Technology Sensemaking by University Administrators, Faculty and Staff: Unity and Divergence

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Applying Weick's (1995) sensemaking theory to analyze technology sensemaking by university administrators and faculty and staff, this study found that there is both unity and divergence in their sensemaking about an information technology. Administrators attempted to discursively construct a pro-technology organizational culture, which gained support from faculty and staff. Administrators implemented the system to create a new teaching and learning environment that emphasized technology competence, whereas faculty perceived the system as an aid to teaching and learning. Faculty used the system to augment service work but staff resisted using it for that purpose. While administrators pushed faculty to use the system for online teaching, they met strong resistance. The role of socio-political concerns in their technology sensemaking was addressed.

Keywords: Technology sensemaking, technology for control, technology resistance, and pro-technology organizational culture

INTRODUCTION

In technology sensemaking, people take into consideration possible changes in their work practices that information technology (IT) use may bring about (Weick, Sutcliffe, & Obstfeld, 2005). Members within an organization vary in their social-political concerns. Knowledge of members' sensemaking behavior is of great importance to organizations, as it can inform them of organizational members' attitudes toward IT implementation, and thus help them assess the likelihood of successful IT implementation. Investigating technology sensemaking by organizational administrators and nonmanagerial employees can serve dual purposes. First, investigating their technology sensemaking enables

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researchers to delve into their cognitive worlds to see what technology implementation and use represent to them and how their representations influence their interactions with technology (Prasad, 1993). Second, examining technology sensemaking by organizational administrators and nonmanagerial employees together will help reveal consonance and/or tension in these two groups of organizational members' perceptions of issues related to organizational change. Knowledge of these organizational dynamics is critical to understanding, articulating, facilitating, and managing organizational change (Gioia, Thomas, Clark, & Chittipeddi, 1994; Maitlis & Lawrence, 2007).

In organizations, different social groups may have different socio-political concerns. Managerial organizational members are interested in strategic change (Corley & Gioia, 2004; Dunford & Jones, 2000; Gioia & Chittipeddi; 1991; Gioia, Thomas, Clark, & Chittipeddi, 1994), constantly exploring possible IT uses that might strategically benefit the organization. Their advocacy for IT implementation stems from intentional enhancement of organizational control (Fernie &Metcalf, 1998; Limburg & Jackson, 2007). On the other hand, nonmanagerial members are mostly concerned with changes in their work practices triggered by technology use (Leonardi, 2009; Schultze & Boland, 2000). The likely outcomes of strategic change would trigger intense sensemaking among nonmanagerial organizational members. Research showed that nonmanagerial organizational members sometimes resisted technology adoption (Bain & Taylor, 2000; McKinlay, 2002; Richards, 2008). Therefore, revealing the role of these socio-political concerns in technology sensemaking will shed light on political actions by these two groups around IT implementation such as control and resistance. This is a gap in the current literature that this study seeks to fill.

Blackboard, since its inception in 1997, has been widely adopted in American colleges and universities for its various products and services including course delivery and management, community communication, content management, and student assessment (Blackboard, 2014). This study seeks to investigate socio-political concerns in technology sensemaking by university administrators and faculty and staff in a Midwest state university. Particularly, this study attempts to fill the gap by first exploring organizational members' perceptions of possible outcomes in work practices and organizational change that use of Blackboard would bring about, and then revealing how such perceptions influence their attitudes and actions toward this particular technology.

In the rest of the paper, we will review the literature on technology sensemaking so as to establish a theoretical basis for the study, describe the methods of data collection and analysis, present findings of the study, and finally discuss the findings with respect to theory and practice.

LITERATURE REVIEW

Sensemaking is a social process in which organizational members interpret their environment through interaction with each other, socially construct meanings that help them understand the environment, and collectively respond to events (Weick, Sutcliffe, & Obstfeld, 2005). As technology is equivocal (Weick, 1990), organizational members can make multiple senses around it, which then shape multiple attitudes and reactions toward it including acceptance, usage, and resistance (Berente, Hansen, Pike, & Bateman, 2011; Bijker, Hughes, & Pinch, 1987; Karsten, 1995; Prasad, 1993; Schon & Rein, 1994). Weick's (1995) sensemaking theory can best illuminate the process of technology sensemaking (Tallon & Kraemer, 2007).

