

2007

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Recommended Citation

Jian, G. (2007). “Omega is a four-letter word”: Toward a tension-centered model of resistance to information and communication technologies. *Communication Monographs*, 74(4), 517-540. doi:10.1080/03637750701716602

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“Omega is a Four-Letter Word”: Toward a Tension-Centered Model of Resistance to Information and Communication Technologies

Guowei Jian

The adoption of enterprise-wide information and communication technologies (ICTs) has become a growing trend in a wide range of industries. Resistance has been identified as one of the most common reasons for unsuccessful implementations. Assuming technologies as fixed objects, many existing theories tend to reduce resistance to psychological mechanisms or structural misalignment. The purpose of this study is to retheorize resistance to ICTs by integrating a social constructionist perspective of technology and a framework of organizational tensions. By employing qualitative methods, a case study examined the adoption, implementation and use of an enterprise-wide software system in a technology service organization. The in-depth case analysis revealed a tension-centered process model, which shows that resistance to ICTs is constituted in a dynamic, reflexive interplay between the ongoing construction of ICTs and organizational tensions. In this process, an ICT adoption brings into play various organizational tensions, which then shape the interpretations of the ICT in oppositional terms, and reactions to these tensions and oppositional interpretations result in various forms of resistance behaviors. This tension-centered process model offers a useful alternative to existing research on resistance to ICTs in the workplace.

Keywords: Workplace Resistance; ICT Implementation; Social Construction of Technology; Organizational Tension; Technological Change

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Since the 1990s, the adoption of enterprise-wide information and communication technologies (ICTs) has become a growing trend in industries ranging from high-technology and engineering to retail services and education (Ehie & Madsen, 2005; Shin, 2006). Such systems promise the integration of information and seamless communication across functional areas in organizations (Kumar & van Hillegerberg, 2000). However, the road to these promises is often riddled with unmet objectives, abandoned projects, and wasted resources (Davenport, 1998; Kansal, 2006). Among many challenges, resistance has been acknowledged as a significant source of failure in ICT implementations (e.g., Hong & Kim, 2002; Kim, Lee, & Gosain, 2005). To address this issue, theoretical models have begun to emerge in recent years, focusing on individual psychology (e.g., Joshi, 1991; Martinko, Henry, & Zmud, 1996), group power structures in organizations (e.g., Markus, 1983), or subversive behaviors (e.g., Bain & Taylor, 2000; Townsend, 2005). I argue that recent communication research on the social construction of ICTs (DeSanctis & Poole, 1994; Fulk, 1993; Jackson, Poole, & Kuhn, 2002) and organizational tensions (Ashcraft, 2006; Ashcraft & Trethewey, 2004; Fairhurst, Cooren, & Cahill, 2002; Howard & Geist, 1995; Jian, 2007; Poole & van de Ven, 1989; Seo, Putnam, & Bartunek, 2004; Stohl & Cheney, 2001; Tracy, 2004; van de Ven & Poole, 1995) holds promise to extend our understanding on this issue beyond the psychological or structural modes of explanations.

Hence, the purpose of this study is to re-theorize resistance to ICTs by integrating a social constructionist perspective of technology, which attends to the interpretive struggle (Mumby, 2005) and organizational sensemaking (Weick, 1979), with a framework of organizational tensions. By employing qualitative methods, a case study examines the adoption, implementation and use of an enterprise-wide software system in a technology service organization. In-depth case analysis reveals a tension-centered process model, which shows that resistance to an ICT is constituted in a dynamic, reflexive relationship between an ongoing construction of the technology and organizational tensions: an ICT adoption brings into play various organizational tensions, which then shape the interpretations of the technology in oppositional terms, and reactions to the tensions and oppositional meanings lead to variant resistance behaviors.

This study makes several theoretical contributions to the literature of resistance to ICTs. First, it offers a tension-centered process model as a useful alternative to existing frameworks. Especially, the model foregrounds meaning interpretation as a modality (Jackson et al., 2002) which plays a consequential role in producing resistance to ICTs. It is a modality often overlooked in previous research that focuses on psychological states and organizational power structures as determinants of resistance. Second, integrating the social constructionist approach to technology and a framework of organizational tensions is an innovation that allows and extends an interactional understanding of resistance (Markus, 1983) as the interplay between technological and organizational processes (Markus & Robey, 1988; Orlikowski & Barley, 2001), which overcomes the traditional dualistic tilt in theorizing toward either technology or organization (Jackson et al., 2002; Orlikowski & Barley, 2001). I will begin by introducing the social constructionist approach to ICTs.

The Social Construction of ICTs

Research from management information systems and critical management studies have gained significant insights in understanding workplace resistance to ICTs in the past decade or so (see, for review, Lapointe & Rivard, 2005). It includes psychological models based on equity (Joshi, 1991), cognitive attribution (Martinko et al., 1996), and stress (Marakas & Hornik, 1996), structural models based on power distribution and organizational politics (Markus, 1983), the combination of psychological and structural processes (Lapointe & Rivard, 2005), and critical analysis of subversive behaviors (Bain & Taylor, 2000; LaNuez & Jermier, 1994; Townsend, 2005). However, an implicit assumption underlying these models is that ICTs are static and stable objects and embody rather fixed meaning, technical practice, power structure, and social arrangement. Recent developments with respect to the social construction of ICTs by scholars from communication and other fields (e.g., DeSanctis & Poole, 1994; Fulk, 1993; Jackson, 1996; Jackson et al., 2002; Orlikowski, Yates, Okamura, & Fujimoto, 1999; Slack, 1989; Williams & Edge, 1996) challenge and problematize this assumption.

A central argument of the social constructionist perspective is that a technology, instead of being a static and fixed artifact, is constituted in various ways in which certain technical features are appropriated by social actors within specific social contexts (Jackson et al., 2002). For instance, by studying a collaborative software product Notes, Orlikowski (2000) reveals that the same technological artifact is reconstituted with different rules and structures in different organizations, and hence, becomes different technologies in practice. Adaptive structuration theory (DeSanctis & Poole, 1994) also convincingly demonstrates the process in which groups reconstruct a technology through different appropriations. The emphasis on the reconstitution of technology in practice opens up the possibility of understanding resistance not as a phenomenon external to a technology but internal to its continuous construction and shaping.

