Meet Me in Cyberspace:
Meetings in the Distributed Work Environment

Katherine M. Chudoba
MIS Department, College of Business
Florida State University
Tallahassee FL 32306-1110 USA
+1 850.644.8228 (voice)
+1 850.644.8225 (fax)
kchudoba@cob.fsu.edu

Mary Beth Watson-Manheim
Information and Decision Sciences Department
University of Illinois, Chicago
Chicago, IL 60607-7124 USA
+1 312.996.2370 (voice)
+1 773.868.3204 (fax)
mbwm@uic.edu

Chei Sian Lee
Information and Decision Sciences Department
University of Illinois, Chicago
Chicago, IL 60607-7124 USA
+1 312.996.2370 (voice)
+1 773.868.3204 (fax)
clee49@uic.edu

Kevin Crowston
School of Information Studies
Syracuse University
Syracuse, NY 13244-4100 USA
+1 315.443.1676 (voice)
+1 866.265.7407 (fax)
Crowston@syr.edu

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Abstract

Meetings have long been a critical activity in contemporary work life. At least since Mintzberg's classic study of managerial behavior, researchers have documented and practitioners have bemoaned the amount of time spent in meetings. Despite these problems, meetings are becoming even more common in organizations. Teams are now found throughout the organization, from the manufacturing floor to senior management. Organizational work increasingly occurs in teams, with participation in meetings becoming a core work activity. How are these meetings conducted? What are the implications of the increased use of ICT in these meetings? As more and more members of organizational teams are distributed and must make extensive use of ICT in order to work together, these questions become even more important.

Using the device of genre system, an interrelated set of socially constructed communicative actions, we examine meetings from the perspective of employees at a company in the technology industry. We began with the questions: Are meetings in the 21st century different from Mintzberg's conceptualization? If so, how? Drawing on data gathered from interviews that used entries in the employees' electronic calendar system, we found that employees are attending a large number of meetings (20% reported more than 25 meetings in a week) and spending significant time in meetings (27% reported more than 30 hours in a week in meetings). The majority of meetings included non-collocated participants and extensive use of ICT. We explore the implications of these and other findings for collaboration and ICT support.

Key Words: distributed meetings, e-collaboration, e-communication

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Meetings have long been ubiquitous in contemporary work life. At least since Mintzberg's

(1973) classic study of managerial behavior, researchers have documented and practitioners have

bemoaned the amount of time spent in meetings. Many people don't enjoy attending them, but

most find that they cannot avoid meetings because they are necessary for collaboration,

coordination, information sharing, and decision-making (Tropman, 1996). Complaints about the

failure of many meetings to adequately serve these purposes have led to books such as *How to*

Make Meetings Work (Doyle & Strauss, 1976) and the development of Group Support Systems

(GSS), alternatively called Electronic Meeting Systems (EMS) (Nunamaker et al., 1991). Yet

meetings continue to be viewed as problematic, as reflected in a recent *Harvard Business Review*

article, "Stop Wasting Valuable Time" (Mankins, 2004).

Using the device of genre system, or an interrelated set of socially constructed communicative

actions (Orlikowski & Yates, 1994), we examine meetings from the perspective of employees at

a company in the technology industry. We began with the questions: Are meetings in the 21st

century different from Mintzberg's conceptualization? If so, how? Drawing on data gathered

from interviews that used entries in the employees' electronic calendar system, we found that the

majority of meetings included non-collocated participants. Frequently, employees attended

meetings from their private workplaces (e.g., office or home) rather than conference rooms,

making it easier for multi-tasking to become *de rigueur*. So much time was spent in meetings

that many employees entered private events on their calendars so that it would appear they were

unavailable to meet, allowing them to "get work done." We explore the implications of these

and other findings for collaboration and ICT support.

We begin with an examination of meetings and communication, and how genre systems can illuminate the social dynamics as meetings are enacted in an organization. This is followed by a description of our research methods, including the research setting and our analytical methods. Next, we present the insights that emerged from our qualitative analyses. We conclude with a discussion of our findings and their implications.

Meetings and Communication

Managerial work in contemporary organizations was first documented by Mintzberg (1973), and recognized the central role of communication. He noted managers' preference for verbal communication, observing that some managers spend 80% of their day in verbal contact with others including time spent in scheduled meetings and brief, chance encounters. Mintzberg (1973) further describes a manager's workday:

> The manager feels compelled to perform a great quantity of work and the pace he assumes is unrelenting. The manager seems to have little free time during the workday and he takes few breaks. Senior managers appear unable to escape from their work after hours because of what they take home and because their minds are constantly tuned to their jobs. (Mintzberg, 1973: 170)

Long days with back-to-back communication events reflect the three role sets of managerial behavior that Mintzberg identified: interpersonal, informational, and decisional. Similarly, the purpose of meetings is commonly recognized as collaboration, coordination, information sharing, and decision-making (Tropman, 1996). And in spite, or perhaps because of, the central role meetings play in an organization's life, they are frequently distained by those who attend

them. Common problems associated with meetings include, frequently resulting in the sentiment that attending meetings is a waste of time and hindrance to getting real work done.

