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Contemporary calendar management: Exploring the intersections of groupware and personal calendars**

Individuals create spatial, temporal, and psychological boundaries to maintain personal role preferences. We analyze semi-structured interviews with 22 working professionals to study how employees manage their electronic calendars to achieve their boundary management preferences. We explore the patterns and tensions in calendar practices, including the processes people use to manage their boundaries and the factors that influence how employees use groupware calendars. The results show that in addition to the classic boundary management preferences for segmentation and integration, individuals also have preferences for keeping group calendar information public or private. We also find that personal boundary management preferences are constrained by organizational systems and norms about calendar use. Key factors in individuals' calendar structures are the technological affordances of visuality, synchronization, and proactivity. Boundary breaches highlight problems with the use of taken-for-granted technologies and spur individuals to develop new processes to work around organizational policies or expectations that do not fit with individual preferences. The study expands boundary management theories by introducing the concept of public and private information.

Key words: **boundary management, electronic calendars, affordances, time**
(JEL: M10, M12, M15)

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1. Introduction

Boundary theory explores how individuals create and maintain boundaries as a means of simplifying and ordering their environment (Ashforth, Kreiner, & Fugate, 2000). Based on people's individual preferences for integration and segmentation, they may establish 'weak' or 'strong' boundaries between their work and personal domains (Nippert-Eng, 1996b). Research has found that technologies such as mobile phones, email, voicemail, PDAs, and pagers can be a useful tool for boundary management (Boswell & Olson-Buchanan, 2007; Fenner & Renn, 2009). Contemporary 'groupware' calendars such as Microsoft Outlook allow employees constant accessibility, as well as the capability to synchronize calendar data across their calendars and to share calendar data with others.

However, technological affordances such as synchronization and sharing have changed the landscape of calendaring in paradoxical ways. In the case of groupware, users have access to increased integration capabilities, which can give them a greater sense of control; but using such integration can make them more vulnerable to others' time demands because of the shared and public nature of groupware calendars. Managing this increased permeability requires effort and forethought, and may sometimes result in boundary violations when employees are not able to maintain their desired level of boundary management. We suggest that the embedded structures of groupware tools can affect social systems and individual time management processes (Lee, 2003; Palen, 1999; Van den Hooff, 2004, Payne, 1993), shaping people's boundary management capabilities.

Our qualitative study analyzes interview data from 22 US business professionals regarding use of their organization's electronic calendar systems. We investigate how electronic calendars are used as a boundary management tool through two research questions: (1) what processes do people use to manage their boundaries given the wide array of calendars available? and (2) what factors influence how employees use groupware calendars? The justification for these questions will be explained below.

The paper is organized in six sections. Following this first introductory section, section 2 reviews current research on boundary management, technology, and electronic calendars to demonstrate the relevance of and linkages between boundary management concepts and individuals' groupware calendar management strategies. Section 3 describes our research objectives, methods, and data collection. Results are discussed in section 4, section 5 offers a discussion of the implications, and section 6 offers directions for future boundary management research and a conclusion.

2. Theoretical background

2.1 Boundary management

Boundary management theory is the foundation of work family research that attempts to explain how and why workers establish temporal and spatial boundaries between their roles. According to this model, people do proactive boundary work to create and maintain their desired psychological, physical, or behavioral boundaries to separate and categorize their various roles and life domains (Ashforth et al., 2000; Kossek, Noe, & DeMarr, 1999; Nippert-Eng, 1996b). The permeability of boundaries can vary

along a continuum from strong boundaries, which create strict divisions between life roles, to weak boundaries, which allow more blending and blurring of the divisions between roles. People tend to have a preference for stronger or weaker boundaries, and adopt corresponding strategies which vary on the continuum of *segmentation* to *integration* (Kossek et al., 1999; Rothbard, Phillips, & Dumas, 2005).

Empirical research has demonstrated a number of strategies employees can use to establish and maintain boundaries between their work and family roles (Kreiner, Hollensbe, & Sheep, 2009; Moen, Lam, Ammons, & Kelly, 2013; Fonner & Stache, 2012). For example, professionals may develop strategies of consciously prioritizing non-work demands for family, health, and leisure above job demands, or use "triage" (Kreiner, Hollensbe, & Sheep, 2009) to determine which tasks really need to be done. Physical tactics include erecting physical borders or creating physical distance between work and home domains. For example, seminal research by Nippert-Eng (1996a) highlights how physical objects such as calendars, keys, and photos can be used to help separate domains. Temporal strategies of controlling, limiting, and blocking out designated times for activities can help plan when work, family, and leisure activities will be done. Technologies such as email, voicemail, and caller ID can be used for both segmentation (such as turning off computers and cellphones when at home) and integration (such as checking work voicemail or email from home). These strategies can be used to maintain boundaries and also to cue role changes as people cross the boundaries of their domains (Fonner & Stache, 2012). The present study investigates the last two categories of strategies – temporal and technological – and the role of calendars as boundary objects.