In Weick's conceptualization, sensemaking is social, ongoing, noticing, plausible, identity related, retrospective, and enacting. (1) Sensemaking is a social activity in which organizational members interact with each other, influence and receive influence from each

other. The social nature of sensemaking is where organizational sensemaking differs from individual sensemaking. In organizational sensemaking, a sense is developed among majority of organizational members when they engage themselves in mutual interaction and influence. That sense is made in accordance with social norms of the organization. Organizational members' social interactions impact how they interact with IT (Agarwal & Prasad, 1998; Moore & Benbasat, 1991; Vaast & Walsham, 2005; Walsham, 1998). (2) Sensemaking is ongoing and active throughout different stages of technology adoption, in which multiple modes of interaction with technology emerge (Hsiao, Wu, & Hou, 2008). For example, in the case reported in Vaast and Walsham's (2005) study, sales agents made different senses about the same technology at different times. (3) Sensemaking is about noticing, gathering facts and opinions. Sensemaking involves individuals' reactions to what they notice in their environment. When involved in technology sensemaking, organizational members gather various kinds of information about the technology and its possible impacts from their peers and other social contacts (Fulk, 1993; Gopal & Prasad, 2000). (4) In outcome, sensemaking is plausible rather than accurate. Research shows that managers' sensemaking and decision making is a process of rational satisficing, not entirely based on accurate information processing (Starbuck & Mezias, 1996; Thomas, Clark, & Gioia, 1993). Organizational members' perceptions of IT and its impacts are usually not based on accurate evaluations through a lot of information processing but selective and sometimes even biased information (Tallon & Kraemer, 2007). (5) Weick (1995) argued that sensemaking is grounded in identity construction involving interdependent relationships between members and the organization. For individual organizational members, IT adoption can threaten or enhance their self-identity, as it can mean deskilling and existential anxiety, as well as reskilling and empowerment (Barrett & Walsham, 1999). For instance, Schultz and Boland (2000) showed that a group of competitive intelligence analysts only minimally used a new knowledge management system because they feared that an extensive use of it would have contradicted their perceptions of their job as "gatekeepers" of information in their organization. (6) Sensemaking is a retrospective process. Although sensemaking is to respond to uncertainties, individuals' interpretations are largely based on their lived experiences. For example, organizational executives' perceptions of IT are shaped by their earlier experiences (McLean, 1979), and their perceptions of IT impacts are rooted in recent events (Tallon & Kraemer, 2007). (7) Sensemaking is to enact an environment. Organizational members interact with IT based on their attitudes toward and perceptions of IT (Jarvenpaa & Ives, 1991). Executives' perceptions of the value and role of IT infrastructure are related to their IT investment inclinations (Broadbent & Weill, 1993). In the enactment process, organizational members, enabled as well as constrained by their agency, draw on rules and resources (structure) to make sense of technology and their environment (Orlikowski, 2000), hence enacting their interactions with technology (Hsiao, Wu, & Hou, 2008). In sensemaking, human agents draw on both local/organizational as well as institutional rules and resources (Weber & Glynn, 2006).

Weick's sensemaking theory is a general characterization of the process of organizational sensemaking. It can be applied to investigate IT adoption process. Past research documented different sensemaking outcomes regarding IT in organizations. For example, IT has been found to have great potential to transform work practices and enhance productivity (McKinlay, 2002). Further, it has been perceived as helping organizations perform surveillance (Barnes, 2007; Fernie & Metcalf, 1998; Russell, 2007) and control (Bain et al., 2002; Limburg & Jackson, 2007; Pulignano & Stewart, 2006; Valsecchi, 2006; Van den Broek, 2004). On the other hand, it has been perceived as leading to loss of control and deskilling (Alvarez, 2008; Bertolotti, Macri, & Tagliaventi, 2004), enabling resistance (Bain & Taylor, 2000; McKinlay, 2002; Richards, 2008; Townsend, 2005; Van den Broek,

2004; Winiecki, & Wigman, 2007) and dissent (Schoneboom, 2011), and offering unions great potential for organizing (Lund & Wright, 2009). These technology sensemaking outcomes have enriched our understanding of technology in organizations. However, while past research was mainly concerned with these outcomes, it rarely made significant efforts to unwrap the sensemaking processes in which different organizational groups interact with each other with respect to information technology adoption and implementation. Investigating these processes will provide us insight into similarities and differences in technology sensemaking by different groups within organization.