Despite these problems, meetings have become even more common in organizations. The use of teams in organizations increased significantly in the early 1990's (National Research Council, 1999). Teams are now found throughout the organization, from the manufacturing floor to senior management. Decision-making in teams has also increased as organizations move to reduce levels of middle management. Business process engineering techniques often explicitly called for changes in job skills (less specialization) and an increase in the use of teams for decision-making (e.g., Hammer, 1990).

Thus, organizational work increasingly occurs in teams, with participation in meetings becoming a core work activity. How are these meetings conducted? What are the implications of the increased use of ICT in these meetings? As more and more members of organizational teams are distributed and must make extensive use of ICT in order to work together, these questions become even more important.

Meetings as a Genre System

Drawing from the disciplines of rhetoric and literary analysis, Yates and Orlikowski have examined genres as communicative events that shed light on the dynamics of social interactions (cf. Yates & Orlikowski, 1992; Orlikowski & Yates, 1994; Yates & Orlikowski, 2002). Examples of genres include memos, purchase requisitions, training seminars, and meetings.

A genre established within a particular community serves an institutionalized template for social action – an organizing structure – that shapes the ongoing communicative actions of community members through their use of it. Such genre usage, in turn, reinforces that genre as a distinctive and useful organizing structure for the community (Orlikowski & Yates, 1994: 542).

Multiple genres that are interrelated and recognized as parts of a communicative process form a genre system – e.g., job posting, interview, and offer letter are elements of the hiring process (Yates & Orlikowski, 2002). The individual genres that comprise a genre system reflect expectations about interactions within a given context, offering insight into collaboration and coordination processes. Within the meeting genre system, for instance, there might be genres such as agendas or minutes. Yates and Orlikowski (2002) suggest six dimensions for examining a genre system: purpose (why), content (what), participants (who), form (how), time (when), and place (where). We use each of these dimensions to briefly describe meetings as genre systems.

Purpose

The purpose of a genre system revolves around the question *why?* – in our case, the objective or reason for a meeting. For example, meetings might be scheduled to facilitate knowledge generation (e.g., brainstorming) or knowledge sharing (e.g., project status). Training for Total Quality Management (TQM) groups explicitly recognizes the importance of understanding why a meeting is scheduled through the use of the acronym PAL to describe effective meetings: every meeting should have a purpose, agenda, and limit (e.g., time duration).

Content

The content of a genre system is concerned with *what* happens, both as part of the overarching genre system and within and between each of its individual genres. Within the meeting genre system, for instance, there might be genres such as agendas or minutes. Examining the content of a meeting, then, would include identifying which individual genres were present (e.g., did the meeting have an agenda) as well as what transpired during the meeting itself (e.g., the relationship between what happened during the meeting and expectations about the meeting's content as reflected in its agenda).

Participants

Those involved in the communicative events of a genre system, along with their roles in enacting the system, are included in the dimension of *who*. Continuing our example of the meeting agenda genre, identifying the person responsible for preparing the agenda may provide insight into power structures to the extent that the agenda reflects what will and what will not be discussed during the meeting itself. In other words, the person who prepares the agenda may also play the role of gatekeeper.

Form

Form consists of expectations about *how* the genre system unfolds. For example, is the agenda genre part of the meeting genre system, and if so, how is it enacted? This could include whether or not a text document is shared in advance of the meeting or whether participants generate a list of topics verbally as a synchronous meeting begins. Minutes might be another constituent aspect of the meeting genre system, enacted as a text document sent to participants as an attachment to an email message or as hardcopy documents placed in participants' mailboxes.

Time

The temporal dimension of a genre system examines *when* questions, including aspects such as deadlines and perceptions of time. Saunders and her colleagues (2004) described different perceptions of time across national cultures and the impact of this on understanding among members of global virtual teams. Time in this context also refers to one's work patterns and how interruptions are handled (Perlow, 1999), as well as perceptions of appropriate times for meetings to be scheduled (e.g., does the time of a meeting conflict with other activities, professional or personal)?

Place

The sixth dimension of a genre system is place, or *where* the genre is enacted. For example, meetings might be convened in conference rooms, around a lunchroom table, or in the corridor. Alternatively, individuals might be in two or more locations and participate in a meeting via an audio telephone bridge.

In conclusion, as a genre system, a meeting shapes the expectations of those who participate in the meeting. These may be generic expectations of what a meeting entails (e.g., the overarching form of a meeting) that individuals bring to the gathering, or specific expectations about why a particular meeting is scheduled, what will happen during the meeting, and so forth.

Methods

For this research we used a grounded theory approach (Glaser & Strauss 1967; Eisenhardt 1989; Martin and Turner, 1986; Strauss & Corbin, 1990). Grounded theory is an inductive theory discovery methodology that seeks to develop theory that is grounded in data systematically gathered and analyzed. Since the focus of the approach is "to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data" (Martin and Turner 1986), it allows researchers to obtain a deep understanding of a phenomenon from the data.