Moreover, the social constructionist perspective argues that a technology is brought into existence not only by its hardware or designed features but also by the interpretations that assign meaning to it (Bijker, 1987; Pinch & Bijker, 1987; Slack, 1989). It acknowledges and emphasizes the symbolic existence of a technology as a signifier, the meaning of which is (re)constituted in, and challenged by, various interpretations in the active sensemaking (Weick, 1979) that takes place throughout the process of technology acquisition, implementation and use. Fulk (1993) argues,

Technologies provide unusual problems in sensemaking because their processes are poorly understood and because they are continuously redesigned and reinterpreted in the process of implementation and accommodation to specific social and organizational contexts. Communication technologies in particular link disparate entities in a seamless web that engages joint sensemaking in the process of mediated interaction. . . . The symbolic meanings may well arise, be sustained, and evolve through ongoing processes of joint sensemaking within social systems. (p. 922)

Bijker (1987) and other scholars (Feenberg, 1991; Pinch & Bijker, 1987) have convincingly demonstrated that a technology possesses interpretative flexibility, which undermines any ultimate discursive closure or fixation of meaning (Laclau & Mouffe, 1985). Thus, “technology has no absolute identity but the ongoing production of identity empowered and empowering in articulated social relations” (Slack, 1989, p. 338). Different interpretations of a technology empower different technological practices. Hence, a social constructionist perspective on technology directs attention to the struggle over interpretations that extant resistance models overlook. It echoes what Mumby (2005) argues that organizational control and resistance play out not only in structural or behavioral forms but also in the way in which organizational members try to “control and shape dominant interpretations of organizational events” (p. 595). By examining the struggle over the meanings of an ICT we may uncover significant insights into workplace resistance to ICTs.

Organizational Tensions

Additional to the social constructionist perspective of ICTs, organizational tension serves as another theoretical resource that this study draws upon to understand resistance. Tension-centered analysis has become an important approach in organizational studies (Ashcraft, 2006; Fairhurst et al., 2002; Howard & Geist, 1995; Jian, 2007; Poole & van de Ven, 1989; Seo et al., 2004; Stohl & Cheney, 2001; Tracy, 2004; Trethewey & Ashcraft, 2004; van de Ven & Poole, 1995). As Trethewey and Ashcraft (2004) explain, “A tension-centered approach begins with the premise that organizations are conflicted sites of human activity; accordingly, foregrounding tension can lead to richer understandings of actual practice and thereby aid in theory building” (p. 82). Specifically, in the context of organizational change, van de Ven and Poole (1995) propose the use of dialectical tensions as the generative mechanism of change. Following their proposal, Fairhurst et al. (2002) and Jian (2007) empirically demonstrated how organizational tensions operate as dynamic driving forces in creating unintended consequences of change. In the research of management information systems, Robey and Boudreau (1999) argued that “theories with a logic of opposition offer an alternative explanation of the ways in which information technologies interact with organizations to produce social consequences” (p. 181). The tension-centered approach proved to be useful in understanding the learning process in implementing ERP (enterprise resource planning) systems in organizations (Robey, Ross, & Boudreau, 2002).

Given its effectiveness in theorizing a variety of organizational and technological issues in the past, I argue, the tension-centered approach could be extended to theorize resistance to ICTs in the workplace. First, the implementation of new technologies, especially enterprise-wide ICTs, could be considered a special occasion of planned organizational change (Markus, 2004). Like other planned change initiatives, new ICT implementations are deliberate processes with the goals of achieving a state of behavior, structure, and/or conditions different from the prior one (Ford & Ford, 1995; Goodman & Kurke, 1982; Porras & Silver, 1991). This special

change event could trigger and intensify organizational tensions, through which the competing meanings of the technology are constructed and appropriated.

Second, resistance itself to an ICT already implies an overarching control/resistance dialectic. To understand this dialectic, it is necessary to explore “the ongoing tensions and contradictions that constitute the process by which organizational actors attempt to shape workplace practices” (Mumby, 2005, p. 23) and to examine “how social actors attempt to ‘fix’ meanings in ways that resist and/or reproduce extant relations of power” (p. 24). Recent research on workplace resistance has placed greater attention on the dialectic nature of resistance (Lutgen-Sandvik, 2006) and the use of discursive strategies (Larson & Tompkins, 2005; Putnam, Grant, Michelson, & Cutcher, 2005). Hence, in the case of resistance to ICTs, it is important to understand the tensions through which organizational members form competing meanings of the technology in practice.

Third, I argue that resistance behaviors to ICTs can be theorized as variant ways in which organizational members react to oppositional meanings of ICTs that embody organizational tensions and contradictions. Existing research suggests that people react to, or cope with, tensions in patterned ways (Baxter, 1990; Kramer, 2004; Poole & van de Ven, 1989; Pratt & Doucet, 2000; Stohl & Cheney, 2001; Tracy, 2004). For instance, Pratt and Doucet (2000) found that employee emotional reactions to organizational contradictions range from fanatical commitment, rage, and vacillation between these extremes to escapism and paralysis. In studying the reactions of correction officers to organizational tensions, Tracy (2004) revealed that officers engaged in selection (choosing one pole of a tension over the other), vacillation (switching between two poles), splitting (dividing tensional poles among employees), tactics to attend to multiple goals simultaneously, and withdrawal. Based upon this line of research, I suggest that resistance behaviors be examined and theorized through reactions to tensional meanings of ICTs.

Thus, drawing upon the social constructionist perspective of technology and a tension-centered approach to organizational analysis, this study intends to explore the following research questions through a case study in order to better understand workplace resistance to ICTs: What kinds of organizational tensions emerge in the adoption of an ICT? How are the interpretations of the ICT shaped in these tensions? How do organizational members resist to the ICT in reaction to its tensional meanings?

Methods

The Setting: UTech¹

UTech is an information technology and service provider for a large state university in the western US. The organization offers a wide range of technological products and services from traditional low-end technologies such as telephone to the state-of-the-art computing, networking, and media technologies, and from basic classroom technical support, such as setting up a data projector, to facilitating videoconference

and online education. At the time of my research, it employed 140 full-time staff and about the same number of student part-time employees, serving the university faculty, students, and administrative staff. About 50% of UTech's full-time employees have bachelor's and postgraduate degrees and its entire part-time student employees are working toward a bachelor's or postgraduate degree. Although operating independently, UTech receives funding from the University and is part of the state employment system.

