

**The Effect of Telecommuting on the
Temporal Patterns of Managers and Employees**

by

Gertrude Bruner Rowello

Submitted to the Alfred P. Sloan School of Management
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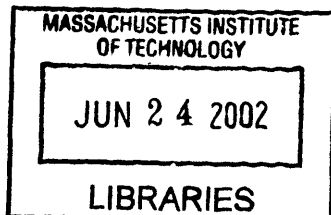
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ABSTRACT

Rapidly evolving communications technologies, the expanding global scope of business, and changing societal expectations with regard to employment has expanded the prevalence of teleworking as an employment arrangement in recent years. The expansion of teleworking employment arrangements has significant implications on organizations, management, and the teleworkers themselves. Of particular interest are how teleworking has changed temporal patterns associated with work and how these changes have affected interactions between teleworkers and those with whom they work. This thesis explores these issues through interviews with both teleworkers themselves and their colleagues and managers. The areas of inquiry are organized into three primary categories: Impacts on Timing Aspects of Work, Impacts on Temporal Aspects of Professional Interactions, and Impacts on Temporal Patterns of Individuals and Work Groups.

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1. Introduction

With rapidly evolving communications technologies, the expanding global scope of business, and changing societal expectations with regard to employment, the prevalence of telecommuting, or teleworking, as an employment arrangement has expanded in recent years. The expansion of teleworking employment arrangements has significant implications on organizations, management, and the teleworkers themselves. Of particular interest are how teleworking has changed temporal patterns associated with work and how these changes have affected interactions between teleworkers and those with whom they work. This thesis explores these issues through interviews with both teleworkers themselves and their colleagues and managers. The areas of inquiry are organized into three primary categories: impacts on temporal aspects of work, impacts on temporal aspects of professional interactions, and impacts on temporal patterns of individuals and work groups.

Much information regarding telework has been published; however, comparative analysis is difficult because of diverse definitions of telework and its components. For example, even identifying an estimate of the number US teleworkers yields estimates ranging from 13.9 million (US Bureau of Labor Statistics) to 24 million (International Telework Advisory Council). These problems

with definition arise throughout the literature. Therefore, for the purpose of this thesis, I will use the definition of telework set forth by Kurland and Bailey: “transition from in-person supervisions to remote managing, from face-to-face communication to telecommunications-mediated communication, from on-site working to off-site or multiple site working and, in the case of groups, from side-by-side collaboration to virtual teamwork.¹” They divide telework into four primary categories; home-based, regional satellite offices, neighborhood facilities, and finally mobile workers. While the company I studied in this thesis, does have both mobile workers and regional satellite offices for use by teleworkers, the highest proportion of teleworkers use a home-based arrangement. Therefore, this analysis addresses only home-based teleworkers.

1.1 Thesis Structure

This thesis is organized into five chapters; Introduction, Impacts on Temporal Aspects of Work, Impacts on Temporal Aspects of Professional Interactions, and Impacts on Temporal Patterns of Individuals and Work Groups.

The remainder of Chapter 1 includes a Methodology section explaining the approach of this study and providing general background information about the

¹ Kurland D., Bailey N. 1999. The Advantages and Challenges of Working Here, There, Anywhere, and Anytime. *Organizational Dynamics*, 53-68.

study participants. Chapter 1 also includes a Summary of Key Findings, which previews the findings discussed in Chapters 2, 3, and 4.

Chapter 2, “Impacts on Temporal Aspects of Work,” explores when work is performed by teleworkers and how these routines have changed as a result of telecommuting. The impacts of teleworking on the duration and structure of the workday, the timing of when work is performed and the number of days worked are considered to address the following questions:

- What effects does teleworking have on the duration of the workday for the teleworker and those with whom they work?
- For part-time teleworkers, does the timing of teleworking workdays differ from that of regular workdays? If so, do these differences impact the work habits of those who work closely with the teleworkers?
- Do teleworkers work more days now than previously?
- Does teleworking affect the timing of when certain work is performed? Do colleagues shift their work plans to accommodate the schedule of teleworkers?
- What types of work are performed while teleworking? What types of work are not?