While employees have preferences for boundary management, they may not be completely free to set their desired boundaries. External factors such as the social environment and work-family climate of the workplace can interfere with an employee's ability to manage their boundaries to suit their preferences (Kossek & Lautsch, 2012; Mennino, Rubin, & Brayfield, 2005). Organizations may offer resources that support boundary management such as time off for family responsibilities and a supportive work-family culture (Voydanoff, 2005), which can allow employees more control of their boundary management (Kossek & Lautsch, 2012). However, the segmentation norms of the organization may differ from the individual's preferences (Park, Fritz, & Jex, 2011), thereby constraining personal choice.

Empirical research has found that when individuals can enact boundary management practices that align with their preferences, they experience lower stress and greater well-being (Edwards & Rothbard, 1999; Fonner & Stache, 2012; Kossek & Lautsch, 2012). Kreiner (2006) has found that the interaction between an employee's boundary management preferences and the perceived level of integration and segmentation provided by the workplace can affect work-home conflict, stress, and job satisfaction. Similarly, Chen, Powell, and Greenhaus (2009) found that when employee's preferences for work-to-family segmentation were met, they experienced less time-based and strain-based conflict.

2.2 Technology and boundary management

Technology can be a great resource for boundary management and boundary spanning. For example, Mazmanian et al.'s study of professionals' use of mobile email found that the technology allowed continual connection, and that the asynchronicity of mobile email communication allowed strategies of 'buffered availability' and 'temporal distancing': users could have the benefits of keeping up-to-date and checking in, but could also choose which emails to respond to (and when) (Mazmanian, Orlikowski, & Yates, 2013). In their study of personal digital assistants (PDAs), Golden and Geisler (2007) report that people use their devices to block off time for work and limit time for specific tasks. They also protected private time by recording personal events on their PDA, as a way to ensure that work events do not completely take over their calendar.

However, the ability to be constantly connected can complicate boundary management, creating an 'autonomy paradox'(Mazmanian et al, 2013) because it blurs the physical boundaries that historically separated work from personal life (Clark, 2000; Glavin & Schieman, 2011). Employees are now connected and available for work at all times (Matusik & Mickel, 2011; Perlow, 2012). Fenner and Renn (2009) report that 'technology-assisted supplemental work' (i.e., using communication technologies to work from home) was directly and positively related to work-to-family conflict. Boswell and Olson-Buchanan (2007) found that use of communication technology after work hours increased work-family conflict, as reported by both the employee and their significant other. They suggest that employees may choose to use communication technologies after hours to stay on top of their work, underestimating the significant toll it can take on their personal lives.

2.3 Electronic calendars and groupware

Electronic calendars implemented by the organization are a common component of software known as 'groupware'. Their major function is to allow sharing of scheduling information across workgroups to achieve social coordination (Grudin, 1994; Palen, 1999; Van den Hooff, 2004). Groupware calendars are naturally positioned at the intersection of role boundaries and can be viewed on both work and personal devices. Employees' calendar management practices can offer insight on the boundary management of work and personal roles because people may be using their workplace groupware calendars, explicitly designed as *group* coordination tools, to manage their *personal* calendars. Using these calendars, people may invest active forethought to develop customized or 'idiosyncratic' (Ashforth et al., 2000) boundaries which are not fully institutionalized by work policies or social norms.

The mechanism of customization can be understood by considering calendar affordances. Affordances are broadly defined as the possibilities for action provided to the individual by the environment (Gibson, 1979). When individuals look at an object, they perceive the affordances it provides to them in their particular context, not the object's substantive qualities; thus, the same technology can be appropriated in different ways by different users (Hutchby, 2001). In organizational technology research, the concept of affordance focuses on how the materiality of an object can shape, in-

vite, and constrain a set of specific uses (Markus & Silver, 2008; Orlikowski, 2007; Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007).

Major affordances of electronic calendars are synchronization and portability, which ensure that the right data is available at the right time (Sell, 2008). Synchronization allows users to keep multiple calendars up to date, and portability allows multiplatform access. For groupware calendars in particular, the ability to see others' availability and to schedule meetings are important affordances.

Yet, the public nature of groupware also has some challenges. Blandford and Green (2001) note that shared calendars force people to form intentions earlier than they would naturally choose, so that time management becomes a more explicit and demanding activity. Another problem is 'free-riding': people can use the shared information on the calendar without contributing any information for collective use (Van den Hooff, 2004), making it difficult to compile timely and relevant group information (Lee, 2003). For example, Grudin (1994) found that periods marked as 'free time' on employee's calendars were not truly 'free', and that availability still had to be checked with the person.