As multiple groups representing diverse subcultures exist in organizations (Martin, 2002), special attention needs to be paid to sensemaking by diverse groups of organizational members (Maitlis, 2005). While official, dominant, and unifying organizational culture represents the ideology of administration, diverse subcultures may conform to or resist it (Martin, 2002). Depending on sensemaking process characteristics (levels of animation and control) (Maitlis, 2005), organizational sensemaking outcomes in terms of accounts generated can be unitary and convergent or multiple and divergent (Balogun & Johnson, 2004, 2005). Unity and divergence may well be manifested in aforementioned seven aspects of organizational sensemaking process that Weick (1995) elaborated. Unitary and convergent accounts lead to consistent actions and facilitate organizational change (Bartunek, Rosseau, Rudolph, & DePalma, 2006; Gioa & Chittipeddi, 1991).

Yet past research captured significant tensions between dominant groups representing a managerial organizational culture and subordinate groups representing diverse subcultures in organizations (see, e.g., Alvesson, 1993). As different groups engage in sensemaking from a variety of organizational positions and subcultures (Dutton & Dukerich, 1991; Gephart, 1993; Weick, 1995), their sensemaking processes unfold in different patterns or forms that lead to different outcomes (Maitlis, 2005). Thus, multiple and divergent sensemaking processes may emerge. Multiple and divergent accounts of sensemaking indicate failure of collective action (Weick, 1993) and may explain unintended results of planned change (Balogun & Johnson, 2004, 2005). In their discourse of technology and innovation, administrators impose upon organizational members through talks, ceremonies, signs, documents, and presentations an organizational culture predominantly as a means of control (Kunda, 2006). Such organizational culture favors technology usage and attaches positive values such as efficiency, innovation, and performance excellence to it (Kunda, 2006). Such a top-down approach to imposing a strong pro-technology organizational culture is evident in many higher education institutions. For example, in York University in Canada and University of California Los Angeles in the late 1990s, with the rhetoric of technology use as innovative teaching, university administrators pushed faculty and students to go online but met strong resistance (Noble, 2002). Faculty perceived this move as a threat to their job security, intellectual property loss, commercialization of higher education, and tightening control over faculty by administration (Noble, 2002). Obviously this was a case of divergent technology sensemaking by two different groups. Although Noble's study and this study share a similar setting and technology, the findings from Noble's study cannot exclude the unity possibility in technology sensemaking by administrators and faculty and staff. Because both possibilities (unity and divergence in process and outcome) exist in sensemaking by multiple groups of organizational members, the purpose of this paper is therefore to investigate the social processes of sensemaking around the implementation of Blackboard between two organizational groups: university administrators, faculty and staff. Two research questions guided the study:

1. What similarities did university administrators, faculty and staff share in their technology sensemaking related to Blackboard implementation and use?

2. How did university administrators' technology sensemaking differ from that of faculty and staff during Blackboard implementation and use?

METHODS

DESIGN AND SETTING

The study employed a qualitative case study method to gather and analyze data because of the exploratory nature of the study (Creswell, 2005). Both research questions focus on individual's perceptions about their lived experience with Blackboard.

The setting for this study is a Midwest state university (XYZU) in the United States with a population of about 2,500 full-time faculty and staff, and 21,000 students. Blackboard was the IT explored in this study. In XYZU, Blackboard was fully integrated into the university's website, and was adopted by employees regardless of their position and job duty. Typical usage included information search, instructional delivery, services rendering, and community communications.

RESEARCH PARTICIPANTS

Judgmental sampling method (Bernard, 2002) was adopted to recruit research participants. The researchers chose research participants based on who they thought would be appropriate for the project, especially in areas where a limited number of people had the expertise and knowledge needed for the project. First, three senior administrative officials were selected to represent the university administration's perspective on Blackboard. Second, the investigators recruited faculty and staff participants using an organizational directory to identify subjects that held administrative, staff, or faculty positions across several functional divisions in the university. The board-approved standardized cover letter and letter of informed consent were attached to email solicitations. Because of the low response rate through this procedure, the investigators invited specific administrative staff and faculty members of different disciplines to participate in the study. Overall, 20 agreed to participate in the study, including four high-level administrative staff, two associate professors, five assistant professors, two full-time instructors, five mid-level specialists, and two lower-level administrative secretaries. The diversity of the participants helped avoid elite bias, and ensured that different voices were represented (Myers & Newman, 2007). The participants were all guaranteed confidentiality.

