

Supporting Culture in Computer-Supported Cooperative Work

Lu Xiao

The Pennsylvania State University, USA

Gregorio Convertino

The Pennsylvania State University, USA

Eileen Trauth

The Pennsylvania State University, USA

John M. Carroll

The Pennsylvania State University, USA

Mary Beth Rosson

The Pennsylvania State University, USA

INTRODUCTION

Computer Supported Collaborative Work (CSCW)

Information Technology (IT) has a significant impact on our lives beyond mere information access and distribution. IT shapes access to services, technology, and people. The design and use of IT can change people's communication styles and the way they work, either individually or in a group. The recent introduction of groupware and Computer Supported Collaborative Work (CSCW) systems enables people to collaborate with fewer time and space constraints and affects people's lives and their cultures in the long term.

CSCW is a new and fast developing research field. The terms *groupware* and *CSCW* were coined in the mid-1980s. The study of CSCW and groupware could be defined as a middle field of research between the study of single user applications (e.g., human-computer interaction [HCI] research) and applications for organizations (e.g., information systems [IS] or management information system [MIS] research) (Grudin, 1994). CSCW studies the way people work in groups as well as technological solutions that pertain to computer networking with associated hardware, software, services, and tech-

niques (Wilson, 1991). There are several alternative labels used to denominate CSCW applications: groupware, group support systems (GSS), collaborative computing, workgroup computing, and multi-tiuse applications.

Some of the key issues studied in CSCW include commuter-mediated communication, awareness and coordination, and multi-user interfaces. However, there has been very limited research to account for culture in CSCW. In this article, we discuss the role of culture in the design and implementation of CSCW systems that support work in cross-cultural contexts. We first present two different perspectives on culture in the literature. We then review prior research in both HCI and IS fields and follow with a summary of preliminary research work in CSCW about cross-cultural group work. We conclude by discussing alternative approaches to design and by suggesting a theoretical tool that may inform future research on the cultural factors in CSCW.

CULTURE

Culture is "an integrated system of learned behavior patterns that are characteristic of the members of any given society. Culture refers to the total way of life of particular groups of people. It includes every-

thing that a group of people thinks, says, does and makes—its systems of attitudes and feelings. Culture is learned and transmitted from generation to generation” (Kohls, 1996, p. 23). Two distinct perspectives on culture are represented in the literature: culture is relatively constant vs. culture is variable and situated. The major advocate of the first perspective (i.e., culture is a constant entity based on shared assumptions) is Hofstede (1980), who defines culture as “the collective programming of the mind which distinguishes the members of one group or category of people from another” (p. 25). Researchers who hold the first perspective on culture also define culture as beliefs, values, and assumptions that are reflected in artifacts, symbols, and behaviors (Kroeber & Kluckhohn, 1963). Schein (1992) defined organizational culture as a set of implicit assumptions shared within the group that determines its perspective of and reaction to various environments.

The other perspective on culture characterizes it as variable, historically situated, and evolving with the context. Rather than being a holistic and relatively stable entity, culture is seen as fragmented, variable, contentious, and in-the-making (Brightman, 1985; Prus, 1997). The values and attitudes of the working group affect the behavior of the group, whose collective patterns of behavior contributes to the group culture. The group culture, in return, has significant impact on the values and attitudes of the group. This cyclic relationship is true for not only working groups or organizations but also for nations (Davison & Jordan, 1996).

BACKGROUND

Culture: A Research Issue in Multiple Disciplines

In this section, we review studies from different research fields that have investigated the role of culture in computer technology. We first describe prior research in HCI and IS (or MIS) literature. Then, we focus on studies that have accounted for cultural factors in CSCW and groupware.

Current Research in HCI and Information System

HCI researchers have investigated how cultural factors may affect design and evaluation of single-user applications (Barber & Badre, 1998; Marcus, 2000; Marcus & Gould, 2000; Sheppard & Scholtz, 1999). The research in this domain has focused on research issues such as cultural usability (Barber & Badre, 1998) and the design of intercultural user interfaces (UI) (Marcus, 2000). An instance of the impact of culture on UI design pertains to the meaning of colors. The color red, for example, in some cultures is associated with danger, anger, and so forth (Dix & Mynatt, 2004). In other cultures, such as in China, it is more commonly associated with happiness and good luck. Designing UI for multicultural audiences may require interfaces that adapt the standards to the cultural context of the specific audiences.

Several IS (MIS) studies have investigated the influence of cultural factors on the use of information systems. Table 1, reproduced from Ward and Ward (2002), summarizes a number of studies on GSS and culture. Setting future agendas for IS research at the group level of analysis, Walsham (2000) observed, “There are clear agendas here for IS researchers to investigate in more detail the role of groupware in multi-cultural contexts” (p. 204).

Culture Issue in CSCW and Groupware

Located between HCI and IS research, CSCW has given increasing attention to cultural factors in CSCW and groupware. CSCW researchers have acknowledged the relevance of culture to appropriately design groupware and to successfully support cooperative work. For example, Olson and Olson (2001) have observed that remote teams misunderstand each other because of cultural differences. Dix and his colleagues have observed that lack of consideration for different cultural perceptions and habits about personal space (proxemics) may have unpleasant effects in cross-cultural meetings (Dix & Mynatt, 2004). The following section discusses two distinctive examples of system design that support cross-cultural communication.

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