To cope with the 'free riding' problem, IT researchers advise organizations to encourage broad and systematic use of electronic calendars, and that employees should make their calendars open to all in the network. Such advice overlooks the challenges related to privacy and boundary management, which can prompt people to avoid or limit shared calendar use. Palen (1999) argues that privacy issues in groupware can stem from both information and time-based content. For example, information may be personally private (such as a medical appointment), socially sensitive (such as an internal job interview), or strategically sensitive for the business (such as a proprietary meeting with a business partner). These kinds of appointments may be awkward to fully reveal on one's calendars. Full sharing of calendar information also exposes employees to peer judgment about their time use and allocation, and some may feel that they are relinquishing control of access to the self (Palen, 1999).

3. Specific research objectives and methods

While technology has been hailed as a great resource for boundary management, little research has focused on the methods employees use to manage boundaries on groupware calendars. Recent research on calendars and groupware comes from the information systems domain (i.e., Blandford & Green, 2001; Hayes, 2000; Lee, 2003; Sell, 2006; Van den Hooff, 2004), and has not yet incorporated boundary management concepts. Our objective is to apply boundary management ideas to groupware calendar use, to explain the strategies employees use to manage their work and personal calendars and how personal, social, and technological forces shape time management practices.

Our work extends the discussion of boundary management by examining how individuals plan to manage boundaries. Our research questions are: (1) what processes do people use to manage their boundaries given the wide array of calendars available?; and (2) what factors influence how employees use groupware calendars?

3.1 Methods, sample, and data collection

We collected interview data regarding calendar use from 22 participants located in the U.S. in Boston and Detroit. We conducted a qualitative study involving a range of employees and organizations because we wanted to understand the range of methods people use, and particularly the processes they had created to manage their calendar data. We recruited participants and conducted interviews until we reached saturation regarding calendar management practices in relation to boundary management. To ensure our participants would have at least a minimum need for calendar management and prospective planning, we recruited current graduate students and recent graduates of our universities' masters' degree programs. Sample criteria also included working in paid employment at least 20 hours a week and having access to organizational groupware; self-employed participants were excluded.

The sample was 59% female, and ranged in age from 23 to 61 years (average = 34 years). Specific brackets were ages 21 to 25 ($n = 4$), 26 to 30 ($n = 4$), 31 to 35 ($n = 6$), 36 to 40 ($n = 3$), 41 to 45 ($n = 2$), 46 to 50 ($n = 2$), and 60+ ($n = 1$). Our sample included engineers, financial analysts, market researchers, research scientists, human resource professionals, teachers, software developers, and operations supervisors. Eight of the participants were in managerial roles.

Participants were asked to bring their calendars to talk the researchers through their personal ways of organizing time. We anticipated unique narrative descriptions for each participant's processes. Our interviews were semi-structured, addressing the tools people use to keep track of time, how they are used, and their levels of time stress at work and home. We also allowed for open responses and longer descriptions, as participants often explained how their special circumstances lead to particular systems and modifications. Interviews averaged 45 minutes, with a range of 28 to 75 minutes; in total we had 16.5 hours of recorded interviews. Participants were given a $25 gift card following their interview to thank them for their time.

Interviews were professionally transcribed and coded by both researchers following guidelines from Miles and Huberman (1994). We coded in several stages, starting with descriptive coding, then moving to interpretive coding. For descriptive coding, we did line-by-line inductive open coding for major categories of information to classify the content, creating broad codes such as paper calendars, electronic calendars, memory, calendar failures, time stress at work, and time stress at home.

We had coding discussions to clarify interpretations of the transcripts. In an iterative process, we returned to the transcripts to code, and then further discussed our findings to develop interpretive codes such as: agency, privacy, trust, dependency, and confusion. This round of coding was analyzed and compared across cases, and was intended to characterize themes seen throughout the whole set of interviews. In our final coding process we treated each participant as a case, reading each transcript to describe that individual's time keeping process. We felt this was consistent with the concepts of affordance and agency, to explain how each participant had individually appropriated and constructed their calendar system. We present results showing the broad conceptual terms we found in our data and illustrating with specific examples.

4. Results

4.1 Boundary management processes

Our first research question asked what processes people used to manage their boundaries. As expected, our participants described highly individual and personal calendar management practices, but they shared a common theme that prioritized accessibility and reliability – designing personal systems that allowed them to access the calendar information they wanted, whenever and wherever it was most suitable to them. Some had constant access to calendar data though their smartphones, while others had intentional limitations on when and how they could get certain information to support boundary management across their various roles.

Calendar structures showed complex patterns of both segmentation and integration. We determined integration and segmentation by assessing the number of calendars an individual uses: segmentation is indicated by multiple calendars, while integration is indicated by a single calendar (Nippert-Eng, 1996a). Our findings suggest that the continuum of boundary management, which has traditionally been a single dimension ranging from segmentation to integration, does not fully capture the nuances of contemporary boundary management. We see an additional continuum of public/private, reflecting participants' level of sharing or protection of role information on their calendars. This continuum ranges from keeping whole roles private, to masking specific events, to sharing all information. The public/private dimension provides a refined view to explain how our participants developed and used their suite of calendaring tools, giving us four basic types of calendar boundary management strategies. Although we discuss them as four distinct quadrants, both dimensions are continua and people can fall anywhere on the dimension (from low to high). Figure 1 displays the two dimensions of our model with frequencies from our current study. We describe and explain each approach below, illustrating each approach with one participant from our sample.