DATA SOURCES

Interviews with university officials and faculty and staff served as the primary data sources in this study. Upon agreeing to participate, participants were asked to choose their preferred location for the interview. They all chose to have the interview conducted at their site of employment on campus. During the one-time audio-taped interview with each participant, a graduate research assistant asked them to share their experience of using Blackboard. Each interview lasted between 20 – 60 minutes. To aid the probing, identification and interpretation of emerging themes, the assistant took notes related to interview flow and content. Throughout the interviews, the assistant asked questions using the mirroring technique (Myers & Newman, 2007). Then the assistant transcribed the interviews while the study was ongoing, which allowed for adjusting the interview schedule to further explore emerging themes. Please see Appendix A and Appendix B for the interview guide.

DATA ANALYSIS PROCEDURES

To code and thematize the interview descriptions, we engaged in a two-round process of qualitative analysis (Emerson, Fretz, & Shaw, 1995). First, the qualitative data were

approached with an interest in identifying themes of adoption, implementation, use, and resistance. After that, we found that there was clear distinction between university officials and non-administrative university members in their perceptions of technology use. Therefore, we developed two major categories: one representing university officials' sensemaking and the other representing those of non-administrative university members. Second, interpretations of meanings attached to technological adoption, implementation, use, and resistance by both categories of employees were initially coded. After the coding, the descriptions were compared and contrasted. The investigators collaboratively engaged in focused coding to flesh out, co-construct, and elaborate upon initial themes. Coding proceeded until the themes chosen for closer analysis saturated narrative patterns in the interview transcripts.

RESULTS

We found that university administrative officials and faculty and staff members exhibited mixed sensemaking patterns. While the university administrative officials' sensemaking was characterized by a strong convergence, patterns of both convergence and divergence appeared in faculty and staff's sensemaking. We first present findings related to unity in both groups' technology sensemaking, followed by divergence.

UNITY IN SENSEMAKING: BUILDING A PRO-TECHNOLOGY CULTURE AND DEVELOPING TECHNOLOGY COMPETENCE IN TEACHING AND LEARNING

Top administrative officials' sensemaking can be characterized as technology advocacy. Most of these administrators had a strong background in computer technology (some even held degrees in computer science), and were highly socialized about the important role of technology. Their similar educational background, career and professional socialization, mutual interactions, together with their administrative positions in the university, contributed to shape their technology sensemaking in higher education. They advocated that technology-enhanced teaching and learning represents progress and innovation. One administrator pushed such advocacy by ridiculing traditional teaching and learning philosophy. He likened faculty who teach with traditional teaching methods to luddites, who were described as "old-fashioned," just "assembling students in a certain room at a certain time," and mostly just "lecturing to students and then testing them." He reasoned that students taught with such old-fashioned teaching philosophy would be "least competitive in the job market". Similarly, another high level administrator commented, "some faculty just viewed Blackboard as a tool, but it is not just a tool. What we implemented is a new teaching and learning environment." This administrator associated the tool metaphor with outdated teaching style of many faculty members.

After attacking traditional teaching and learning methods, these administrators began to articulate their perceptions of what "optimal teaching and learning" should be like. They endeavored to cultivate an organization which embraced technology competence. For example, a high-level administrator in charge of distance education emphasized that technology competence must be used as an indicator of faculty's teaching effectiveness. Similarly, another high-level administrator envisioned to turn the university into a technology-enhanced teaching and learning environment. Her vision of the university's goal was to nurture more computer savvy faculty, and graduates from the university "should be the most computer- sophisticated of any." To reach this goal, the university heavily invested in technology infrastructure. Blackboard was implemented at the peak of technology investment. Meanwhile, the university joined Internet 2 and enabled campus wide wireless Internet connection. University-wide technology-related support mechanisms were also available to faculty, staff, and students.

Unsurprisingly, the administration wanted faculty and students to take advantage of Blackboard to enhance their teaching and learning. More importantly, they were trying to infuse a spirit of technology superiority among faculty and students. Their administrative power enabled them to discursively construct and promote such an organizational culture. The advocacy by administrators for such a pro-technology culture paid off. University staff endorsed such culture, as commented by a staff member who did campus event planning:

> Absolutely, if you look at the XYZU mission statement, the first line is to be the premier learning environment in state and one of the best in the nation. I think we're going to be a premier learning environment as we enter 2008. You have to incorporate that technological piece because that's where our society is headed. I mean everything is going techish. I definitely think the university promotes it and keeps it part of its overall curriculum and educational experience.

