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Guowei Jian
Cleveland State University, g.jian@csuohio.edu

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Identity and Technology: Organizational Control of Knowledge-Intensive Work

Guowei Jian

Much has been written about the functioning of managerial ideologies in identity-based organizational control. However, less attention has been given to the role of information and communication technologies (ICTs) and identity defined by a technological discourse in regulating knowledge-intensive work. The purpose of this research is to examine the roles of identity and ICTs in the control of knowledge-intensive work. A case study of a technology service organization reveals that the construction and consumption of a technologist identity operate as organizational control, and that ICTs enable the functioning of a dialectic of technological control. This study also demonstrates the paradoxical nature of work knowledge that both empowers and controls knowledge-workers.

Keywords: Control; ICTs; Identity Construction; Knowledge Workers; Organizational Knowledge

The production and maintenance of organizational control have been a persistent interest of organizational communication scholars (e.g., Barker, 1999; Deetz, 1998; Kärreman & Alvesson, 2004; Larson & Tompkins, 2005; Tompkins & Cheney, 1985). As knowledge-intensive work gradually becomes the cornerstone of this economy (Drucker, 1993), understanding its control practices is consequential to organizational effectiveness, worker satisfaction, and ethical conditions of organizational governance. Excessive control stifles the voice of employees, leading to the decrease of creativity in work problem-solving and decision making, erosion of trust and loyalty, and perpetuation of managerial domination (Deetz, 1995).

Guowei Jian (PhD, University of Colorado, 2003) is an assistant professor in the School of Communication, Cleveland State University, Cleveland, OH 44115-2214. E-mail: g.jian@csuohio.edu

Much has been written about the functioning of managerial ideologies in identity-based organizational control (Alvesson & Willmott, 2002). However, less attention has been given to the role of identity defined by a technological discourse and information and communication technologies (ICTs) in regulating knowledge-intensive work. The purpose of this research is to examine through a case study the role of identity and ICTs in the control of knowledge-intensive work. I will first lay down a contextual and theoretical ground for the case study by reviewing the current understanding of knowledge-intensive work and organizational control theories.

Knowledge-Intensive Work

Although knowledge has long been recognized as a critical factor for organizational development and performance (Penrose, 1959) and an essential economic resource for a postindustrial society (Drucker, 1993), only in the past decade or so has the growth of knowledge-intensive work begun to gain momentum. Existing literature has drawn some consensus on the nature of knowledge-intensive work.

First, different from capital- or manual labor-intensive work, knowledge-intensive work has knowledge as its primary input and is marked by high level of job autonomy (Alvesson, 1995; Starbuck, 1992). The transformation from input to output is infused with human creativity based on both high-level formal education and experiential understanding. Second, knowledge-intensive work involves complex communication processes that not only accomplish the work at hand but also establish and maintain certain social identities and relationships beyond organizational boundaries (Deetz, 1997). Identity construction and maintenance play a consequential role in knowledge-intensive work. Finally, ICTs have been widely adopted by organizations for the purpose of facilitating work processes and storing and distributing work knowledge (Jian & Jeffres, 2006).

The distinctive characteristics of knowledge-intensive work as presented so far demand an in-depth understanding of how organizational control operates. In this study, I am particularly interested in how identity and technology function in the control of knowledge-intensive work. To proceed, I will briefly review the existing theories of organizational control.

Organizational Control

In recent years, the growing deployment of advanced information and communication technologies (Jian, 2007a) and post-bureaucratic organizational arrangements (Heckscher & Donnellon, 1994) has sparked a renewed interest in organizational control. Building on Edwards' (1979) initial conceptualization of organizational control, which consists of simple control, technical control, and bureaucratic control, organizational communication scholars have contributed significantly to understanding some novel forms of organizational control mechanisms, such as cultural-ideological control (Alvesson, 1993), concertive control (Barker, 1999; Larson & Tompkins, 2005), and self-control (Alvesson & Willmott, 2002; Deetz, 1998).