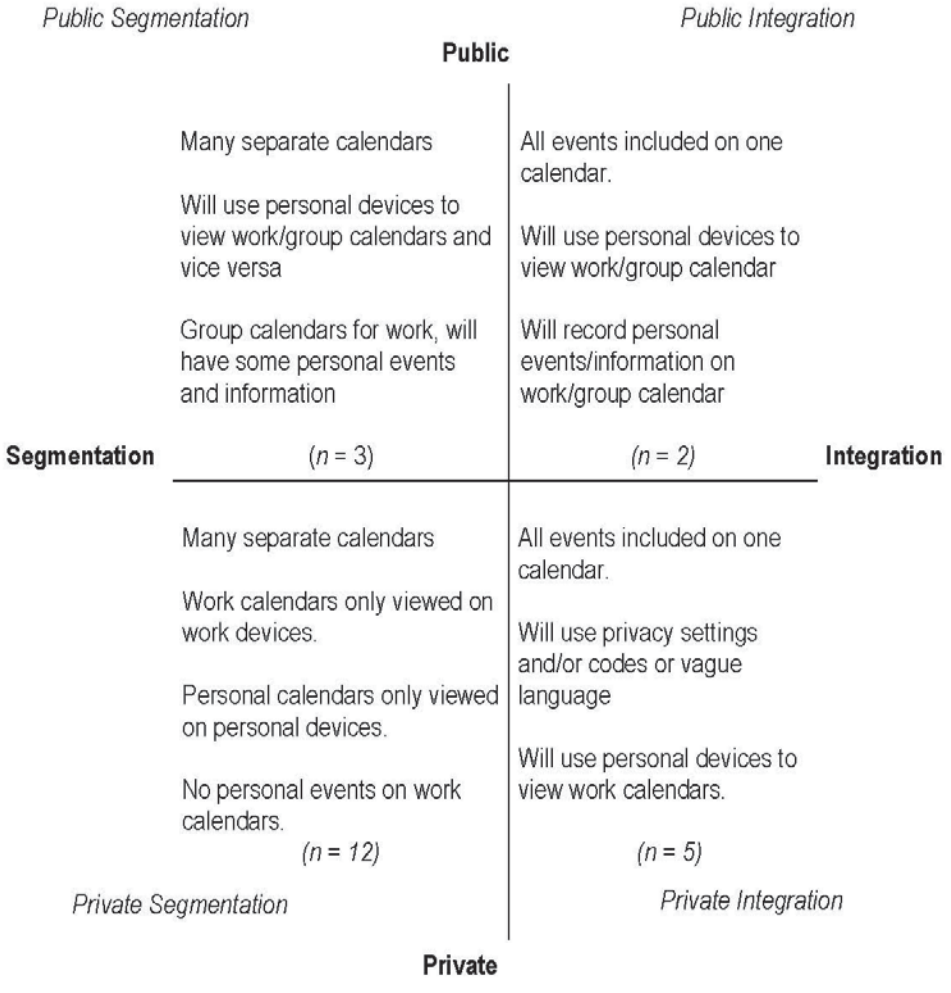
The first strategy (shown in the upper left quadrant) is *public segmentation*. People using this strategy have many separate calendars which may be viewed from one or multiple devices, and their group calendars may include some private events and information. Electronic calendars enable segmentors to keep their various roles separate on different calendars, but accessible on one device. For example, a 23-year old woman in our study has multiple personal calendars and uses a shared Microsoft Outlook calendar at work. Her quote below highlights the affordance of control of her electronic calendar:

> "That's why I have a work calendar. I have a class calendar. I have a 'going out' calendar. I have a vacation calendar. I have, you know, all these different calendars that you can turn on and off if you click on them. And then, depending on a certain calendar, you can choose to share that calendar with somebody."

While it is possible to access her work calendar from her personal devices, she rarely does so on nights and weekends, preferring to explicitly 'turn off' from work. She duplicates work events on both her personal and work calendars when work commitments may infringe on personal time. She records personal events on her work calendar if they occur during work hours, but will record them simply as 'busy' without

much detail. She notes that her boss has occasionally asked what she is doing when she has blocked off time on the work calendar. She also shares her personal calendar with her boyfriend through automatic synching. Her key boundary management challenges are related to calendar segmentation. She has many events with reminders recorded on a range of calendars, which can cause confusion from too many alerts.