Faculty's endorsement of the pro-technology culture seemed to be stronger. They felt sweeping technology-associated change across higher education. They learned about the increasing role of technology in education from various sources including academic conferences, journal articles, and even popular press. An art history professor shared his view of this pro-technology culture. He mentioned that when he was presenting digitization related research at a conference, he received much appreciation and admiration from conference attendees. His colleagues recently hired from more financially-enabled schools noted that XYZU did have an exceptional technology infrastructure, which enhanced his sense of pride among fellow researchers in his field. Similarly, a speech pathology instructor thought highly of the university's heavy investment in technology despite its limited budget compared to other universities. Accompanied this appreciation was their support of the technology-enhanced teaching and learning. Here is a typical comment from a faculty:

> I think it's my responsibility to use Blackboard and to use it well because I think it becomes part of the culture of education on campus. I think it's part of my obligation to this institution that has tried so hard to have these things available for me. I think it's my responsibility to use Blackboard.

Faculty members' acceptance of technology contributed to their frequent use of Blackboard. Faculty members indicated that they used the system for various instructional purposes. They used Blackboard to post course documents such as syllabi, course schedules, reading materials, and grades, to send class emails and provide online testing, and to facilitate class discussions. An art professor used the online testing function of Blackboard to curb student cheating in tests. A biology professor enjoyed using concept map functions of Blackboard because she perceived that her use of these functions was consistent with five E model of teaching (engagement, exploration, explanation, expansion, and evaluation), an important teaching philosophy. Further, a speech pathology instructor incorporated discussion boards into her teaching repertoire because she believed that they facilitated collaborative learning, a teaching practice highly valued by many faculty members. As faculty continued to integrate available Blackboard functions into their teaching, they helped reinforce the organizational and professional values, rules, and resources that they drew on to justify their use of the system.

DIVERGENCE IN SENSEMAKING BY FACULTY AND STAFF ABOUT BLACKBOARD USE FOR SERVICE: BLACKBOARD AS AN ENABLER VS. BLACKBOARD AS AN EXPLOITER

In addition to teaching purposes, some university members also used Blackboard to facilitate their service work. For instance, some faculty used Blackboard to more efficiently advise undergraduate students, as one faculty reflected:

> Blackboard makes life much easier from an advisor's standpoint. I can't imagine how long it would take me to do my job without the use of this tool (My Advisees/DARS function). I'd probably only be able to help half of the students I typically help in a day.

For faculty like this one, they perceived Blackboard as a time saver because less time for advising meant more time for their teaching and research.

In addition, the "virtual committeeing" function in Blackboard allowed faculty members to accomplish more service work than what their normal capacity would allow for if without the technology. Besides student advising, many faculty members sat on a number of committees. Committee work was an integral component of their service duty. Faculty typically did not have a clear 8 - 5 office work schedule, and they differed in their teaching schedules. Blackboard was appealing to faculty because it enabled them to post and share documents, to meet and communicate both synchronously and asynchronously in a virtual environment. However, they seldom openly complained about this work as overburden. Their reaction might be attributed to their professional culture - it is quite normal for faculty to carry out university work during family hours. On the contrary, staff members had rather different perception of the same Blackboard function. They sensed that using it would extend their work from offices to homes. When asked what functions of Blackboard they usually did not use, or were hesitant to use for work, an interim director for registration and scheduling provided the following response:

> That is the function of "My Communities". I'm on classified staff council and we started using that, where you can go in and chat. During the past six months, council has been talking about that. You know, we want people to use it more. We're trying to get involved and use it to have conversation. And people don't and I don't. I don't know why. You know there's just not anything I really want to discuss. You know we're here, we're working, and that's kind of extra, so people don't have time, they don't want to do it when they go home.

As this staff member acknowledged, the reason why staff members did not use the community function of Blackboard was that it would extend their work hours. Sensing that using that function means that they mostly had to use their home hours to do what they thought would be extra work, staff members refused to use it for committee work. Their perception of their identities was that work meant doing things physically in their offices during the designated eight hours. Thus, most staff members resisted using this function.

DIVERGENCE IN SESEMAKING BY ADMINSTRATORS AND FACULTY & STFF ABOUT BLACKBOARD USE: PROMOTING VS. RESISTING ONLINE TEACHING

The university administrators made sense of Blackboard at a higher level, namely the strategic level. At this level of technology sensemaking, they drew on the norm of business survival to enact a technology infrastructure targeted for promoting online learning. In recent years, university enrollment was steadily declining. The university administration recognized the potential of online teaching in increasing its enrollment by enticing non-traditional students. The administration wanted faculty to adopt Blackboard to delivering

online classes. At that time, the university had a diverse student population some of whom could only take courses that were offered online. Meeting diverse student needs was critical to enrollment, and "the enrollments are what drive this institution," according to a top administrator. To encourage faculty to offer online classes, the university provided incentives: a course release for a semester to allow for designing and developing a new online course, $3,000 bonus for teaching a new online course, and $1,000 for teaching an existing online course.