Research Setting

The study was conducted in TechCo, a pseudonym for a Fortune 100 company in the information technology industry. The company, headquartered in the United States, has R&D, manufacturing, and sales operations. It is a large global organization with multiple sites within the U.S. and around the world. Working and collaborating with colleagues across the globe is a way of life in the organization. In fact, it is common to find employees working in the same project team to be distributed in different worldwide sites or to find employees reporting to managers who are not co-located.

Data Collection

Data for this study were collected from semi-structured telephone interviews. Each interview lasted approximately one hour, with two members of the research team (one interview only had a single researcher). Interviews were not tape-recorded, although both interviewers took copious notes.

The respondents were asked to discuss all entries on their electronic calendar from the most recent, typical workweek. Since all employees across the company use the same calendar application, this was the most expeditious way to identify meetings employees attended. We asked a number of questions to characterize each meeting, including the number of participants and their locations, types of communication technologies used during the meeting, the discontinuities faced such as language or functional area, the type of meeting (recurring or one-of), the purpose of meeting, and other factors. Respondents were also asked to reflect on the effectiveness of the meetings and technologies used, and the challenges faced. These questions were aimed at uncovering established work norms and strategies utilized by the respondents. The interviews were semi-structured in format, where the interviewer allowed for conversation with the respondents so that respondents could expand on topics most relevant to them and open the possibility for gaining additional unforeseen information. In addition, the respondents were not directly prompted for answers but gave spontaneous explanations and reasons for any events. The interview protocol is provided in the Appendix.

Respondents

We interviewed 30 employees from the company. For all 30 employees, communication with colleagues is an important and signification part of their work responsibilities. For this reason, these employees have to rely heavily on the calendar application for work scheduling and coordination. A snowballing technique was used to identify respondents. The researchers were initially given names of two mid-level knowledge workers. At the end of each interview, employees were asked to refer us to other employees. As the interviews progressed, researchers asked interviewees to identify subjects located outside the U.S. and across different functional

areas in order to achieve a stratified sample. Data in Table 1 show the demographic profile of the respondents.

Data Analysis

Before analyzing the interview data, the interview write-ups were transcribed into text formats that could be recognized by a content analysis program (ATLAS Ti). Specifically, one member of the research team went through all the write-ups to make sure that the meeting information was structured in the same way. Missing information was identified (e.g. location of respondent, time of meeting), and figures and diagrams that could not be recognized by the content analysis program were re-formatted.

To analyze the interview data, we performed qualitative analyses to determine the most frequently mentioned issues by the respondents. We followed standard practices for qualitative data analysis (Miles and Huberman, 1984; Glaser and Strauss, 1967; 1970). First, we constructed inductive code categories by reading through the interview texts, and created an extensive list of all the issues mentioned separately. Once the team agreed on the list of categories, two members of the research team coded one interview file separately. The two coders then compared results and discussed differences until agreement was reached on the categories. The coding template was then revised and discussed with the rest of team until we achieved complete agreement. This iterative coding process was carried out according to the approach developed by Glaser and Strauss (1967). Specifically, this approach recommends that analysis gradually moves toward higher level concepts by subsequent grouping codes into higher level categories. This method involves multiple iterations and successive coding efforts starting with codes that are descriptive

and then grouping the descriptive codes into categories that are progressively more abstract. Based on the final set of coding categories, we achieved an inter-coder reliability of 0.9 (Cohen's Kappa) from two coders, one of whom was not involved in any of the interviews, based on a sample of half of the interviews. The remaining interviews were coded by a single researcher.

Using the coded files, we identified key themes that were repetitive among the respondents. We subsequently clustered these into themes of related statements. We used the most frequently mentioned strategic themes to summarize the current practices and barriers to effective meetings brought up by the respondents. The preliminary list of themes was compiled, discussed, and modified several times among the research team. We generated several themes related to current practice and difficulties.

Findings

The meeting genre system characterized by Mintzberg (1973), which we'll label traditional meetings, is different in important ways from the meeting genre system enacted by those we interviewed in TechCo. The findings from our data are shown in Table 2. The total number of meetings found across all 30 interviewees was 524. The first section of the table summarizes the characteristics of these meetings. A number of different types of ICT were used in meetings. Most prevalent was the use of an audio bridge, an internal teleconferencing facility. The telephone was also used for meetings with only 2 or 3 participants. Team collaboration tools that allowed shared view of document and collaborative editing were often used in conjunction with teleconferencing.

There are many meetings with people who are not collocated (70%). This includes 58% of meetings where no participants are collocated and 12% with partial collocation, i.e., some are collocated and some are FTF. Interestingly, even when participants in a meeting were in the same geographic location, they often preferred to stay at their desks and use ICT to participate in the meeting. Not unexpectedly, the size of the meetings varied: almost 50% of meetings involved 5 or fewer participants while 10% had more than 15 participants. However, we were unable to assess the size of a large number of meetings. While the distribution/invitation list was clear to the interviewees, the actual number attending the meeting was often not clear because many non-collocated participants did not attend or only attended for a portion of the scheduled meeting time. In addition, people cycled in and out of conference calls depending on their interest in the meeting's content, as assessed from the meeting agenda.