Common to these recent theoretical developments is their identity-based characteristic (Kärreman & Alvesson, 2004). For instance, concertive control focuses on the collective production and reinforcement of identification with organizational values imposed by managers (Larson & Tompkins, 2005). Self-control is accomplished through the formation of employee identity within ''managerially inspired discourses about work and organization,'' such as the ''leadership'' discourse (Alvesson & Willmott, 2002, p. 620).

A shared assumption in this literature is the existence of conscious managerial efforts to control and influence, directly or indirectly, employee identity formation. However, when work becomes highly autonomous and employees retain significant power in work decision-making in knowledge-intensive work, I question whether the source of identity regulation still comes from conscious managerial efforts.

Moreover, although much effort has been made in understanding identity-based forms of control, less has been explored with regard to the role of ICTs in controlling knowledge-intensive work. Research in technological control suggests that ICTs provide electronic surveillance (e.g., Burris, 1993; Sewell, 1998; Zuboff, 1988), while resistance to ICT-based control has also been documented (e.g., LaNuez & Jermier, 1994). For example, LaNuez and Jermier (1994) illustrated sabotage as a form of resistance through such actions as infecting company computer systems with viruses.

In summary, the above review suggests that both our theoretical and empirical knowledge about the role of ICT and identity in the control of knowledge-intensive work is rather limited. To further our understanding, I propose the following research question:

> *RQ: What is the role of identity and technology in the control of knowledge-intensive work?*

Methods

The Site

Campus Technology Services (CTS) was the primary information-technology provider for a large state university in the western United States. (To protect confidentiality, pseudonyms were given to the organization, participants, and the ICT.) It employed roughly 140 regular staff and about the same number of student part-time employees, serving approximately 30,000 customers on campus, including faculty, students, and administrative staff.

The core activities of CTS can be characterized as knowledge-intensive work. First, much of the work was in the form of knowledge services, such as trouble-shooting technology-related problems and providing technical advice and solutions. Second, the work process at CTS involved complex communication and creativity to define problems, explore solutions, and provide new products and services. Third, the demographics of CTS fulltime workforce indicated that 73% of people had received some higher education and about 50% had bachelor's and postgraduate degrees. Fourth, CTS employed a state-of-the-art ICT named Alpha to help facilitate and

manage workflow. The commercial vendor of Alpha described the technology as a software system that was capable of keeping track of customer service and other work-related requests, documenting and searching for work solutions, and recording and reporting work efforts. I entered CTS as a volunteer researcher in the name of studying the implementation and use of Alpha.

Data Collection and Analysis

I employed a case study method. As Yin (2003) argued, case study "allows investigators to retain the holistic and meaningful characteristics of real-life events" (p. 2). In a nine-month field research, I conducted 36 in-depth interviews with 34 people out of 140 full time staff members at CTS. Interviewing time ranged from 35 minutes to two hours. To gain rich understanding, I purposefully sampled employees from different organizational levels. All the interviews were audiotaped. Segments in each interview that provided evidence and insights were selected for transcription, which resulted in about 520 pages of double-spaced transcripts.

To help understand and interpret interview accounts, I collected written documents, including senior management meeting minutes, organizational charts, documents related to Alpha, organizational newsletters and Web pages, and e-mail messages. For direct observation, I attended a senior management meeting, two quarterly Alpha Users Group meetings, information-sharing meetings across workgroups, and two employee training sessions.

I used N4 (QSR NU*DIST 4.0) to assist my qualitative data analysis (Gahan & Hannibal, 1998). Based on my research question, I started my analysis with three root categories: "identity," "Alpha use," and "control." I coded data line-by-line into these categories (Charmaz, 2006). For data points that were interesting but did not fit into these categories, I created what N4 calls "free codes" to hold these data points for potential later use. The second round of coding was to examine the data within each root category and split them into subcategories. In fact, while conducting the first round of coding, some subcategories began to emerge and were created along the way. For example, subcategories were created for data that suggested various identity patterns, types of Alpha use, and forms of control. The final analytical step was to make data-based theoretical connections or integration among subcategories within and across root categories. For example, data demonstrated that a technologist identity was associated with certain types of Alpha use and forms of control. Such integration produced thematic patterns that I will discuss in detail in the following section.