Meanwhile, as a further measure to retain and increase enrollment, the administration was drafting a strategic plan to cope with crises such as bird flu, terrorist attack, or earthquake. The core of this strategic plan was to expand the catalog of online courses and convert many existing face- to- face courses into online ones. According to a top level administrator, they got this idea from Hurricane Katrina disaster. He explained, "When Katrina hit New Orleans, within about three weeks, the institutions there in the area, Tulane University and so forth, reached out to the online community to say, 'Could you help our students stay on track?'" They reasoned retrospectively that if Tulane and other schools in New Orleans had offered online courses, they would have been able to keep their losses to the minimum. Thus online courses were not just instances of using technology to enhance teaching and learning, but were infused with strategic importance by the administrators.

Although faculty and staff members' sensemaking around using Blackboard to improve teaching and service quality converged with university administrators', these two groups held divergent views toward online teaching. Though pressured to offer online courses, many faculty members expressed their skepticism over online teaching. A major concern was the uncertainty on quality control. Some faculty alerted to an increased possibility of student cheating in online courses, as students could hire others to complete their assignments or take tests. Other faculty were concerned about increased difficulty in knowing whether a student understands the materials in an online learning environment. For example, a business professor commented that it was extremely difficult for students who were already weak in sciences and statistics to take quantitatively oriented courses online, as such mode of course delivery would deprive them of face-to-face interaction which he thought, was critical to students' academic performance. A communication professor further commented on the detrimental effect of the lack of face-to-face teacher-student interaction in an online learning environment:

> I'm highly skeptical myself from the standpoint of being a communication professor. So I think there are serious questions about that. Educational delivery through technology like Blackboard is different to me than using it as a resource in the classroom. I would guess that there would be a good deal of skepticism in the department about that.

For many faculty members, their attitude toward online teaching was more than skepticism. Teaching online meant loss of something that they valued in teaching: for an education professor, that is "personal relationships with students"; for an art professor, "human element and connection in the classroom environment". A pop culture professor deemed standing in front of students in the classroom as a primary reason for why she wanted to be in the teaching profession. Without that, she wouldn't find anything that would sustain her interest in teaching. When making sense of the university goal of promoting online teaching, many faculty members were worried about losing their identities as traditional educators. They then drew on the traditional educational values to resist using Blackboard for online teaching.

Besides the aforementioned concerns with online teaching, many faculty members viewed online teaching as a potential threat to their job security as professors. The art

professor who was an adamant supporter of the pro-technology culture on campus, revealed this kind of anxiety:

> And it does concern me that there's this possibility—All of our jobs as faculty may be on the line. There may be one art historian per department who is a webmaster. That's probably taking it to the extreme, but I have heard people in high places say we're all going to be replaced in the future for efficiency's sake and I wonder how much are we going to lose if that ever happens.

The scenario in which one webmaster in one department replaces all current faculty members was never indicated in administrative discourses promoting online teaching. But such a speculative yet scaring scenario did have material basis at XYZU. It was a university policy that no one should own a course, meaning if someone developed a new course, other faculty could apply to teach it. Once an online course was developed, it was owned by the university. Then any online course could by easily "taught" by anyone who knew how to use the software. Also the trend developed in recent years at the university that many instructors were hired to teach classes on a temporary basis to save money could have flamed such a scenario. Thus, it was not surprising that many faculty members were worried that online teaching would eventually lead to the disappearance of the teaching profession.

DISCUSSIONS

This study took Weick's (1995) sensemaking theory as a point of departure to analyze the social processes of sensemaking by university administrators and faculty and staff. The lens of organizational sensemaking, especially the concepts of identity construction and enactment, helped us gain a deeper understanding of the social processes of technology sensemaking by these groups and the outcomes. Aided with these concepts, the findings revealed organizational members' different interpretations of information technology, specifically Blackboard in this case. Faculty perceived Blackboard as a platform of teaching and learning, a tool that was supposed to facilitate their teaching. In most cases, faculty used it to enhance their teaching. The impact of identity consciousness on faculty's interactions with the technology was evident when some faculty mentioned that they used Blackboard simply because they were faculty. More importantly, their consciousness of identity was well apparent in their resistance to online teaching. They were worried that online teaching would undermine their traditional teacher identity by replacing face- to-face interactions between faculty and students with a style of "identityless teaching". Behind their resistance to online teaching was their worry about the drastic change in their work practices that online teaching would trigger, not just a concern about deskilling (Barrett & Walsham, 1999), but about loss of the teaching profession. Thus, for faculty, using Blackboard both enhanced and threatened their self-identity.