The second section of Table 2 summarizes responses by individual interviewee. The data makes it clear that individuals spend a significant amount of time in meetings. Sixty three percent of the interviewees had more than 15 meetings on their calendars during what they considered a typical workweek, and 20% reported more than 25 meetings in a week. Correspondingly, 64% reported spending more than 20 hours in meetings with 27% reporting more than 30 hours in a week in meetings. In addition, individuals had multiple team memberships, with 80% reporting concurrent membership on four or more teams. We categorized team participation as peripheral or integral to capture the different levels of participation in a meeting, as reported by respondents. Peripheral membership refers to those who only attended a portion of the meeting, "half-participated" (e.g., respondent reported significant time spent multi-tasking during meeting), or reviewed agenda and/or minutes and then decided not to attend the meeting.

Integral membership refers to active participation during most of the meeting. Respondents were more much likely to report integral membership than peripheral, however, 40% reported more than 20% of their meetings attended involved peripheral membership.

We now examine meetings from a genre system perspective, focusing especially on the use of ICT in these meetings.

Purpose (Why)

Meetings in our sample were convened to facilitate collaboration, management, and information dissemination, similar to the meeting objectives that Mintzberg (1973) highlighted. Meetings for collaboration purposes include those that primarily involve brainstorming, problem solving, and coordination. Management meetings refer to those held between a supervisor or manager and her/his subordinates, such as performance reviews or staff meetings. Information dissemination meetings are those in which the mode of communication is primarily one-way, such as major product or strategic initiative announcements that were broadcast to large numbers of people. These three objectives are similar for both traditional meetings and ICT-enabled meetings; however, our data suggest socializing is a fourth important objective for ICT-enabled meetings. Whereas socializing has long been part of traditional meetings (Nardi & Whitaker, 2002), it has typically been an implicit objective that was not obvious to many meeting participants. On the other hand, because ICT-enabled meetings that our respondents attended frequently lacked FTF contact, meeting participants explicitly included time for socializing during meetings or even scheduled meetings solely for the purpose of socializing. For example, one respondent described a meeting that appears on her electronic calendar one Friday a month. The purpose of the

meeting is to provide a "water cooler" opportunity for members of a team to connect and talk about whatever is on their minds. Team members are located on three continents, and several have never met FTF. The respondent said the conversation typically focuses on personal items, such as vacation plans, children's activities, and the like. The respondent noted that she and about half of the team's members usually attend the water cooler meeting every month, and enjoyed the opportunity to talk informally with one another. Interestingly, its scheduled time prevented team members residing in several locations in Asia from attending. The respondent thought Asia-based team members had their own water cooler meeting on a regular basis, but she wasn't certain. The social meetings were thus important for relationship building between at least a subset of the team members, in order to compensate for the lack of social bonding that commonly accompanies FTF interaction.

An interesting aspect of ICT-enabled meetings was that many of those we interviewed made explicit choices about whether or not to attend a meeting based on its purpose. This was facilitated by the frequent use of agendas, which were usually distributed as an email attachment before the meeting or posted to a team's web-based repository. Respondent 9 observed, "Agendas are sent out before the meeting so some people review the agenda and choose not to attend the meeting if they think that their item(s) may not get discussed." Selective attendance at meetings that appear on one's calendar certainly happens with traditional meetings, although we posit that it may be a more common occurrence today for two reasons. First, the addition of the agenda genre to the meeting genre system makes it easier for people make an informed decision about whether their attendance at a scheduled meeting is warranted. Second, the increased time spent in meetings (20 hours a week or more for 64% of our respondents) means that people will

frequently find themselves double-booked, so they must choose which meeting to attend. Similarly, since so much of one's workday is taken up with scheduled meetings, people may choose not to attend a meeting in order to have time to accomplish other responsibilities. People may also remain on a meeting list in order to receive the agenda and minutes and keep aware of progress and activities taking place on the project.

Content (what)

What happens during a meeting is obviously dependent, in part, on the purpose for the meeting. For example, a meeting whose explicit purpose is socializing may feature a team celebration with everyone eating the same food, even though they're in different geographic locations. One of the chief differences between traditional meetings and ICT-enabled meetings is that other than minutes, content is restricted to those who are physically present in one location. ICT makes it possible for many more individuals to participate in the meeting, and in so doing, affect what happens during the meeting.

The extent of involvement in what happens during a meeting is affected by whether any or all of the meeting participants are collocated. ICT technologies such as NetMeeting® enable those who are not physically present to have a visually shared workspace so that everyone can see what happens. Respondent 1 noted the problems when a meeting has both collocated and non-collocated participants: "Initially, we only used the phone bridge. Eventually, the group in [city] stopped using the whiteboard [to take notes], opened [a team collaboration tool], and then used a Word® document that everyone could see and document the ideas the group was generating."