Findings

Data analysis from this case revealed two key findings. First, a technologist identity constructed within a technological discourse served as a dominant form of control among knowledge workers. The identity embodied a unity of the self, technology,

and work tasks. It defined and regulated workers' experience and work relationships. Second, the case revealed a dialectic of technological control (Giddens, 1979, 1984) between professional managers and knowledge-workers. That is, to establish bureaucratic control over knowledge workers, professional managers attempted to transform knowledge-intensive work practice into observable bureaucratic discourse by using the ICT Alpha. The malleable nature of Alpha, on the other hand, enabled knowledge workers to transform the technology into alternative uses, and so created a space for resistance. The remainder of this section will explain and discuss these results.

Control through Identity Construction and Maintenance

In CTS, technical employees demonstrated a strong self-identity of being "technologists." To do work was foremost to prove or reaffirm their identity of being technologically competent. As one employee said, "For about two years I was a programmer. And then I took a test and became an analyst. . . . There's a mentality within [CTS] that you need to pay your dues . . . so I kind of needed to prove myself." Technological knowledge and creativity defined who they were and infused the labor process. The technologist identity embodied a unity of the self, technology, and work. It was in sharp contrast to "alienation" as used to characterize traditional manual and office work. CTS employees demonstrated strong attachment to the technological knowledge or technologies on or with which they worked. For example, unlike career or professional managers, Jason was promoted to the managerial position due to his technological accomplishments. He commented during an interview,

> I enjoy doing real work and I get in trouble for saying things like that because, as managers, we are in meetings, just meeting after meeting (laugh). When I say we're not doing real work, I offend some people [professional managers]. I can't help it. I still enjoy programming. . . .

For employees like Jason, doing "real work" was a matter of being who they were—part of the identity work.

The irony is that the very construction and maintenance of a technologist identity allowed the functioning of organizational control. For instance, UNIX Ops was a workgroup of 21 employees that serviced UNIX machines for about 22 academic and administrative departments on campus. The group had a shared UNIX-based email trouble-queue system called MH. MH had personal email folders for each employee and a shared email folder to which customers could report their problems. One employee of the group stated in an interview,

> In a lot of cases, we'll be logged in [MH] and monitoring things from home as well if we're doing other work or surfing Web pages or reading CNN.com or whatever. . . . We are all just some kind of computer geeks, we are inevitably, we are logged in and watch stuff anyway and they [the customers] get 24 hour-service seven days a week.

As we see, control of customer service operated unobtrusively through individual knowledge-worker's efforts to maintain a technologist identity. The consumption

of this identity created a sense of security and organizational status, and most importantly, the unity of work and the self.

The Dialectic of Technological Control

Professional managers at the senior level in CTS were in a legitimate position of authority, but the very lack of technological knowledge undermined their authority to establish direct control over knowledge-workers. Although the construction and maintenance of a technologist identity offered a powerful means of unobtrusive control over service and product quality, the professional managers were not satisfied with the lack of uniformity in service and loss of a direct rein over technological knowledge as an organizational asset.

The managers found an opportunity to establish such control in the newly implemented ICT Alpha. One built-in capability of Alpha was ''reporting.'' On these reports, information about service cases handled by each employee was provided with details (see Table 1). Time was a critical criterion in these reports. For instance, time was broken down into seven categories to measure timeliness and efficiency of each individual. This reporting function of Alpha transformed work into a visible discourse. Work was categorized by cases and divided by various measures of time. Every second of work was made visible. Alpha individualized each unit and employee's work and functioned as ceaseless and automatic surveillance and discipline. The reports became a disciplinary discourse containing voluminous administrative knowledge that rendered technological work visible and directly manageable. The professional managers could then utilize such administrative knowledge as leverage to establish authority over knowledge-workers.