Figure 1: Calendar choices and personal preferences



The second category is *public integration* (displayed in top right of figure). People following this strategy have all events on a single calendar, and will use personal devices to view and manage their work/group calendar. Personal events will be recorded on their work/group calendar. We illustrate with the example of a 41-year-old male participant. He reported tremendous time pressure at work and a busy home life, which he manages by keeping everything automatically synched onto one calendar. He in-

tends to mark personal events as 'private' on his work calendar, but he sometimes forgets; he does not mind if his colleagues know that he is busy at his children's soccer or baseball game. He feels that having everything together in one calendar enables him to plan his roles by visually seeing all his personal and work events together. He syncs his work calendar with his wife's calendar so that his work and family commitments are all available in one place, and his wife is aware of his work schedule.

Overall he feels that organizing his time and coordinating with others is simplified by the use of group calendars and automatic synching. However, he also expressed some frustration because the public nature of his work calendar makes it more difficult to guard and control his time: 'open' time on his schedule is liable to be filled by others, and others may delete or modify events on his calendar when they are scheduling group meetings. He explains: "You can look at what my time is and pick a time that you can work with me, and then you're constantly doing that instead of just […] calling somebody and saying, 'Hey, [are you] busy? Can I talk to you?' And saying, 'No, I am busy, so I can't talk to you." To counter the reliability problem that happens when others delete and modify events, he keeps multiple copies of meetings in his calendar to retain a version with the information he needs.

The third type of boundary management is *private* integration (displayed in the bottom right of the figure), characterized by storing events on one calendar and using privacy settings or vague language to keep personal information private. Our illustration comes from a 32-year-old female who keeps only one calendar, which is the shared group calendar for work. Because of her organization's technology policies, she is not allowed to access the calendar via her personal smartphone; it can only be accessed on her work laptop. She enters personal events on the work calendar, including after-hours events, to show that she is unavailable. She does so because her job entails flexible hours, and others could hypothetically try to schedule a meeting at 6PM. She uses vague and cryptic descriptors to maintain privacy, which is why we describe her calendar management as a private integrator. She noted that in previous jobs she had not used the group calendar privacy features. However, she explained a specific event in her current job that led her to start keeping certain information private on the group calendar:

> "But my boss, he looks at my calendar every day. Like one time I put 'take antibiotics at 1 o'clock' [on my calendar] and he asked me why I was taking antibiotics. But that's how much I use the calendar, like I didn't want to forget to take the antibiotics every 24 hours. He looks at my calendar for sure, like he'll look and see who I went to lunch with and then make a comment about it, which you can only see if you physically open [the appointment] up and see who is on there."

Contrasting the boundary management strategies of public and private integration highlights some of the underlying motivations for these strategies. The 41-year-old male participant did not mind having his private roles visible to his colleagues because it made it easier for him to coordinate his home and professional roles. In contrast, the female participant above felt that her current boss was gaining too much access into her personal life and roles. She had recently changed her calendar practices, taking steps to use more cryptic event identifiers to obscure the details available to others. She shared an example of an after-work happy hour she was attending that she had

'disguised' as a meeting; she did the same practice with facial and manicure appointments. These differences highlight the level of control over determining who is able to see calendar information on shared calendars. As more organizations adopt shared calendars and requirements to use them, separating public and private roles becomes more complicated.

Some participants were required to use their organizational calendar to keep their schedules visible for others, most often in association with setting up meetings. Electronic meeting request processes were widely used, with the expectation that one would check co-workers' calendars to find a compatible time before setting a meeting time. As one participant explained, co-workers who did not check others' calendars first were considered 'rude'. The prevalence of organizational groupware calendars may help to explain why the majority (n = 12), of our participants fell into the fourth category of calendar management boundary strategies in the bottom left segment of the table: *private segmentors*. The participants in this quadrant described a wide array a calendar management processes to protect their private roles. In four cases, segmentation was not a choice, but a result of organizational policies that prevented them from accessing their organizational calendars on personal devices.

In this strategy people have separate calendars, and they view them only on specific devices: work calendars are viewed only on work devices, and personal calendars only on personal devices. Participants described role management techniques that aimed for complete private segmentation, but we did find examples of events or appointments that might cross boundaries, such as a work event that crosses into personal time recorded on a home calendar or a personal event occurring during work time (such as a doctor's appointment) recorded on a work calendar. Only one of our participants, a 33-year old female, has total separation of her work and personal calendars. The shared group calendar that she uses at work is not synced with her personal Gmail calendar. While she can open her personal calendar on her work computer through Gmail, she sometimes carries two laptops to keep them separate:

> "So, I remember when I went [to the airport], the first time, I was carrying two laptops, one was my personal laptop and one was this laptop. The security clearance asked, "Why are you carrying two laptops?" That was a dumb thing to do, you know. I probably shouldn't have carried my personal laptop."

She does not enter personal events on her work calendar. While she is aware that events can be recorded as private, she does not trust the security settings. She explains that she does not personally 'own' her work-supplied computer, and knows it can be taken away at any point. Many of the systems employed by this participant were designed to maintain control over her calendar.