The process of co-editing a document did not necessarily change depending on the location of participants. For example, Respondent 8 noted that he edited a document with another meeting participant observing and offering feedback. Rather than co-editing, he suggested that it's better to only have one person "control" the document at a time.

Sharing sensitive data (e.g., company confidential information) may differ between traditional and ICT-enabled meetings. Within a traditional meeting, content is distributed by hand or projected using PowerPoint®. Controlling distribution becomes more problematic when others must access the data from a shared drive or via an email attachment. Respondent 21 noted that he typically does not post documents related to strategic issues on the shared web-based repository because the information is too sensitive, preferring instead, to use a team collaboration tool. In contrast, Respondent 1 notes that he regularly used a shared drive to post information so that he can track who accesses the information or who posts information, saying: "They MUST use [shared workspace application] to effectively participate."

Participants (who)

Expectations about who participates in a meeting and their respective roles in the meeting encompass this dimension of the meeting genre system. In traditional meetings, one typically encounters a person who leads or facilitates the meeting (e.g., chair) and participants who are, at least theoretically, fully engaged in the meeting. A chair and full participants were also noted in our data, although two other categories of participation also emerged. What we label "partial participants" are those who "listen with one ear" and are not fully engaged in the meeting, most often because they are multi-tasking and working on other things such as checking email during

the meeting. A fourth category is "non participants" who are on a distribution list and have been invited to participate in the meeting, but after reviewing the agenda, decide not to attend this particular meeting.

Partial- and non-participation are enabled because the meeting genre system represented by our sample typically included both agenda and minute genres. This discipline provided meeting participants greater flexibility in deciding the extent and nature of their participation for any given meeting that appeared on their calendar. Respondent 1 noted that agendas were sometimes structured to facilitate active participation during a portion of the meeting: "They begin with product related updates, delivery schedules, customer's requirements, etc. immediately during the first 10 to 20 minutes, then people can leave if they're not interested in the rest of the items on the agenda."

While partial participation provided flexibility to some people, Respondent 8 noted: "The agenda for the meeting is usually shared in advance – it's attached to the meeting invitation. 25 people are on the invitee list but only about 10 or 12 usually attend," it also meant that some meeting chairs had problems garnering participation and attention. Respondent 8 continued: "Sometimes we have dry spells where there's a wane in participation or attendance. If something important is coming up, he'll [meeting chair] send a reminder via email, remind people about the agenda, and in general, encourage attendance."

Sometimes, meeting chairs actively try to encourage full participation in meetings by discouraging multi-tasking. "It's hard to multi-task in staff meetings because my manager will

call on you randomly to make sure you're paying attention, whether you're in the conference room or dialing in on the [audio] bridge." It was common for people to bring their laptops to meetings when they gathered in a conference room. Some meeting chairs enforced a "laptops down" mode during their meetings to force participants' attention to the task at hand rather than email, IM, etc. Having non-native English speakers in a meeting also enforced greater attention. " … the tone of the meeting changes when someone who isn't a native English speaker participates. There's less joking, less use of common phrases that don't translate well. It takes more energy to make sure people understand what's going on."

Form (how)

The form meetings take, or how the genre is enacted, is the next dimension. ICT-enabled meetings require telephones, audio bridges, and computer networks, as well as media used in traditional meetings when at least some of the participants are gathered in the same room. Qureshi and Zigurs (2001) noted that the use of ICT improved both FTF and technology-mediated meetings.

Many of the meetings described to us by those we interviewed could not have happened without ICT. ICTs are used to disseminate information before, during, and after the actual meeting. "Email is distributed mainly after meetings – we may share ideas between meetings. The electronic discussion may reach a level that the item will be added to next week's meeting" (Respondent 2). An ad hoc meeting may be set up in response to an email asking for clarification – the two parties may then open a team collaboration tool so that both have access to the same document to clarify open issues.

ICT, specifically IM and sometimes email, are used to create side conversations during meetings, the electronic version of whispering or passing notes. Sometime, these conversations are for matters related to the meeting at hand. One respondent noted that she did not attend a meeting that was on her calendar because of a schedule conflict. She received an IM from someone in the first meeting requesting information while she was attending the second meeting.   At other times, "side conversations are a problem in these meetings. If the meeting really disintegrates, then people will stop talking about the task" (Respondent 2). While side conversations happen at traditional meetings, participation is limited by physical proximity, e.g., talking to the person sitting next to you or passing a note to someone close. Such conversations are also limited by timing, e.g., conversations take place during breaks in formal meetings. Also, in traditional meetings, side conversations are usually visible (although they may not be noticed). But with ICT, these interactions are not visible to others in meetings.