Prior to the year 1999, UTech was very much decentralized in servicing university customers. For instance, each workgroup that offered a set of products and services had its own direct contact channels with their customers. Some larger groups had their own customer helpdesks. There was very limited formal coordination across groups, which often generated customer complaints about confusion regarding overlapping services and delayed or lost service requests. In 1998, senior management decided to centralize customer services and improve coordination among groups. A taskforce was commissioned to plan and set up a centralized service center and to acquire and implement a software system so as to enable the new service process. The taskforce reported to a steering committee consisting of the director and two associate directors of UTech at the time.

At the beginning of 1999, UTech opened the service center. Meanwhile, it began implementing the newly acquired, client-server based software system Omega. UTech completed its implementation of Omega at the central helpdesk and in core workgroups in 1999. Resistance became palpable immediately following the implementation and continued. By the fall of 2005, UTech phased out Omega.

Data Collection

With the agreement of UTech's senior management, I entered the organization in fall 2002 as a volunteer researcher to study the use of Omega and was allowed to interview its employees and observe some meetings and work processes. I conducted field research for 9 months, although my close contact with Omega's system administrator continued afterwards. In-depth interviews constituted the primary data source for the study and direct observation and document collection offered information to help better interpret, triangulate, and contextualize interview accounts.

During the 9-month period, I conducted 36 in-depth interviews with 34 people out of 140 full-time staff members at UTech. Interviewing time ranged from 35 minutes to 2 hours. I purposefully sampled employees from different organizational levels. Of the 34 participants (18 men and 16 women), 21 were lower level employees (including supervisors), 9 middle level managers, and 4 at the rank of senior management. Overall, the tenure of participants varied from 1 to 35 years with an average of 10 years. All the interviews were audiotaped with the agreement of participants. Most of the interviews took place in participants' offices and some in conference rooms of the organization. Segments of the interviews that provided evidence and insights were selected for transcription, which resulted in about 520 pages of double-spaced transcripts.

To help understand and interpret the interview accounts, I collected data in the form of paper and electronic documents and through direct observation. Paper documents included both internal and external publications, senior management meeting minutes, service center taskforce meeting minutes, organizational charts, and documents related to Omega (e.g., Request for Proposal, workflow design charts, and Omega reports). Electronic documents consisted of newsletters and web pages of the organization. I was subscribed to their internal e-mail list, one of UTech's primary communication channels, which enabled me to gather and monitor discussions, messages, events, and managerial memos circulated within the organization.

To collect data through direct observation, I attended one senior management meeting and two quarterly Omega Users Group meetings, one of which was audiotaped with members' agreement. I also attended other organizational meetings, such as their quarterly conferences held with university customers, monthly employee meetings with the director, and information sharing meetings for people to share project information across groups. Lastly, I participated in one Omega training session and one orientation training section for UTech's new hires.

Data Analysis

I used QSR NU*DIST 4.0 to aid qualitative data analysis (Gahan & Hannibal, 1998). Based on my theoretical focus and research questions, I started my analysis with three root categories: "meanings of Omega," "organizational tensions," and "practices of resistance." I began with coding data line-by-line into these categories (Charmaz, 2006). For instance, when interviewees described what they thought what Omega was and how it worked, I coded the account into "meanings of Omega." However, there were situations in which certain themes, at the time of this first round of coding, only appeared interesting but did not seem to belong to any of the root categories. In this case, I created what QSR NU*DIST calls "free codes" to hold these pieces of data. For example, interviewees often emphasized the uniqueness of their work in comparison to other workgroups. I then generated "uniqueness of work" as a free code.

The second step was to generate subcategories within each root categories. While doing the first round of coding, subcategories had already begun to emerge within each root category. For example, some accounts characterized Omega as a tool for control and surveillance. So I created a subcategory "tool for control" within the root category "meanings of Omega." The third analytical step was to identify and formulate relationships among the categories, such as the relationship between "organizational tensions" and the struggle over the "meanings of Omega." It was also during this step that I related those free codes with the tree of root and subcategories. For example, I recoded accounts within the free code "the uniqueness of work" into a subcategory "'appropriate' use versus local practice" under the root category "organizational tensions." After much reiteration of the three analytical coding steps discussed so far, a thematic structure finally emerged, which I will discuss in the following section.

Analysis and Findings

The data analysis reveals a process (Figure 1) in which resistance to an ICT is constituted in the dynamic organizational tensions and struggles over the interpretations of the technology. The process started from the stage of acquisition and management articulation of the “appropriate” use of the ICT, through which management priorities first shaped the technology. This initial managerial construction triggered an active sensemaking process among employees during implementation and use. Especially, employees framed oppositional meanings of the technology around various organizational tensions. Resistance behaviors manifested themselves as reactions to the tensions and oppositional meanings of the technology. My following discussion will illustrate this process in detail.

Management Construction of Omega

The organizational construction of the ICT started before the technological object entered UTech, beginning with the drafting of the technology Request for Proposal (RFP). After several months of organizational analysis, the Service Center Taskforce (SCT) arrived at a diagnosis, which the project manager summarized as follows,

We knew we had pretty serious problems with people calling in requesting things. They would call the individual. Then the individual might not get back to them. Or they would call different places and those people wouldn't know that the calls were made. We really needed that call-tracking system so that calls wouldn't get lost, requests wouldn't get lost. If the wrong person has been called, that request can get to the right person and we know that it got to the right person. So it was really a call management system problem we're trying to solve.

The diagnosis suggested a technology that addresses customer service through better call management and workflow.

However, when an initial draft of the RFP was presented to the steering committee consisting of UTech directors, it was clear that the technological views held by these senior managers at the time were broader than the proposed need for the service center. Each of the three senior managers had his focal management priorities and concerns. For instance, work effort reporting had been a key issue for George, the UTech administrator, while Peter, who was a technology architect, was interested in knowledge management. As a result, the finalized RFP for the Service Center software system included not only workflow and call management but also components such as knowledge management and reporting. A member of the SCT commented during an interview with a sense of sarcasm and frustration, “it was pretty interesting having those [i.e., knowledge management, etc.] included. That, kind of, threw it [the software system] into a different realm of vendors.” Thus, the management priorities altered the technology as defined by the SCT.