In general, participants described a balance of public/private that fits with their role management needs, organizational policies, and technological affordances. The majority of our participants described calendar management processes that placed them in the segmenting strategy, trying to keep their private roles private.

4.2 Factors influencing groupware calendar usage

Our second research question asked what factors influence how employees use organizational groupware systems. The main factors we identified were related to their organization's policies and to the affordances of their calendar technology.

First, our participants had personal preferences on how to keep their calendars, but their preferences were constrained by some organizational rules and policies. For example, the most common constraint occurred for employees who would have liked to synchronize their work and personal calendars (an integration strategy), but were prohibited due to their organization's technology policy or by the extra costs associated with syncing. As a matter of security, some companies limit electronic access to the corporate server to employees above a certain pay grade; and cell phone companies may charge an extra fee for the data plan for people to connect to enterprise systems. As a 37-year-old male explains, "The only reason I don't have my work [calendar] on my phone is because I didn't want to pay the extra money, but it would be really nice to have. I didn't want to pay more to do more work."

Organizational policies are difficult to tailor to individual preferences, however we found that most of our participants would like to have some choice to integrate their personal and organizational calendar technology. Technology made it possible for segmentors to develop work-arounds to keep their roles separate, but integrators could not create work-arounds for organizational policies that prohibit the access of organizational calendars from personal devices.

Second, we found three themes related to the affordances of calendars that shaped whether and how people adopted them. The first affordance is *synchronization capabilities*, or the ability to automatically update information across a range of calendars and/or devices by entering it into only one device. Automatic synchronization is only available with electronic calendars, and our participants who used electronic calendars often mentioned this affordance to link their work calendar on their personal smartphones. As this 37-year old male participant says, "I've gotten rid of some other email accounts that don't allow me to synch [my calendar data], just to manage it a little easier. If I only have one or two accounts, it is a big positive for me. It really helps."

Some participants synchronized their electronic calendar manually by sending emails and invitations to their various calendars, while others had an automated process. Synchronization not only allowed participants to share information across a range of personal devices and calendars, it could also be used to share information with others. Calendar preferences could be set to automatically update with a linked spouse's electronic calendar, or with a colleague linked on a team calendar. Synchronization can support boundary management, whether the individual is a segmentor or integrator; basic calendar structures may be blended or separated, and information can easily be duplicated where required.

The second affordance is *visuality*, referring to the visual format of the display and electronic calendars. Participants were particular about having the right display – monthly, weekly, or daily, supporting individual conceptions of time. For example, a 32-year-old female prefers a weekly view, and notes a distinction between a 5-day view

and a 7-day view: "… So this is just a 7-day view in a different format. I prefer to look at it with my meetings, like how long they are and stuff. I don't like this [7-day] view, so I usually look at the 5-day view."

Some participants had different calendar views for personal and work calendars which supported differentiated approaches to time, and further enabled boundary management. For example, a 28-year old female participant explains:

> "I love looking at my personal life this way [monthly], but at work, I cannot stand looking at it any other way except a day. I cannot stand it. I see people on their computers looking at it in a week format and it doesn't even make sense to me visually. It's overload if I have more than one day."

Visuality features can support both segmentors and integrators, as calendars can be viewed in any way the individual prefers. However, electronic calendar technology still has limits in this area, as we discovered when participants described calendars they had tried and abandoned. The reasons they gave often related to visuality. For example a 32-year old male tried using an online calendar but couldn't get the display he liked, so he dropped it. Visuality was often the reason given for not using the calendars on cell phones – seen as too 'cumbersome' because the screen display is too small, making it more difficult to enter the appointments.

The third affordance of calendars is *proactivity*, referring to the calendar's ability to actively remind users. Highly proactive systems have 'push' alerts and reminders to tell participants of upcoming appointments and tasks; low proactive systems have no automatic alerts. Many participants reported heavy reliance on alerts, saying that they would not do anything until the alert went off: "If there's a meeting scheduled without a reminder, I'm very likely to miss the meeting" [Male, age 37], and "I don't know I have a meeting unless my alert goes off" [Female, age 23]. As one participant said, he never needs to look at his calendar "because I know that the alert is going to beep when I really need it to" [Male, age 31]. Participants used alerts for both appointments and tasks that had specific due dates, and alerts were more commonly used for the work domain. Some said that they 'snooze' the alerts so that they keep going off until the task is completed, while others immediately close the alert once it has been received.

Participants tend to rely on the default alerts in Microsoft Outlook, set for fifteen minutes prior to the appointment, but some customized the alerts to match the particular appointment or their own particular system. An example of a custom system comes from a 31-year-old male participant who worked the midnight shift. He made two reminders for all of his appointments – 24 hours prior and one hour prior to the appointment. He had multiple synched Apple devices (iPhone, iPad, laptop), so he would receive the same reminder across all his devices – everything beeping at the same time. As he explains:

> "I don't like to enter an event without putting any alert on it because I know that I'll forget about it because I've just have too much going on, and I'm so tired all the time. That's why I enter two alerts, always, and I always enter it one day before and one hour before. I don't deviate from that because I know, then tomorrow, and then I know one hour right before."