Time (when)

The time dimension refers to expectations or perceptions about time. Meetings that were the subject of Mintzberg's (1973) study included participants that all met in the same location so there were no differences in time zones. Sometimes, participants in the meetings in our study were located across 12 or more time zones. This meant that many participants adjusted their working hours to include the very early morning or very late evening. In general, meeting participants were attuned to the time zone where TechCo's headquarters was located, and "minority" participants (e.g., those from other time zones), made the greatest schedule accommodations.

Interestingly, TechCo employees considered unplanned telephone calls intrusive. Respondent 9 noted, "The norm is to set people's expectations ahead of time [before a telephone meeting]. You schedule time on their calendar for a phone call so they can get the materials ready." Instead of impromptu telephone calls, TechCo employees used email or IM.

Those that we talked with had different perspectives on double-booking meetings. Some resisted scheduling meeting conflicts, and declined electronic invitations to attend a meeting if something was already scheduled during that time period. Respondent 4 was more typical. He was a manager whose administrative assistant worked in a different location, and he had a weekly telephone meeting scheduled with her to review his calendar. He preferred she include all meetings to which he was invited on his calendar, even if that meant double- or triple-booking his time, and waited until closer to the time of the scheduled meetings before deciding which was most important and required his active participation.

Respondents devised interesting mechanisms to manage their time because one's workday frequently intruded on time that was considered "personal." Respondent 6 noted that his wife also worked at TechCo so they made use of each other's calendars to schedule time commitments for family responsibilities. For example, before accepting a late evening meeting, he might check his wife's calendar to see if she were available to pick up the children, and if so, add that commitment to her schedule so he could attend the evening meeting.

Place (where)

As already noted, it was common for employees at TechCo to attend meetings with people residing in different geographic locations. The freedom that the telephone audio bridge provided in allowing employees to attend a meeting from anywhere – home, office, or conference room – also meant that sometimes people felt left out. Respondent 1 observed:

> When people are in the same room, as they often are in [location name], they take over the meeting – "[location name]-izing the meeting." They banter back and forth, and others not in the room have a hard time participating. If I don't step in and tell people to be quiet, I'd never be able to participate and get work done … People who work on major campuses [and attend meetings from a common conference room] have really poor meeting etiquette.

Human Resources personnel at TechCo recognized this as a common problem, and instituted a best practice that if everyone could not meet in the same room, everyone should join the meeting over the audio bridge. The intent of this was to "level the playing field" for all meeting participants, yet this recommendation was frequently ignored or unknown, according to the respondents we interviewed. Some meeting conveners so valued FTF interaction that they mandated meeting participants attend the meeting from a conference room if they were on the same campus.

Meeting Genre System Strategies

Meetings are a major device to facilitate efficient exchange of information among people (Huber, 1990) and to coordinate work activities and dependencies among people within the organization. As discussed in the previous section, employees of TechCo utilized many different forms of ICT during meetings not only to discuss work but also to accomplish work during the meetings. To

support and enable these meetings, the implementation of a company wide electronic calendar application played a major role and served as the foundation for the meeting genre system at TechCo. In fact, sharing calendar information was the means by which employees at TechCo achieved coordination and communication. Specifically, everyone in the company used the same electronic calendar application and kept their schedules online and accessible to others. This ability to view and access each other's calendars, making it easier to find meeting times that fit most people's schedules, has also been reported in many past studies as the major reason for the adoption and usage of electronic calendar applications in organizations (Mosier & Tammaro, 1997; Olson & Olson, 2003; Palen & Grudin, 2002). In addition, electronic calendar applications also support effective and efficient information dissemination and integration (Whittaker & Schwarz, 1999), which is essential to manage work dependencies with minimal interruption when meeting participants are geographically distributed. Hence, the electronic calendar application at TechCo is a vital tool for coordinating, scheduling, and communicating important logistical information to facilitate and support meetings.

The types of interaction evident in our analysis of knowledge workers' electronic calendars gave rise to strategies for dealing with busy work lives characterized by frequent meetings. Five types of interaction emerged from our data that we then mapped into two categories of strategies, group-oriented and self-oriented strategies. Group-oriented strategies were devised whenever a meeting required the active participation of the person we interviewed with others in the meeting. Self-oriented strategies were devised when the calendar entry required minimal or no participation by the person. ICT supported the emergence of these strategies, and the

technology in tandem with the strategy enabled workers to make what they thought was the most productive and effective use of their time.

Three types of interaction – managerial, team, and social – were associated with group-oriented strategies. Managerial interaction, meetings between a manager and her/his reports, required direct interaction, with engagement and participation by all parties. When these meetings were FTF, the purpose, content, participants, time, and location were not noticeably different from traditional meetings. The form of the meeting might be different, however, because even in FTF meetings, participants usually followed the company norm and brought their laptops to the meeting. In addition, sometimes managerial interaction meetings were held with one or more people in a different location, necessitating the use of ICT. The presence of laptops and/or use of ICT led managers to employ strategies to reduce multi-tasking such as cold-calls to assure that participants were paying attention or directing "laptops down" so that no one was tempted to use a computer for a purpose not directly associated with the meeting.