After Omega was purchased, George, the associate director and an influential figure at UTech insisted on the use Omega for work documentation. According to the senior management meeting minutes,

Managerial Construction of Omega during Planning and Acquisition

Resistance as Tensional Reconstructions of Omega during Implementation and Use

Resistance Behaviors as Reactions to Tensional Reconstructions

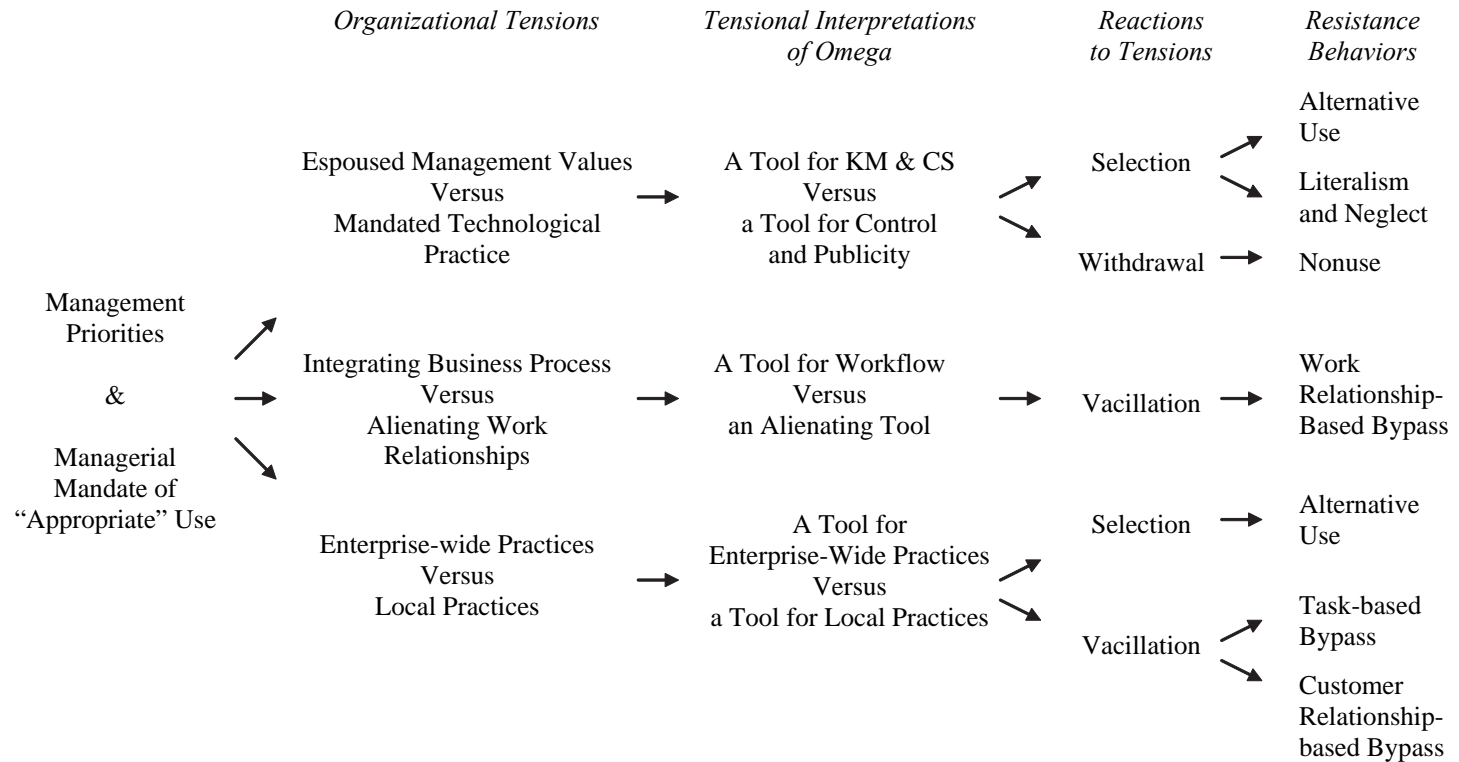


Figure 1 Resistance to Omega at UTech. Note. KM = Knowledge Management; CS = Customer Service.

George stated that using the system [Omega] will document everything UTech is doing and that the default, when questioning whether or not to open a case in Omega, is yes. George commented on the time and investment for Omega and the expectation that everyone will use it. Jared [a senior manager] suggested sending out a message to UTech staff outlining George's statements regarding Omega.

The message became a mandate on the "appropriate" use of Omega. Here is this "appropriate" use of Omega in a nutshell when it was implemented: Whenever an individual (either an external customer or internal employee) calls, e-mails, or pays a visit about a technical problem or service request, a UTech representative at the helpdesk or any employee in other offices who receives the request must open a case in Omega to document the interaction and specify the urgency level (turnaround time committed to solving the problem or offering the service). If it is solved on the spot, the case should be updated with the solution and closed. If the problem needs further service by another employee or group, the case should then be forwarded through Omega accordingly. Whoever takes ownership of a case is responsible for updating its status and content and to finally close the case. The case and time usage will be automatically archived in Omega's database.

Organizational Tensions and the Construction of Oppositional Meanings of Omega

In spite of the claim of Omega as a "workflow tool, customer service tool, knowledge tool, reporting database" (Omega training document), employees constructed various oppositional meanings of Omega that countered or contradicted managerial constructions. These discursive constructions were resistance because they competed against the managerial meaning in shaping organizational and technological reality and empowering certain organizational practices. Emerging from the data are oppositional meanings shaped around three primary organizational tensions. The following will offer a detailed account of these tensional constructions of Omega.

Tension 1: Espoused management values versus mandated technological practices. Specifically, two espoused management values were at issue in this case: building customer relationship and empowering employees through knowledge management, each of which was in tension with some mandated technological practices. First, it was the tension of building customer relationship versus generating looking-good statistics. The senior management characterized Omega as part of the strategic move to improve customer service. One of the first PowerPoint Slides during Omega training sessions began as follows, "the purpose of Omega is to facilitate the provision of unified customer service across all of UTech." The topic on improving customer service had surfaced repeatedly in the senior management meetings prior to the adoption of Omega. For example, when the strategic needs for UTech were discussed at one meeting, the minute says, "Customer satisfaction: This continues to be a priority for UTech. What is needed now, is an ongoing mechanism for measuring customer satisfaction and continuous action based on feedback gained from these measurement mechanisms." The managerial perspective on customer service emphasized the data-based measurement and control orientation.