Chapter 3, “Impacts on Temporal Aspects of Professional Interactions,” considers impacts of teleworking on the broader issues facing teleworkers and those with whom they interact regularly. Changes in professional interactions, both in terms of quantity and content, are considered to answer the following questions:

- How is collaborative work managed? Do these activities take place at different times or in different ways as a result of teleworking?
- Do teleworkers (and their colleagues) experience difficulties with coordination? Is there more time spent managing coordination as a result of teleworking?
- How are teleworkers impacted by reduced informal interaction with their colleagues? What are the tradeoffs associated with reduced interactions?
- Were their job responsibilities changed to accommodate a teleworking arrangement? Have these changes affected any relationships?
- What are the managerial impacts of teleworking?

Chapter 4, “Impacts on Temporal Patterns of Individuals and Work Groups,” explores the ways in which personal routines are affected by the teleworking arrangement. It also explores how teleworking affects the patterns and routines of their work groups. In particular:

- What are motivations for teleworking?

- What types of breaks do teleworkers take during the day? Do these breaks affect the behaviors of non-teleworking colleagues?
- How do teleworkers feel about changes relating to their work-life boundaries?
- How do personal and professional obligations interact? What are the implications of teleworking for the individual? For their workgroups? For the firm?
- Do changes in the quantity and method of interactions affect a group's productivity and efficiency?

Finally, Chapter 5, "Conclusion," provides a brief analysis of the study's results and offers suggestions for additional research.

1.2 Methodology

To investigate these questions, I conducted telephone interviews with employees from a major US manufacturer (“GIANT”) located in the Midwestern United States. Interviews lasted an average of 30 to 40 minutes in length and were recorded with the permission of participants.

Participants (see Table 1) were from different groups within the firm, including two engineering design groups and two purchasing groups. Whenever possible, a complete team was interviewed (at least one teleworker, a manager, peers, and/or direct reports); however, these interviews were also augmented with interviews with additional teleworkers, who were involved in work groups or teams, but whose colleagues did not participate.

The analysis of responses involved a three-tiered approach. First, I identified consistent themes among the interview groups (teleworkers, managers and peers, and groups as whole). Second, I identified conflicting opinions among the interview groups. And finally, I compared the different types of teleworkers. Such as, those who telework one day per week compared to those who telework more. The resulting analysis further considered the possible causes and implications of these results.

Table 1: Study Participants

Participant	Role	Position	Telework Schedule
Alex	Teleworker	Design engineer	3 of 4 days
Bob	Teleworker	Design engineer	3 of 5 days
Chris	Teleworker	Design manager	3 of 5 days
Don	Teleworker	Purchasing	2 of 5 days
Ed	Teleworker	Purchasing manager	1 of 5 days
Fran	Teleworker	IT Administrator	3 of 5 days
Lisa	Teleworker	Purchasing manager	1 of 5 days
Gary	Manager	Design engineer	
Kelly	Manager	Design engineer	
Mike	Manager	Purchasing	
Henry	Colleague	Purchasing	
Jan	Subordinate	Purchasing	
Nancy	Subordinate	Purchasing	
Olivia	Subordinate	Purchasing	

It is important to note that since the participants work in different sections of the firm, their experiences and perceptions with regard to the work environment are different. This is particularly relevant to Chapter 4, where issues such as expectations and work-related stress are explored. These differences are reflected in the analysis. Additionally, it is also important to note that it was the policy of the firm that local managers have final decision-making authority regarding which employees are permitted to telework. This is also relevant Chapter 4, where implications for colleagues, managers, and workgroups and organizations are considered.

As background, it is significant that participants do not view technology *per se* as a major component of the success of teleworking; however, they actively use all of the major communication technologies (telephones, voicemail, e-mail, and fax) to facilitate the arrangements. One major reason individuals did not perceive an impact of communications is because all of these technologies are well utilized within the office environment. In fact, several participants indicate that these technologies (as opposed to face-to-face) are the primary means of communication *within the office environment*. As a result, most people, teleworkers and non-teleworkers alike, indicated that they felt the transition to teleworking was relatively seamless. As one manager said, "I just act as though he stepped away from his desk."