Some participants expressed ambivalence about alerts, finding them to be useful productivity tools but also having concerns about over-reliance on them. Comments include that "it can think for me" [Female, age 23], but that it makes us "lazy" because we don't have to remember anything [Female, age 33]. Further it can lead to procrastination since "no actions are taken until you get prompted to do so" [Male, age 37]. Only a few reported preferring to not use any electronic reminders, due to their distraction factor. When this 26-year old male was asked if he gets reminders on his mobile phone, he explains:

> "No, I don't. And actually, I had a Blackberry before I got this phone. I had access to email all the time. I had my Facebook account on there and all of those different things, and for me, it was just information overload. It was going off too much. There was too much...beeping now for this, and beeping then for something else, because my calendar was linked to my Facebook events and my Gmail account. If there was a date or something in there, it would automatically pick it up and then remind me.
>
> Interviewer: And the audible beeps annoyed you?
> Interviewee: Exactly. And so I purposely downgraded my phone [to give up synchronization capability] because I didn't want that."

Participants see the automatic alert feature as a double-edged sword. On the positive side, they use it to 'think for them' and remind them at the appropriate time; yet, on the negative side, by their very nature alerts are a distraction that will pull them away from whatever they are presently working on. This can be difficult to manage, as this 50 year-old male participant explains:

> "With technology you still have to decide who's in control, you or the phone. You can't really do great quality work if you're constantly in a state of interruption or potential interruption. That's what the down side of it is, and it seems like very few people I know can turn the thing off and protect themselves against being interrupted."

Participants with low proactive systems used more passive systems to prioritize and remember items, such as paper notebooks and post-it notes. Some even used their email inbox as a holding place, applying stars to items that they needed to remember. These kinds of systems are passive because the participant has to remember to look at them, in contrast to an automatic reminder that goes off like an alarm clock. Indeed some participants noted examples of various systems they had tried for remembering their tasks that had not worked out because they had not developed the habit of using them.

5. Discussion

Our study focuses on the role of electronic calendars in boundary management, extending our understanding of the segmentation/integration continuum (Nippert-Eng, 1996a). In classic boundary management terms, segmentation via multiple calendars allows psychological differentiation of roles by both format and location – e.g., leaving 'work' calendars at work and 'home' calendars at home (Nippert-Eng, 1996a). Individuals develop personal strategies based on their preferences for segmentation and integration, the technological capabilities of their groupware system, and organizational policies which may require or prohibit calendar practices. We found that electronic calendars both enhance and complicate boundary work. Multiple calendars may be developed for each role, and can be saved and viewed on one device. Thus, calendars

are available when and where they are required, but alerts for work or home events may overlap role boundaries. Further, with group calendars others may be privy to calendar appointments. Together these can result in boundary violations and role confusion. Ironically, individuals may only become cognizant of their boundary management preferences when those preferences are breached.

We found that participants' calendar architecture and practices were dynamic, evolving as their personal and organizational situations changed. This contrasts with the general understanding of technology adoption that users have a short window of time to adapt to and use functionalities of new technology before their usage patterns become fixed (Tyre and Orlikowski, 1994). It seems that people are constantly in flux with their boundary management techniques, as so many of the contemporary tools available to them are shaped and influenced by external constraints.

In defining the boundary work, Nippert-Eng (1996b) used the terms 'home' and 'private' interchangeably, as if to suggest that 'home' equates with 'private' (and, similarly, that 'work' equates with 'public'). Our findings challenge the conflations of home=private and work=public. Instead we find that participants' public and private roles permeate across both work and home domains, facilitated by contemporary calendaring technology. Our addition of the public/private dimension helps illustrate how people manage boundaries using networked (i.e., shared) tools. The main point is that people consider some personal roles to be public – for example, placing a child's school performance on the group calendar, which reveals to co-workers that the employee is a parent with a school-age child; and some work roles to be private, such as a confidential meeting with a supplier, or a job interview. Managing one's calendars, and by proxy one's boundaries, requires active planning about how to record appointments, and how others will interpret the item once it has been recorded. As we have more access to devices that 'help' us manage our time, it forces us to be more explicit about behaviors and habits that were formerly implicit.

Users adapt elements of the system that fit their preferences, and sometimes make work-arounds if the system cannot do what they prefer. Van den Hooff (2004) notes that 'free-riding' can be a problem in groupware systems: employees use the group calendar to check others' availability, but may not be fully transparent about recording their own information. Our findings, which incorporate both personal and work-related calendaring, suggest that 'free-riding' may be an intentional strategy designed to protect personal boundaries; in other words, it can be a work-around for a system that is designed for more integration than the employee prefers. Employees develop methods (sometimes 'covert' methods) to avoid being always available for their colleagues, to protect their time. The shared nature of group calendars makes employees more vulnerable to organizational claims on their time (Prasopoulou, Pouloudi, & Panteli, 2006). We note the philosophical tensions between the groupware calendar's design imperative of increasing coordination and the individual's needs to retain control, which sometimes means avoiding other's attempts to coordinate.