Most important, the concept of structure enactment helped reveal both unity and divergence in different groups' technology sensemaking at XYZU. Though diversified in their job functions, both administrators and faculty and staff were sensitive to changes in higher education brought about by information technology. They all drew on this institutional change and enacted technology use for teaching and learning. Thus, there was an achieved unity in technology sensemaking. The concept of enactment also explains why divergence existed in technology sensemaking by these different groups. Faculty members enacted the technology-enabling-flexibility structure when they used Blackboard to augment service; whereas staff, drawing on their work culture (work was physically in their office from eight AM to five PM during the day), enacted a Blackboard-resistance structure

by refusing to use Blackboard for service work. For administrators, they enacted the maximum use structure when promoting online teaching, while faculty members enacted a resistance structure by not using Blackboard for online teaching.

Though the enacted structures showed unity and divergence in sensemaking by these different groups, the enactment process helped reveal how socio-political concerns shaped technology sensemaking outcomes. The administrators constantly drew on business concepts of strategic development, organizational growth and survival to enact a structure of using Blackboard for online teaching. Even though it was not a business organization, university administrators unanimously showed business thinking in their enactment process: using technology strategically to strengthen the university's survival and growth. Unlike the administrators, faculty were more worried about the changes in their work practices triggered by online teaching. They drew on professional concepts of educational quality, identity, and socio-political concerns (deskilling and job loss) to enact a structure of resisting Blackboard use for online teaching. The theoretical concept of enactment helped to unpack the processes in which the differing socio-political concerns of the two groups shaped their actions toward Blackboard.

While previous research showed multiple outcomes of technology sensemaking in organizations, the findings of this study extended previous research on organizational technology sensemaking. This study did not find direct evidence showing that technology was used for surveillance and control in organizations. This study showed that organizational control was not executed through technology per se but rather through a pro-technology culture. The administrators attempted to discursively construct a pro-technology organizational culture that attached positive values to technology. The pro-technology culture was initially appealing to faculty and staff. The pro-technology culture also constituted a source of pressure for organizational members to use technology, as they do not want to be recognized as being against organizational goals of technology-enhanced "efficiency, effectiveness, and progress". Both faculty and staff bought into the rhetoric of administrators and endorsed such organizational culture. The results of this study are consistent with Kunda's (2006) observations: Promoting technology-driven organizational culture through various forms of communication by management seems to be an effective way to execute organizational control. Discursively constructing a pro-technology culture is more subtle and powerful than using technology per se to execute organizational control. Limburg and Jackson (2007) found out that information technology systems enable and facilitate all kinds of control (behavior, output, input, peer, and self). The findings of this study added organizational culture to the organizational control list; in addition, information technology plays an important role in shaping the organizational culture. As peer and self controls are deemed as democratic forms of control (Limburg & Jackson, 2007), organizational culture control is another seemingly advanced and civilized control. However, the findings of this study showed that even though a pro-technology organizational culture can be functional in organizational control, it does not exclude organizational members' agency from performing resistance (Bain & Taylor, 2000).

Further, contrary to previous research that showed information technology directly enables resistance by organizational members (Bain & Taylor, 2000; McKinlay, 2002; Richards, 2008; Townsend, 2005; Van den Broek, 2004; Winiecki, & Wigman, 2007), this study found that organizational members did not resist technology or take advantage of technology to resist organizational control, but resisted technology use for a specific purpose. In this case, faculty members resisted using Blackboard for online teaching. This finding lent support to Noble's (2002) findings about faculty resistance to online teaching as well.