However, employees indicated that to adhere to the “appropriate” use of Omega would ensure “looking-good” statistical data from Omega but undermine customer service. Here is the account of an employee from a workgroup,

You know, the joke around here is that if you close the case in ten seconds, you’ll get a raise because it’s really about the time you move through the cases. It’s not really about solving the problems right. Because the same person might call back ten times but if you got ten cases that open and close, you’re looking good even though you never solve the person’s problem, you know. So it’s really about, you know, I don’t know, for me, it’s like cooking the books, it’s about making statistics look good to serve your purposes when you are really not necessarily serving the customer.

The employee account framed the tension as a pragmatic paradox (Tracy, 2004). In order to achieve high quality customer service, employees would have to sacrifice rewards (e.g., pay raises) given based on measurement statistics from Omega. On the other hand, to gain rewards, they would have to spend time on generating Omega cases instead of servicing customers. The account portrayed the role of Omega as a misused management tool designed for performance evaluation instead of enhancing customer service.

In another interview, an employee stated,

You [a customer] could call a number for classroom support. And a classroom support would come out and help you. This is no longer the case. You now call. It goes into a queue in Omega. And that’s incredibly frustrating. They [professors] don’t care about Omega cases. They have a classroom full of students in front of them. And they want their projectors to work. They don’t care what kind of case it is. . . . It’s [Omega] now being used as a tool to create the kind of statistics that makes UTech look good regardless of the real situation.

This account shows that the employee is trying to make sense of the changes in work practices introduced by the new Service Center and Omega. Like the previous account, it dealt with the tension between the demand on quality customer service and the generation and use of statistics from Omega. However, the meaning of Omega was framed as a managerial tool for publicity. From the employee perspective, the management was more interested in extolling statistics to the University community than any substantive change. Document data show that the statistics from Omega was regularly reported in UTech’s newsletter to the University community including the various academic and administrative offices. They were also presented in the strategic planning documents and self-study report presented to the University administration.

Empowering employees through knowledge was another espoused management value, which was in tension with the practice of controlling through documentation. During the RFP drafting and protest period of Omega, senior management and the vendor touted Omega as a knowledge management tool in addition to casting it as a workflow tool and customer service tool. As one senior manager said, “By recording knowledge, we can learn about what works and what’s not.” Knowledge base was one of the mandatory functionality modules in the RFP confirmed by the Omega vendor

in their RFP responses. One manager on the SCT said, "It [Omega] certainly has that capability [knowledge management]. When you solve the case, you create a solution, put it in the knowledge base, and then you can search for that." Overall, during the acquisition process, Omega was articulated to be a technical solution for managing work knowledge.

However, the ease that was portrayed of Omega as a knowledge management tool was quickly questioned by the realization that knowledge management was an undertaking that demanded continuous organizational efforts including time and resources to which UTech did not commit. One middle manager reflected,

My understanding is . . . it [knowledge base] doesn't get taken off just when you solve the case. Somebody has to go in and take a look and create something called solution, type keywords into it so that you can go find it in it. It looks to me it's a much bigger task than they [senior management] thought it would be.

A supervisor commented,

We have some capabilities [knowledge management], yes, and we are not using it. And that might be, you know, who's going to develop it and who's going to continue running it when it's there because it requires some attention in order to keep that information organized.

Employees reported disillusionment with the inability of using Omega as a knowledge management tool. For instance, one employee described,

We have yet to see a report from Omega showing us much . . ., I mean, for all that data that sit there, there is rarely a report they can send up that says, "here is what we're learning" . . . I think the goals they [senior management] have for Omega are keeping track of problems that are out there, trying to resolve the problems, communicating from group to group about what the problems are. So yeah, I think it's designed more for that . . . I think if you conceive it as providing a playground for exploration, you know, sometimes, it is a limiting channel . . .

Interviews with other participants including the system administrator responsible for Omega confirmed that the only reports generated were statistics on such topics as the number of cases opened and closed and the average time used to close cases. Such disillusionment coupled with the mandatory "appropriate use" constituted active construction about the nature of Omega and the perceived managerial intention in adopting Omega, which was to track workflow and control through documenting work efforts instead of enabling workers through work knowledge. For instance, an employee commented,

Well, it's a management tool. They want it as a management tool. They want the numbers so that they can determine, you know, where we're going to work . . . it became a management tool that created numbers that had no meaning. I mean, sure, yeah, "you handled 567 cases," but it didn't save us any time, very rare, very little time.

One middle manager pointed to the employee suspicion with regard to Omega use,

It's like, I believe, it's intrusive, you know. It's like somebody's looking over their shoulders. And I suppose it's not the attempt to do it, to say, "Oh, you aren't doing

your work.” It’s the attempt to understand what work they’re doing and better understand our workflow but I think there is an employee suspicion, sometimes, over those kinds of management tools.

Hence, the tension between the espoused management values on knowledge and customer service and the management practice embodied in the “appropriate” use prompted the suspicion and reinterpretation of Omega as a management tool for control and surveillance.

Tension 2: Integrating business processes versus disintegrating work relationships. John was a member of the SCT and later became a senior manager. He was a strong advocate of Omega and spoke at every Omega training session. He strongly argued that “[Omega] is the ‘glue’ that holds the support model together.” The support model referred to a four-tier service structure at UTech, including customer self-help, distributed support, the service center triage, and services by technical specialists. Prior to the implementation of Omega, one workgroup, if needing help from another, would make a phone call, send an e-mail, pay them a visit in person, leave a sticky note on their desk, or a combination of these forms. With Omega, a group would only need to create an Omega case and send it to another group even with an urgency level (turnaround time) clearly specified. Omega was supposed to integrate the flow of work across groups without losing customer requests into “cracks.” As John said in an interview, “I think it was absolutely true that, with its [Omega] strong focus on ownership, there will never be a time a case is not owned, there will never be a time a customer falls into cracks. It has this strong map of individuals, ah, individuals called ‘queues’ and the ability to assign or dispatch, assign to an individual or dispatch to a queue.” Another senior manager concurred in an interview,

That will certainly help accountability. The great benefits of Omega is that once the Omega case is in your queue, it will whine at somebody until it’s taken care of. So you don’t let ’em fall in cracks.

