer-interaction-hci-project/188480](http://www.irma-international.org/article/using-a-design-science-research-approach-in-human-computer-interaction-hci-project/188480)