Grounding CSCW in Social Psychology

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INTRODUCTION

Computer-Supported Cooperative Work (CSCW) is largely an applied discipline, technologically supporting multiple individuals, their group processes, their dynamics, and so on. CSCW is a research endeavor that studies the use of, designs, and evaluates computer technologies to support groups, organizations, communities, and societies. It is interdisciplinary, marshalling research from different disciplines such as anthropology, sociology, organizational psychology, cognitive psychology, social psychology, and information and computer sciences. Some examples of CSCW systems are group decision support systems (e.g., Nunamaker, Dennis, Valacich, Vogel, & George, 1991), group authoring systems (e.g., Guzdial, Rick, & Kerimbaev, 2000), and computer-mediated communication systems (e.g., Sproull & Kiesler, 1991).

Behavioral and social sciences provide a rich body of research and theory about principles of human behavior. However, researchers and developers have rarely taken advantage of this trove of empirical phenomena and theory (Kraut, 2003). Recently, at the 2004 Conference on CSCW, there was a panel discussion chaired by Sara Kiesler (Barley, Kiesler, Kraut, Dutton, Resnick, & Yates, 2004) on the topic of incorporating group and organization theory in CSCW. Broadly speaking, the panel discussed some theories applicable to CSCW and debated their usefulness.

In this article, we use the theory of small groups as complex systems from social psychology in a brief example to allude to how it can be used to inform CSCW methodologically and conceptually.

BACKGROUND

Preaching to the choir, Dan Shapiro at the 1994 Conference on CSCW made a strong call for a broader integration of the social sciences to better understand group- and organizational-level computer systems (Shapiro, 1994). Shapiro contrasted his proposal with the dominant use of ethnomethodology in CSCW research. As he noted, ethnomethodology implies a commitment to a worldview in which theories and other abstractions are rejected. Therefore, ethnographic accounts of behavior are driven not by explanation but "by the stringent discipline of observation and description" (p. 418). The result has been perhaps excellent designs, but typically, there is little sustained work to develop first principles that can be applied elsewhere (Barley et al., 2004).

Finholt and Teasley (1998) provided evidence of Shapiro's concern by analyzing citations in the ACM Proceedings of the Conference on CSCW. For example, examination of the 162 papers that appeared between 1990 and 1996 showed that each conference had a small number of papers with a psychological orientation. Overall, however, the proceedings indicated only modest attention to psychological questions, and this attention is diminishing. For instance, 77 out of 695 citations referenced the psychological literature in the 1990 Proceedings. By 1996, despite a 34% increase in the total number of citations, the number of references to the psychological literature decreased by 39% to 46 out of 933 citations. Thus, based on this study, the authors argue that the CSCW community should adopt a stronger orientation to social science disciplines.

Greater attention to psychological literature will offer well-validated principles about human behavior in group and organizational contexts, and convey data collection and analysis methods that identify salient and generalizable features of human behavior (Finholt & Teasley, 1998).

Kraut (2003, p. 354) warns of "disciplinary inbreeding", where researchers tend to cite work within their own community. For instance, contrasting with the earlier numbers on the decrease of citations to psychological literature, citations to the CSCW literature grew from 70 in 1990 to 233 in 1996, an increase of 330% (Finholt & Teasley, 1998). Kraut argues that unlike theories in cognitive psychology, social psychology as a theoretical base has been inadequately mined in the HCI and CSCW literatures (Barley et al., 2004). Part of the reason is the mismatch of goals and values of CSCW research with those of social psychology. CSCW is primarily an engineering discipline, whose goal is problem solving; in contrast, social psychology views itself as a behavioral science, whose mission is to uniquely determine the causes for social phenomena.

EXAMPLE

Social psychology has a rich body of theoretical literature that CSCW can build on (Beenen et al., 2004; Farooq, Singley, Fairweather, & Lam, 2004; Kraut, 2003). Let us take an example of a theory from social psychology that entrains implications for CSCW. Consider the theory of *small groups as complex systems* (for details of the theory, refer to Arrow, McGrath, & Berdahl, 2000). According to the theory, groups are intact social systems embedded within physical, temporal, socio-cultural, and organizational contexts. Effective study of groups requires attention to at least three system levels: individual members, the group as a system, and various layers of embedding contexts—both for the group as an entity and for its members. The following social psychological study illustrates how this theory can be leveraged in CSCW.

In the 1971 Stanford Prison Experiment (Bower, 2004), Zimbardo randomly assigned male college students to roles as either inmates or guards in a simulated prison. Within days, the young guards were stripping prisoners naked and denying them food. Zimbardo and his colleagues concluded that anyone given a guard's uniform and power over prisoners succumbs to that situation's siren call to abuse underlings. Currently, the validity and conclusions of these studies are being challenged on the grounds that the study used artificial settings and abuses by the guards stemmed from subtle cues given by experimenters (p. 106). In a recent and similar study to explore the dynamics of power in groups, Haslam and Reicher (2003) are indicating that tyranny does not arise simply from one group having power over another. Group members must share a definition of their social roles to identify with each other and promote group solidarity. In this study, volunteers assigned to be prison guards had trouble wielding power because they failed to develop common assumptions about their roles as guards. "It is the breakdown of groups and resulting sense of powerlessness that creates the conditions under which tyranny can triumph," (p. 108) Haslam holds.

In light of the above-mentioned study, the theory of groups as complex systems has at least two implications for CSCW. First, the theory warrants a research strategy that draws on both experimental and naturalistic traditions (Arrow et al., 2000). This will allow researchers to mitigate for difficulties of both laboratory experiments (e.g., lack of contextual realism) and field studies (e.g., lack of generalizability). Such a theory-driven research strategy can enrich current evaluation techniques in CSCW by increasing methodological robustness and validation (e.g., Convertino, Neale, Hobby, Carroll, & Rosson, 2004).

Second, the theory sheds light on the dynamics of power in a group. Arrow et al. (2000) assert that negotiations among members about power needs and goals typically involve both dyadic struggles to clarify relative power and collective norms about the status and influence structure (this was corroborated by Haslam and Reicher, 2003). This entails design implications for CSCW. Drawing on Arrow et al.'s (2000) theory, CSCW systems should then support, in general, design features that allow the fulfillment of group members' needs for attaining functional levels of agreement, explicit or implicit, regarding the following: (1) How membership status