Meetings were classified as team interaction when the use of constituent genres within the meeting genre system demonstrated varied and complex interaction among meeting participants. One type of meeting in this category included those where participants resided in locations separated by many time zones. Meeting scheduling typically revolved around the same time zone as TechCo's headquarters, understandable since the majority of employees worked in several locations within this time zone. Still, this meant that employees in other time zones frequently set their clocks on headquarters' time zone, and accepted evening meetings (for those in Europe/Middle East) and pre-dawn meetings (for those in Asia) as "just the way it was." One

respondent in Europe/Middle East blocked the 6-8 p.m. slot every day on his calendar to allow time to travel home, have dinner, and put his children to bed. He then joined meetings via audio bridge, and when only his half-participation was required, and spent the late evening with a phone to his ear and the local football game muted on the television. The routine use of agendas shared in advance of meetings and minutes published following meetings facilitated similar half-participation in meetings, even when they intruded on non-work hours.

Other strategies were also evident among those who convened meetings that required more complex team interaction. Experienced meeting facilitators employed a round table discussion method, especially when participants were in different locations or spoke different first languages. This strategy involved explicitly asking each person participating in the meeting for feedback and questions, as one way to ensure that everyone was involved and had a common understanding of issues and decisions discussed during the meeting. Others relied on shared web repositories to maintain meeting and team histories when the volume of data was large, instead of using email and attached documents. Interestingly, the meeting facilitator or team leader preferred shared workspaces more often than meeting participants, who preferred email because they did not have to make a special effort to access the web site and search for the desired information.

Participants in team interaction meetings also developed strategies to manage their time and enhance their productivity. Instant Messaging was used with someone not attending the meeting to both ask and provide immediate answers to questions so that action items could move forward rather than be placed on to-do lists. It was also used between distributed participants who were

frustrated with behavior of meeting participants assembled in a conference room, such as when collocated participants referred to items written on a whiteboard that were not known to participants joining the meeting from other locations. Using IM, the distributed participants formed a minority coalition, which made it easier to interrupt the meeting and insist on a change in work practices, such as taking notes in a document visible to everyone through a team collaboration tool.

Calendar entries for meetings that were primarily for information dissemination required little or no interaction between meeting participants. Self-oriented strategies developed for this type of meeting included extensive multi-tasking during the meeting and occasionally, a decision to miss the meeting altogether because of more pressing demands on one's time. Checking one's email was a common multi-tasking activity, but occasionally people would attend two meetings at the same time by using two different telephones and make liberal use of the mute feature. In fact, some meetings that involved as many as several hundred participants were conducted using ICT that only permitted one-way interaction.

Finally, our analyses revealed the self-oriented strategy of blocking time on one's calendar for individual work time. This meant that anyone else trying to schedule a meeting during the block of time would see it as unavailable, and so would be more likely to look for another time to hold the meeting. Many respondents told us this was they only way they could assure themselves of quiet work time to prepare analyses or presentations.

Discussion

Meetings have long been a critical activity in contemporary work life. Organizational work increasingly occurs in teams, with participation in meetings becoming a core work activity. Using the device of genre system, an interrelated set of socially constructed communicative actions, we examined meetings from the perspective of knowledge workers at TechCo. Drawing on data gathered from interviews that used entries in the employees' electronic calendar system, we found that employees attend a large number of meetings (20% reported more than 25 meetings in a week) and spend significant time in meetings (27% reported more than 30 hours in a week in meetings). The majority of meetings included non-collocated participants and extensive use of ICT. Thus, it becomes clear that it is not just managers who were the subject of Mintzberg's (1973) ethnography who spend a large part of their workday in meetings. The genre repertoire of mid-level people is now more like that of senior managers. As the ranks of middle managers decrease, those who remain in the organization assume some of their boundary spanning responsibilities as represented by frequent attendance in meetings.

The meetings of those whom we interviewed are different along several dimensions that characterize a genre system from those Mintzberg's managers attended. The pervasive use of ICTs means that the form and structure of meetings are different – participants no longer have to be in the same location to attend a meeting. The flexibility to attend a meeting from whatever location is most convenient – be it home, office, or conference room – can mean time saved from reduced travel, but concurrently, savings in time dissipate because of an ever-increasing number of meetings to which knowledge workers are invited. The flexibility afforded employees to attend meetings from the location of their choice brings the expectation that employees will be

available to attend meetings whenever they are scheduled. This is especially notable for employees who live in places that are not in the same time zone as the majority of those with whom they work, and can mean frequent early morning or late evening meetings.

Meetings with non-collocated others also means a change in expectations about meeting participation. While daydreaming and side conversations invariably happens in traditional FTF meetings, the use of ICT has led to new forms of participation when people do not gather in the same room for a meeting. Team collaboration tools make it possible for people in different locations to view the same document, making active participation by everyone possible. Yet, being in a different location makes it easier for meeting participants to reduce their participation by multi-tasking, such as checking email or using IM to respond to a question from someone attending another meeting. Partial participation is also evident in the use of published meeting agendas and minutes as screening mechanisms. With open blocks of time increasingly scarce on one's calendar, people review agendas or minutes to help them decide whether they "have" to attend a given meeting, and if so, how engaged they need to be in the communicative interactions that take place during the meeting.