In practice, such intergroup integration through Omega was counterinterpreted as disintegrating work relationships among groups. Colleen, a middle manager commented, “I think we tend to look at Omega as a problem tracking tool, not a collaboration tool. We walk down the hall and collaborate. Sending an Omega case, I think, tends to make it impersonal.” This account represented an alternative interpretation of what it meant to hand off a problem or request to another colleague or group: an opportunity for collaboration and maintenance of social relationships instead of mere process-control and problem-tracking. Omega was interpreted as endangering the social fabric once maintained through these occasions of handing off work requests.

It was interesting that these social relationships created through tight coupling of work tasks across groups was the very channel through which the influence of such alternative interpretations quickly reverberated into other workgroups. A system analyst who had a direct work relationship with Colleen’s group offered the following account,

We are much more inclined to just go upstairs and talk to them [Colleen's group]. I think we have a pretty good relationship with the group upstairs. We just go upstairs and ask them . . . we kind of bypass Omega . . . um, I think it [an Omega case] actually makes them angry when you create an Omega case instead of just give 'em a call, go up there, and say, "hey, what about this," you know. Because Melissa [the analyst's group manager] occasionally started an Omega case and sent it to Leo [a member of the group upstairs] and he came down and became mad as a hornet, you know, about "why do you send me an Omega case?" So, I don't know, maybe it's just, I think, [if] you have a good relationship with a group, you tend to bypass Omega.

Thus, it is through the very social relationships that one group's interpretation and reaction to Omega took effect in another group.

Finally, the tension between integrating business process and disintegrating social relationship could be a result of problematic work policies but significantly influence how the technology was interpreted. Since Omega was implemented, Jill's group had been having a rocky relationship with the Service Center. She stated during an interview,

It [Omega] doesn't work when a major server is down. We knew it was down before people knew it was down. Then we got bombarded with Omega cases that [said], "this [server] isn't working." And we were sort of "Yes, we know. And we're not going to waste our time answering you now 'cause we're fixing the problem. And someone will, later on, when the problem is fixed."

In this account, Jill pointed out that an unnecessary but overwhelming influx of Omega cases was generated by the Service Center in a crisis situation like a server failure. Closer examination revealed that the problem had its origin in the managerial policies that prescribed how Omega should be used at the helpdesk of the Service Center. The account of a helpdesk supervisor offered a clue to the problem,

We aim for 100 percent of all customer contacts by the frontline [the helpdesk] . . . to be recorded in Omega. So yes, even it's a wrong number, we'll do an Omega case saying "wrong number." Um, we want our telephony statistics to match our Omega statistics.

In a situation of server failure, the helpdesk would experience an influx of phone calls reporting or inquiring about the server problem. To follow the policy of 100% "call-to-Omega-case ratio," every call had to be documented in Omega cases. Because the server problem occurred in Jill's group, not the helpdesk, the helpdesk staff was reluctant to take ownership of the cases and would rather forward them to Jill's group although they knew that all the cases were about the same problem. To make the situation even worse, as a requirement, the Service Center staff had to specify an urgency level for each case from 4 (most urgent) to 72 hours (least urgent) turnaround time. The cases would be "escalated," meaning that they would be forwarded to higher-level managers if they were not resolved or no actions were taken according to the urgency level. These rules put Jill's group in a paradoxical situation in which, if her group did not process the cases, the cases would go to higher-level managers and people in her group would lose face. On the other hand, if they took

time to process each case, they would not be able to fix the server problem quickly enough simply because of the large number of cases they received. Each choice would put Jill's group in a negative light. Therefore, the tense relationship between the two workgroups had its origin in the managerial rules initially programmed into Omega and indiscriminately followed by the Service Center as well as in the managerial attention to Omega statistics. Omega, interpreted as a faulty management tool, was constructed in the tension between the attempt to integrate work process and the resulting problematic group relationship.

Tension 3: Enterprise-wide versus local practices. Data from this study show that the tension between local work practices and the enterprise-wide managerial mandate on the "appropriate" use served as a significant source for constructing the meaning of Omega. For instance, the "appropriate" use attempted to funnel every technical support-related phone call, either internal or external, through a single telephone number in order to reduce confusion caused by many telephone numbers in the past. For one workgroup, for instance, whose role was the liaison between faculty of various departments and UTech, their perspective on Omega differed from the "appropriate" use. Rick, a member of the group since it was initially formed, commented,

This is where we are different. Faculty don't really like to call 5 help . . . they tend not to go through that system. So they very quickly discover who does what, and call you directly . . . I still think Omega is a helpdesk trouble ticket sort of thing, rather than being useful for what we do which tends to be long term relationship we have with faculty.

Sharon, a member of another workgroup that offered media production services, argued in an interview,

So I think there is an assumption that this organization can be run on an Omega model but that may be a faulty assumption. They may be good for something but not good for everything. And I see this is taking me farther away from the customer and give and offer superficial service rather than good and in-depth service. That's my opinion and other people do agree with me too. But what we've done by using a service center model is just sort of going toward mediocrity, you know, it's too surface, there is nothing in-depth.

In both examples, employees worked closer to the external customers, including students and faculty, than did other "core expert" groups who tended to solve technical problems in the back office. The work identity of the former was therefore closely attached to the relationship they formed with their customers. In fact, many of them saw themselves as educators instead of mere service providers. For instance, a middle manager said in an interview, "When you talk about the media services, you're talking about the academic side of it. And the academic clients . . . we are part of the teaching process." He continued,

A lot of the things we do are, eh, they are not requests for service, they are ongoing support for journalism and mass communication classes. . . . So to get something everyday through Omega from the service desk would be kind of a silly thing because it's an ongoing relationship that we provide.

The similar pattern showed in a workgroup that directly serviced the administrative offices through developing and maintaining administrative systems for them. One employee reported in an interview,

What happens is that when we put up a system, there is a direct communication that doesn't go through Omega. So the transportation manager calls me. He doesn't call helpdesk that kind of thing because we don't need it. He knows I'm the person to call. I don't need Omega to help me with this problem. So it's things where it's more general that Omega is good for funneling in and funneling out. . . . So for a lot of my systems, people call me directly. We've always done it that way. . . . If there is a personal relationship already established, then we really don't need Omega that kind of thing.