LIMITATIONS AND FUTURE RESEARCH

Although this study revealed both unity and divergence in technology sensemaking by two different groups, limitations in data collection prevented us from strengthening our claims. First, our interview sample size was relatively small with twenty interviewees only. Thus, the views of the interviewed might not fully capture those of the whole organizational membership. Second, the interviews did not spread out in a longer span of time, thus making us unable to fully capture possible changes in technology sensemaking. Third, the interviews were all held in the participants' offices. The location together with the fact that this study was supported by a vice president may have restrained participants from revealing important thoughts that they deemed it inappropriate for them to articulate. This may explain why some of the socio-political concerns from faculty captured in Noble's (2002) study were not revealed by the interviewed faculty in this study. Although faculty's work culture of flexibility made it easy for them to accept and use Blackboard to augment service, these listed data collection limitations may have prevented them from complaining about the exploitative nature of this practice. Future research should seek ways to overcome such limitations. Additionally, this study was situated in a special type of organization, a university, and the information system studied was heavily related to education. Caution should be taken while applying the findings of this study to other types of organizations and technologies. Future research can extend this framework to study other types of organizations and technologies.

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APPENDEX

APPENDIX A
INTERVIEW QUESTIONS FOR UNIVERSITY LEVEL OFFICIALS REGARDING BLACKBOARD POLICY

1. Will you say that the university culture is pro-technology? Why or why not?
2. What are the goals that you would like XYZU computer communication system to accomplish for the university? Are you satisfied with the current university's faculty and staff use of the system? Why or why not?
3. Which university units are in charge of the adoption and administering the Blackboard system and MYXYZU? Who is the university liaison with Blackboard? Why is the administration of the system split into different units? What is the rationale for this? What are the roles of Continuing Education and ITS in the Blackboard system?
4. Has the university made some policies regarding Blackboard use? If so, what are they? Any rewards or penalties regarding Blackboard use or nonuse? Do you think university should provide rewards or penalties to encourage use of the system?
5. What university unit(s) enact(s) these policies?
6. How did the university communicate these policies to the faculty, staff, and students?
7. Has the university taken any measures to promote the use of Blackboard as the courseware and MYXYZU as the computer communication system? If yes, what are they? Do you think there is enough training and knowledge of the system among faculty and staff?

APPENDIX B
INTERVIEW QUESTIONS FOR FACULTY AND STAFF REGARDING BLACKBOARD USE AND ADOPTION

Questions On System Use:

What are your work duties? Do you use the Blackboard for your work? How often you use it on a typical day? How much time do you spend using the system on a typical day? What buttons /menus/tabs do you use? For what purpose(s) do you use each of the buttons/menus/tab? For what activities or duties of your work do you use the system? Do you use it for non-work activities? Why or why not?

Questions on Perceptions of the System:

What features of the system do you like? What features do you dislike? What do you think of the system generally? What concerns do you have regarding the system? What drawbacks do you think the system has if there is any? What improvements do you hope they can make in the system?
 Is there any incentive for you to use the Blackboard? Is there any reward if you use the system, both verbal and material? Will you be rewarded for using Blackboard for your work? How important do you think the Blackboard system to you and to your work? Why is it important or not important? What benefits do you get for using the system? Or how useful is it to you? Do you think the system benefits the university? Do you think the system will benefit your department/unit? Do you think you will get benefits by using the system?

Questions Regarding Individual Perceptions of the Usefulness of the System:

How do you think of Blackboard as a system in general?

Probing or specific questions:

Do you think the system is useful? To what extent do you think the system is useful? How useful is it? What features do you think are most useful? And what features are not useful at all? Is the system easy to use? What features are easy to use, and what features are less easy to use, and what features are difficult to use? Is Blackboard easy to access? Do you think training and support regarding Blackboard use is available on campus? Is it proficient as well?

Questions on Organizational Culture:

Subculture

What is the norm regarding using this system in your department/unit? Does it facilitate use or reject use? Why? What attitudes and beliefs do you think your colleagues and supervisor have towards Blackboard? Is your department/unit's culture pro-technology use? Does technology facilitate/aid teaching or work in your area? Do you think your department/unit promotes the use of the system? Do you think your department/unit is pro-technology in general? Is your belief/attitude consistent with the departmental/unit norm?

Dominant culture

Do you think the university promotes the use of the system? Do you think the university is pro-technology? Do you think the university values technology use for work purposes? Do you think the university has policies that encourage people to use technology in their work? Do you think the university has policies that reward people for using technology/Blackboard? Are you aware of any university policies that you think encourage/reward use of technology campus wide?

Questions Regarding Organizational Policy, Resources:

Could you describe the University policy toward Blackboard? Could you describe your department or unit's policy toward it?

Probing questions:

What is your department/unit's (university's) policy towards using the Blackboard?
Are you able to get help in your department/unit (the university) about using the system? What kinds of help can you get? Are there training sessions available? Are there help lines available? Are there technical staff that are provided to help you?