The implications of our findings can be conveyed by Isaac Newton's Third Law of Physics: for every action, there is an equal and opposite reaction. Just as ICT enable people to attend increasing numbers of meetings with greater ease, so too do ICT enable people to disengage from the collaboratory activities that are the raison d'etre for meetings. When meeting facilitators insist on practices such as "laptops down" and other devices to encourage active participation in the conduct of a meeting, they restrict attendees' ability to support the

information needs of other colleagues who may be concurrently attending other meetings. In addition, employees may feel compelled to choose not to attend a meeting at all if their half participation is not allowed, depriving colleagues the opportunity for any collaborative interaction.

Conclusion

Employees of TechCo utilized many different forms of ICT during meetings not only to discuss work but also to accomplish work during the meetings. To support and enable these meetings, the implementation of a company wide electronic calendar application played a major role and served as the foundation for the meeting genre system at the company. The types of interaction evident in our qualitative analysss of knowledge workers' electronic calendars gave rise to strategies for dealing with busy work lives characterized by frequent meetings. Five types of interaction emerged from our data that we then mapped into two categories of strategies, group-oriented and self-oriented strategies. Group-oriented strategies were devised whenever a meeting required the active participation of the person we interviewed with others in the meeting. Self-oriented strategies were devised when the calendar entry required minimal or no participation by the person. ICT supported the emergence of these strategies, and the technology in tandem with the strategy enabled workers to make what they thought was the most productive and effective use of their time.

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Table 1. Demographics Profile of the Interview Respondents

Function	Number	Percent
Sales & Marketing	10	33
Information Technology[1]	7	23
Engineering	6	20
Human Resource	2	7
Others	5	17
Location		
United States of America[2]		
State #1	9	30
State #2	8	27
State #3	1	3
State #4	2	7
State #5	1	3
Asia		
Country #1	1	3
Country #2	1	3
Country #3	1	3
Europe/Middle East		
Country #4	2	7
Country #5	2	7
Country #6	2	7
Years with organization		
1 to 5	9	30
6 to 10	8	27
11 to 14	3	10
More than 15	9	30
Unknown	1	3
Number of meetings in a week		
1 to 5	2	7
6 to 10	2	7
11 to 15	6	20
16 to 20	7	23
21 to 25	6	20
26 to 30	6	20
More than 30	1	3

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[1] Respondents in the IT function supported operations in other functional areas (e.g., manufacturing, sales) as well as internal IT operations (e.g., strategy).
[2] The 5 states were located across 3 time zones.

Table 2 Meeting Characteristics

Breakdown by Meetings N = 524 meetings						
ICT used during meetings	Audio Bridge	Team Collaboration Tool	Telephone	E-mail	Shared Workspace	Instant Messaging	Others
Count (%)	221(42)	179(34)	102(19)	60(11)	61(12)	22(4)	48(9)
Meeting Size	2	3 to 5	6 to 9	10 to 14	> 15	Unknown	
Count (%)	174(33)	77(15)	77(15)	50(10)	54(10)	92(18)	
Amount of FTF	No FTF *(Non co-located only)*	Some FTF *(Non co-located & co-located)*	Only FTF *(Co-located only)*	Unknown			
Count (%)	305(58)	63(12)	101(19)	55(11)			
Meeting Objectives	Collaboration	Management	Information Dissemination	Social			
Count (%)	399(76)	79(15)	41(8)	5(1)			

Breakdown by Respondents N = 30 respondents						
No. of meetings in a week per respondent	1 to 5	6 to 10	11 to 15	16 to 20	21 to 25	26 to 30	Unknown
Count (%)	2(7)	2(7)	6(20)	7(23)	6(20)	6(20)	1(3)
No. of meeting hours in a week per respondent	0 to 5	6 to 10	11 to 15	16 to 20	21 to 25	26 to 30	More than 30
Count (%)	2(7)	0	2(7)	7(23)	6(20)	5(17)	8(27)
No. of different teams in a week per respondent	1	2 to 3	4 to 5	6 to 7	8 to 9	>10	
Count (%)	1(3)	5(17)	15(50)	6(20)	3(10)	0	
Percentage meetings with peripheral membership* in a week per respondent	<20%	20-40%	40-60%	60-80%	>80%		
Count (%)	16(53)	11(37)	2(7)	1(3)	0		
Percentage meetings with integral membership*	<20%	20-40%	40-60%	60-80%	>80%		

in a week per respondent							
Count (%)	0	1(3)	2(7)	11(37)	16(53)		

* Peripheral membership refers to those who only attended a portion of the meeting, "half-participated" (e.g., respondent reported significant time spent multi-tasking during meeting), or reviewed agenda and/or minutes and then decided not to attend the meeting. Integral membership refers to active participation during most of the meeting.