These examples demonstrate that the enterprise-wide managerial mandate on Omega use and the local practices form a tension, in which Omega was interpreted as a tool against customer service while managerial interpretation of the technology pointed to the opposite.

Resistance Behaviors as Reactions to Tensions

The above analysis has surfaced various competing meanings of Omega around the three organizational tensions. Following Weick (1979), these interpretations were resistance enactment in the sense that they were active constructions of technological and organizational realities and brought the tensions into concrete existence. The data further show that resistance behaviors to an ICT manifested themselves as variant ways in which organizational members react to tensions and the oppositional meanings of the technology. Three types of reactions to the oppositional meanings of Omega emerged, which are *selection*, *vacillation*, and *withdrawal*, and each played out in different forms of resistance behaviors. The following illustrates these reactions and the related resistance behaviors respectively.

Selection. Selection means that social actors choose one pole of a tension to the exclusion of the other (Baxter, 1990; Tracy, 2004). As the data demonstrated, two types of resistance behaviors are manifestations of *selection*. First, it is resistance through *alternative use*, which is to use the technology in a way different from the managerial mandate with the result of resisting one side of the tension while promoting the other. To illustrate, one workgroup managed to reinvent Omega for project management. As the workgroup manager described,

So we maintain projects within Omega. So it's not just a help-desk utility that the frontline, their goal is to open a case and close a case as fast as possible. And we don't use Omega that way. We don't have this goal to close the case. I've got cases that have been opened for three years because they are projects that haven't been accomplished.

For him, the espoused value of knowledge management and customer service was best achieved by using Omega innovatively for project management. The meaning of Omega as a tool for standardization-oriented control and publicity was rejected. Doing so rendered the performance data collected through Omega "inaccurate" and lack of the kind of standardization that senior management expected. Layered in this

alternative use was a reaction toward another tension, the one between Omega as a tool for enterprise-wide purposes versus for local practices. The group opted for using Omega to advance local practices.

By contrast, the second form of resistance behavior, *literalism and neglect*, embodied a different kind of selection than *alternative use*. It is when organizational members neglected Omega as a tool for customer service by literally opting for its control and publicity related procedures although the underlying motive for this selection was to advance their local interests. For instance, a supervisor reported that he encouraged his people to use Omega as required as much as possible. As he explained, "It [Omega] . . . does give us a good idea, for instance, how many requests we get, you know. It helps us with the argument that we need more resources to support this number." So literally documenting work requests turned Omega into a vehicle that assisted them in the competition for internal resources. When it came to customer service, however, the supervisor complained about the "escalation" feature of Omega. As I wrote earlier, "escalation" was a situation in which a service request filed in Omega was red-flagged and forwarded to a higher-level manager when unresolved within a specified time frame. The supervisor commented, "[when] the four hours pass, the escalation, I mean, more than anything, it's just annoying email. . . . We do get to all of our Omega cases. We do that within a day or two." His group simply *neglected* the escalation, which, for them, was a statement about their understaffed situation rather than a sign of poor customer service.

Vacillation. Vacillation occurs when social actors switch back and forth between the two poles of a tension depending on the situation (Pratt & Doucet, 2000; Tracy, 2004). In this case, vacillation was temporal depending on the kind of work relationships, tasks, and/or customer relationships that were involved. First, *work relationship-based bypass* is a form of vacillation as a reaction to the tension of Omega as a tool for workflow versus for alienating work relationships. It refers to the behavior in which employees chose to use or bypass Omega depending on the kind of work relationship they had with the person to or from whom Omega cases might be passed along. An employee would choose to bypass Omega if she/he knew her/his friend co-worker disliked Omega, for instance. During an interview, an employee was trying to demonstrate for me the new version of a software tool she used at work but had problem downloading the test version from the server. Instead of creating an Omega case to report the problem, she immediately called the server support staff and left a phone message. After a few minutes, she received a call back and had the problem solved. When asked why choosing to bypass Omega in this incident, she replied, "I happen to know one of the individuals who really don't like Omega at all. I know I'll get a better response if I use the phone. You know, frankly, I would probably do the same thing if the table is turned."

Task-based bypass and *customer relationship-based bypass* are the other forms of vacillation. Both are resistance behaviors in reaction to the tension of Omega as a tool for enterprise-wide purposes versus for local practices. Employees vacillated between the two poles depending on the tasks they received. For instance, many workgroups reported that they bypassed Omega for their own projects but used it when Omega

cases were forwarded to them from other groups. One employee said, “I use it because the Service Center writes up an Omega case and then it’s on my machine, I find it.” For others, Omega was used or resisted depending on the kind of customers they dealt with, although, in many cases, the tasks and customers they served were tied together. For instance, a software system developer avoided using Omega when a project was for a well-established customer. As he said in the interview, “It’s a fairly logical separation when to use [Omega]. . . . If there is a personal relationship already established, we don’t really need [Omega] that kind of thing.”

Withdrawal. Withdrawal is to turn away from a tension and to exit (Tracy, 2004). I wrote earlier that some employees treated the tension of advancing espoused management values versus following mandates on technological practices as a practical paradox in the sense that to fulfill the control-related mandate made it impossible to deliver quality customer service. Some organizational members responded by withdrawal in the form of *nonuse* of Omega. In an interview, a staff member described, “I’ve never had it on my machine. So far, I think it is like I slide under the radar because it is a requirement, you should [have it]. I’ve gone to the Omega user training, I’ve gone to all the UTech training but so far I’ve been able to slide under the radar.” In another example, a supervisor in one workgroup recalled how one of her employees decided to stop using Omega,

The people who work for me are constantly worried that somebody’s gonna come to us someday and say, “Hey, you’re not making [Omega] cases.” Steve, for a year, made a case on every single thing that he ever did, just, you know, because somebody said you should do that. And then, you know, he said that, “you know, this isn’t working, this isn’t helping me or my customers in any way.” And I said, “Well, don’t do it.” He said, “Okay.” So then he stopped because none of the rest of us was doing it.

This example shows that the employee who attempted to follow the mandate struggled to make sense of the practice. Withdrawal from use resulted from the frustration in resolving the paradox.