1.3 Summary of Key Findings

Telework influences the timing aspects of work in several ways. First, work schedules are impacted because teleworkers are very likely to participate in flextime and other alternative work arrangements. Second, teleworkers report working more hours and more frequently, including working after arriving home from a full day's work and on weekends. Finally, certain work tasks are often shifted to accommodate teleworking schedules, based on their appropriateness (or inappropriateness) for telework. These findings are explored in greater detail in Chapter 2.

The temporal aspects of professional interactions are also affected by telework. Teleworkers and their colleagues do not perceive any problems with coordination, but this may be because teleworkers are very flexible regarding their telework schedule. Furthermore, while no change in the amount of collaborative work is reported, this type of work is generally held over for the teleworkers' days in the office. Finally, reduced interactions (and thus reduced interruptions) are credited with increased productivity for teleworkers; however, the full impact of reduced professional interactions may not be entirely positive for productivity. These issues are elaborated on in Chapter 3.

Telework has significant effects on the routines of individuals, but the impact on groups is less clear. Teleworkers report an increased presence of work in their home life, but also reduced stress. Increased control over the timing of work is credited for the stress reduction. Teleworkers and their colleagues report little impact of telework on their teams and work groups as a whole. It is unclear if this assessment is correct or if difficulties relating certain issues back to the telework arrangement skew perceptions. These themes are the focus of Chapter 4.

2. Impacts on the Temporal Aspects of Work

Case studies commonly assert there are significant increases in productivity through telework.² Additionally, teleworkers are frequently reported to work more hours than their traditional counterparts.³ However, this data is primarily derived from the self-reported feedback of teleworkers and it is unclear whether these individuals are blurring increased productivity with simply working more hours.⁴ This makes the issues surrounding when work is performed and how much time teleworkers spend working among the most important areas of inquiry within telework. These issues weave through several aspects of work such as the length and structure of the workdays and the way work is distributed among teleworking and non-teleworking days. This chapter explores these issues and offers interpretation of the data provided by this sample.

2.1 Case Illustration

Pat is an IT administrator who teleworks three days per week. She is responsible for meeting the needs of global internal clients. When GIANT decided to implement a formal teleworking program, Pat and two others in her work group were interested. Her work group collaborated to develop their own guidelines and protocols (beyond what GIANT had proposed) to accommodate the specific needs of the

² For example, Compaq and JDEdwards reported estimated increases in productivity of 15-45% and 20-25% respectively. Source: ITAC, www.telecommute.org

³ For example, ATT reported that teleworkers work an additional five hours per week. Source: ITAC, www.telecommute.org

⁴ Bailey D. and Kurland N. 2002 A review of telework research: Findings, new directions, and lessons for the study of modern work. *Journal of Organizational Behavior* **23**:383-400

group. Pat starts her teleworking day at the time she normally would leave for the office (around 6:00 a.m.), and while she is “technically” done work at 3:00 p.m., she remains proximate to her home office for up to two additional hours to handle any emergencies that develop during this time. Additionally, Pat leaves her computer logged on during the weekends when she is home so that she will be aware of and able to handle emergencies. While aware of the increased presence of work in her home life, Pat does not mind these impositions on her personal time. She estimates she saves nearly two hours per day in total commute time on her teleworking days, and that even with the additional time worked she still “comes out ahead.” Pat feels that sharing this gained time is one way she can help create a win-win situation for the firm.

This case illustrates several important timing issues and employee behaviors associated with teleworking arrangements. For example, starting work very early is common among teleworkers. Also, Pat’s feelings about the increased presence of work in her home life were repeated by teleworkers throughout the interviews. What is unique about Pat’s case, at least among the interviews I conducted, was the inclusion of the entire workgroup in developing protocols for the arrangement. This level of participation allowed the group to identify areas where teleworking could benefit the entire group, not just the teleworkers. In this case, teleworkers were asked to increase their responsibilities for international clients, which took advantage of increased flexibility of their schedules.

2.2 Duration of the workday

“Now I can extend my day without shorting my kids, because I can get up at four in the morning and work for two hours before they even wake up.”