The time demands of work are increasing due to the excessive pressure for employees to complete their work tasks, leading to greater time urgency and fragmentation (Agypt & Rubin, 2012). We see the calendar as a site of contested power – laying

claims on one's own time, and resisting others' attempts to hijack one's time, but at the same time getting others to bend to our attempts to schedule their time. The link between time and power has been noted by others such as Perlow (1998), who said that organizations control employees' time through the use of temporal structures such as tightly defined work schedules and time clocks for blue-collar workers, or all-encompassing schedules of senior management. The rules of engagement have become increasingly complex due to technology.

Boundary management research has generally focused on professional roles (Ashforth et al., 2000; Fonner & Stache, 2012; Golden & Geisler, 2007; Olson-Buchanan & Boswell, 2006), as personal agency is implicit in control over how boundaries are enacted. Yet, all of our participants, regardless of job or seniority, had access to some type of group calendar, with organizational policies clearly having an effect on how individuals' manage their boundaries through calendar processes. The results from our interviews imply that calendar management is driven primarily by individual preferences; none of our respondents mentioned organizational rules about calendar management, and only one had received specific training on the calendar management system in her organization (a marketing firm that tracked billable hours in a special database).

Calendar management practices and norms could be an area in which progressive companies offer suggested policies and training. However, we offer this idea tentatively because time management strategies are highly individual, and employees may rightfully protest perceived infringements by the organization if they interfere with their preferred practices. Organizations should be aware that restrictive organizational policies can bar both integrators and segmentors from using calendar management to maintain their desired boundaries; the difficulties are more significant for integrators who would prefer more synchronization but are precluded by organizational policies, because the work-arounds to achieve synchronization are complex and error-prone. These findings support previous work highlighting the importance of congruence between personal boundary management preferences and organizational policies (Rothbard, Phillips, & Dumas, 2005).

The benefits of groupware systems will vary for each individual user (Grudin, 1994), and we did find examples of people creatively adapting the calendars to fit their needs; people can and do practice agency. Organizational process changes or technology upgrades can drive reactive changes in individual's calendaring strategies. Given the lack of thought to their calendaring processes vocalized by many of our participants, an implication for practice is that both managers and employees should attend to the shared patterns and behaviors of calendar management. Are there specific norms, and have they been clearly stated? Are employees using their calendars as well as they could, and is there training that might help them improve their individual and group calendar management (without forcing them to make incongruent changes)?

Individuals would benefit from greater consideration of the privacy implications of their calendar practices, specifically that group calendar systems may be sharing more personal information than one initially realizes. Organizations should also consider the effects of enterprise-level groupware changes and usage rules because the effects of these changes can be disruptive for individuals. Our results highlight the fact

that more attention should be given to individual and group calendar systems because they are a powerful force shaping the debate about boundary management and work-family conflict.

6. Directions for future research and conclusion

Our qualitative study used a sample from a range of professions, which is useful for exploratory studies. Larger studies might investigate additional variables to determine if there are differences among specific groupware applications, and comparisons across organizations could explore whether there are industry sector differences. Studies conducted in a single organization could help explore the effects of seniority or other job design factors, such as having direct reports or a job that requires frequent travel or meetings. As with previous studies, we found that people still use a suite of both electronic and paper calendars to manage their time and their boundaries (Blandford & Green, 2001; Jones & Thomas, 1997); however, future research should examine the effects of electronic calendars in relation to the full range of computing and mobile devices used. Jung et al. found that digital artifacts are related, and that the interaction between these devices needs to be examined to understand how each is used and why (Jung, Stolterman, Ryan, Thompson, & Siegal, 2008).

Our study highlights the impact electronic calendars and organizational policies have on individual boundary management processes. In answering our first research question we have shown that people manage their boundaries by setting limits not only on how much they segment and integrate their work and family roles, but also in terms of how they share and protect public and private information. The role of organizational policies and practices was highlighted in our exploration of our second research question; we found that individual's calendar processes are constantly in flux as the challenges and opportunities of new technologies, and expectations for their use, are blended into time management preferences.

A key paradox of contemporary calendar management is that it is simultaneously highly personal, in terms of individual boundary management preferences and comfort with technology, yet also public and shared. The resulting tension between ease of collaboration and loss of agency has long been identified as a challenge for groupware developers (Grudin, 1994). Groupware technologies and organizational policies drive organizational norms and expectations that inadvertently reduce individual autonomy (Mazmanian et al., 2013). It is critical that such possible outcomes are taken into consideration when organizations are making decisions to implement such basic and taken-for-granted technologies.

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