In summary, the above analysis has shown that resistance to Omega lay not only in the oppositional meanings of the technology constructed around the organizational tensions but also in various behavioral forms as reactions to the tensions and competing interpretations as well. It was the reflexive interplay between an ongoing construction of the technology and organizational tensions that constituted resistance. The following section will discuss the theoretical and practical implications of the findings.

Discussion

By integrating a social constructionist perspective of technology and a framework of organizational tensions, the qualitative case analysis offers a tension-centered process model of resistance to ICTs. The model presents several theoretical insights. First, it retheorizes resistance to ICTs as constituted in a reflexive relationship between the social construction of technologies and organizational tensions: The adoption of

Omega foregrounded and intensified several organizational tensions, which then shaped the interpretations of the technology in oppositional terms, and reactions to these tensions and oppositional meanings resulted in various forms of resistance behaviors to the technology. The significance of this retheorizing is that it overcomes the technology-organization dualism (Jackson et al., 2002; Orlikowski & Barley, 2001) which characterizes much of previous research on resistance to ICTs. Under the dualistic influence, research either foregrounds technologies as a fixed and deterministic material cause of resistance or privileges social choices under certain psychological or structural conditions. The consequence of this dualistic theorizing is a reduction of resistance to either technological or social (individual and organizational) conditions, overlooking the indeterminate and symbolic properties of ICTs (Jackson et al., 2002) and the intertwined relationship between the technological and organizational processes. By contrast, an examination of the dynamic interplay between the social construction of ICTs and organizational tensions is able to attend to technology and organization simultaneously as coproducing resistance.

Second, the model demonstrates the consequential role of interpretation in understanding resistance to technologies. ICTs, rather than exterior to their interpretations, were shown to be brought into existence, first, by managerial interpretations and then contested and transformed through interpretations by other organizational members. These competing meanings of ICTs are not merely representations of the thoughts or cognitive frames (Orlikowski & Gash, 1994) of organizational members but enactment (Weick, 1979) that empowers respective behaviors of control and resistance (Mumby, 2005). Therefore, the study suggests that communication as meaning interpretation be an important modality (Jackson et al., 2002) through which resistance is produced and should be understood.

Third, and more specifically, the case reveals three primary tensions surrounding the ICT and suggests a framework of theorizing resistance behaviors as reactions to tensions and oppositional meanings of the technology (see Figure 1). It is obvious that none of the tensions are unfamiliar organizational issues. For instance, the tension between espoused managerial values and practices has long been addressed in the literature of organizational culture (Martin, 2002; Schein, 1985). So have the technical-social duality in the sociotechnical systems research (Rice, 1963; Trist & Bamforth, 1951) and the tension between organization-wide and individual/group practices (Seo et al., 2004) in the literature of organizational change. What is significant, however, is that the ICT was the occasion that galvanized these tensions simultaneously, which then redefined the technology with competing meanings. By associating with patterned reactions to tensions (selection, vacillation, and withdrawal), the study offers a systematic and theoretically grounded way to understand resistance behaviors. It could serve as a framework upon which future research on resistance to ICTs could be advanced.

Finally, understanding resistance to ICTs through the lens of social construction and tensions provides insights into the management practices with regard to ICT adoption and implementation. First, the study identifies the early stage of ICT adoption, including organizational needs assessment, problem diagnosis, and RFP

writing as a critical stage in shaping the technology and organizational tensions. As the case demonstrated, the organizational construction of Omega preceded its introduction to the organization. Omega was shaped in the competing definitions of the organizational problems and management priorities. The SCT, charged with creating a service center, offered the first definition for the software system, which was then overwritten by senior managers according to their managerial priorities. After Omega was deployed, the “appropriate” use, advocated by one influential senior manager, further defined the technology according to his management concerns. The initial meanings of Omega, emerged and submerged in the construction process, planted the seeds of organizational tensions. Thus, the early stage of the ICT adoption process should not be treated as merely a technical or managerial matter. Instead, the study suggests broader employee participation in defining system needs and organizational problems. Second, the study suggests the alignment between management values and policies on technology use. In the UTech case, espoused management values contradicted the policies on Omega in situated contexts of use. Careful organizational assessments on such alignment, both prior to and after ICT deployment, could help reduce resistance. Third, from a dialectical perspective, stronger control only strengthens, rather than eliminates, the force of resistance. Hence, the study suggests that to manage tensions involved in ICT implementations is to achieve a state of balance between opposing forces. For instance, between competing needs for enterprise-wide standardization versus interpretive flexibility, heavy-handed enforcement on the standardized use of Omega led to withdrawal and subverted customer services. However, complete embrace of interpretive flexibility would have inhibited Omega’s potential to integrate information and streamline communication across the organization. Therefore, only by striking and maintaining such a balance through negotiation and dialogue (Eisenberg, Goodall, & Trethewey, 2007) can organizations reap the technological advantage while minimizing resistance.

In spite of the contributions discussed above, the limitations in the study suggest many areas for development in future research. First, the study leaves out the potential influence by the broader cultural, political, and financial systems in which UTech resided. For instance, the managerial preoccupation with standardization and statistics could have been driven by the need to legitimize UTech’s position and by the competition for limited resources with other institutions within the university system. At an even broader level, the managerial concerns may have reflected the overall drive toward greater accountability in education through such measures as strategic planning and assessment. Incorporating these factors in analysis would certainly enrich future studies. Second, the case only reveals three primary organizational tensions that pertain to the ICT implementation. Future analysis from a variety of cases may suggest additional tensions around which a technology evolves in meaning and practice. Third, a more longitudinal approach would extend the current understanding by exploring the consequences of resistance. For instance, three years after my field research, UTech finally abandoned Omega. To explore the abandonment process would help build a fuller understanding of the resistance.

Methodologically, the study relies on in-depth interviews as the primary data source. Theoretical development in the future would certainly benefit from data gathered through direct observation of both resistance discourse and behavior. Although difficult to obtain, such data would shed light on mechanisms through which resistance evolves and sustains through interaction.

In conclusion, this study has offered a process model for examining resistance to ICTs in the workplace, which focuses on meaning interpretation and the relationship between the social construction of ICTs and organizational tensions. The model extends our understanding of resistance from being the result of psychological or structural conditions to being the product of sensemaking and the dynamic interplay between technological and organizational processes.

Note

- [1] Pseudonyms were used for the organization, participants, and the ICT to protect confidentiality and proprietary information.

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