Unlike Bentham's panopticon (Foucault, 1995), however, the technological control attempted by the professional managers at CTS was far from being totalizing. CTS workers demonstrated the dialectic of control through their action of redefining the ''spirit'' of Alpha—the core functionalities of the system (Poole and DeSanctis, 1990). Some CTS work groups transformed Alpha from an ''automated timesheet'', as defined by the professional managers, to other forms of technology. The transformation of Alpha in local workgroups defeated the very purpose of complete technological control and enhanced the power position of the technical staff. The following example could demonstrate this point.

One workgroup turned Alpha from a case reporting tool into a project management system. This alternative use of Alpha rendered information on the Alpha reports irrelevant for professional managers. For instance, ''case age'' (time length from opening to closing a customer-reported problem or inquiry) used to be an important indicator of efficiency of an employee. However, when Alpha was innovatively used as a project management system, ''case age'' entirely depended on the nature and length of a project. According to a group member, a project could last for three months or three years. The professional managers could no longer judge the efficiency of an employee based on the case turnaround time because it did not make any sense now. Therefore, such alternative use allowed the workers to retain power.

Table 1 Examples of Categories Shown in Alpha Reports

Categories shown in Alpha Employee Summary Reports									
Number of cases opened	Number of cases closed	Number of cases opened and closed	Average time to closure	Response average time	Average phone time	Average research time	Total phone time	Total research time	Total work time
Categories shown in Alpha Employee Case-by-Case Detail Reports									
Case number	Create on date	Status	Age	Product	Product description	Total phone time	Total research time	Total work time	

Discussion

This research explored the practices of control over knowledge-intensive work through a case study in a technology service organization CTS. Based on the findings above, I will draw three theoretical conclusions. First, the case reveals that the identity-based control operates through employee self-positioning within a technological discourse instead of managerial value imposition. By offering a sense of unity of the self, technology, and work, a technologist identity functions as an antidote against alienation that marked labor-intensive work (Braverman, 1974). The pursuit and consumption of this identity, aided by new technologies, enable more pervasive self-control over work than other traditional forms of control, and allow the intrusion or colonization of work into other domains of life (Deetz, 1992). This identity is located in a technological discourse embraced by the wider society that makes a fetish of technology and extols technological competitiveness.

Second, the findings indicate that technological control in knowledge-intensive work is dialectical (Giddens, 1979, 1984). The professional managers at CTS attempted to establish bureaucratic control, the ''iron cage'' (Weber, 1947), through the use of new ICTs like Alpha. Armed with technical knowledge, CTS employees were able to take advantage of the malleable nature of Alpha, re-define its instrumental use, and create a space of resistance. Rather than showing managerial control as inherent in a technology itself, the case provided an empirical example of the ambivalence of ICTs (Feenberg, 1991), which is that the function of an ICT is ''located outside the technology in human agents who command it from above'' (p. 91).

Finally, the study reveals the paradoxical nature of work knowledge. On the one hand, work knowledge enables employees to retain a sense of unity between self-realization and work, and empowers them to break away from the bureaucratic ''iron cage.'' On the other, the competition for technological knowledge among workers and the desire to maintain a technologist identity form a new form of control and domination.

The findings of this case are certainly limited by CTS' specific organizational context as a technology-service organization and being part of a large state employment system. However, it is hoped that the understanding unveiled in this case will help lay down the path toward a comprehensive theory of control in knowledge-intensive work. Future research should examine how knowledge workers' professional and organizational identities interact in shaping organizational control outcomes and how multiple control mechanisms co-exist and produce intended and unintended consequences (Jian, 2007b). Finally, it is hoped that this study could offer a moment of critical reflection for practitioners. Understanding the dialectical nature of technological control may prompt business managers to reconsider their use of ICTs for the purpose of control. Recognizing the identity-based self control may heighten the consciousness among knowledge workers about their own participation in tightening the organizational iron cage (Barker, 1993).

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