--Chris, teleworks 2 days per week

Overall, teleworkers indicate that they work more on teleworking days than they would otherwise. Teleworking seems to have several effects on the duration of the workday, which raises several important issues: First, who yields the benefit of saved commute (and preparation) time? Second, does teleworking also have an effect on the duration of non-teleworking workdays? Third, does increased efficiency while teleworking result in fewer hours worked? And finally, how much do teleworkers overlap personal and work time?

Saved commute time is a well-established benefit of teleworking. On average teleworkers save a little less than one hour in daily commute time⁵. The participants in this study saved as much as three hours per day and as little as one hour per day (see Table 2). Weekly commute time saved by participants varied from a high of eight hours per week to a low of one hour per week. Most individuals had the impression that this increased pool of time was shared between them and the firm, resulting in a net gain of work time for the firm and of personal time for the

⁵ Source: ITAC 1999 Telework Survey; Teleworkers save an average of 52.9 minutes of commute time each workday. www.telecommute.org.

employee. Furthermore, most individuals felt that the split was approximately 50/50, but no one had ever attempted to quantify it. Interestingly, this ratio was consistent across commute times, meaning that the individual who saved an hour guessed that he probably worked an extra half hour whereas the individual who saved eight hours guessed that he worked an additional four hours. Participants indicated that they worked this additional time for several reasons: First, the flexibility of the firm was deeply appreciated and participants wanted to “give something back.” Second, in some cases the general work environment was such that many non-teleworkers worked long hours—teleworking allowed participants to do their “fair share” of long hours with minimal impact on personal obligations.

Table 2: Estimated Commute Times of Teleworkers

Participant	Commute Time Each Way	Weekly Commute Time Saved
Alex ⁶	3 hours	
Bob	1 hour, 15 minutes	8 hours
Chris	45 minutes	4 hours, 30 minutes
Don	30 minutes	2 hours
Ed	45 minutes	1 hour, 30 minutes
Fran	1 hour	6 hours
Lisa	1 hour	2 hours

Nearly all participants believed they experienced a significant increase in productivity while teleworking. The reasons for this increase will be addressed in Chapter 3; this section addresses where the gains in productivity go. A few participants admitted that they “occasionally” used this gain in productivity to shorten their workday (i.e. “I got done in six hours what would have taken 10 in the office; therefore, I can end my day at six hours”). However, these same participants (and nearly all others) indicated that if a certain project that they planned to complete on a teleworking day took longer than anticipated, they would work the

⁶ Alex never commuted three hours each way. He moved and planned to leave his job if telework had not been arranged. Therefore, it is not accurate to view his case in terms of time saved per week.

extra hours to finish it. Most considered this behavior a “breakeven” situation for the firm, since it still gains from increased productivity. Additionally, since teleworkers are defining their teleworking days by projects completed rather than time served, there is probably a long-term benefit to the firm of having employees judge the relative importance of a project and put in extra hours *when necessary*.

Interestingly, these behaviors seem to be entirely at the discretion of the employee. While managers were certainly aware of the possibility that teleworking employees might end their days early (or start late), none believed it was happening with their teleworker.

An interesting commonality among the teleworkers in this sample is the use of the home office set-up as a method of extending their non-teleworking days in a more convenient way. For example, several individuals mentioned an intense work environment where working long hours is the norm. The availability of a complete work set-up at home enables these individuals to leave the office at the “normal time” on regular days and resume working at home at their convenience. Others mentioned that the efficiency of working at home made it a useful thing to do beyond official teleworking days. Several cited the ability to work extra hours from home as significantly reducing stress by improving their ability to meet both their professional and personal obligations.

Another unanticipated commonality is the existence of a “semi-work time,” during which teleworkers do not actively work, but are available by phone or e-mail to colleagues or others with whom they work. As Pat said:

“...on days I am actually at home, even though I am technically stopped at 3:00 p.m., I actually remain logged onto the system for another hour, maybe two. And if I get emergency requests...from our users that are over in Europe or Mexico...I go ahead and handle them right away.”

This time, which is beyond the standard (or negotiated) work hours, is often spent on personal activities, but the employee stays proximate to the home office to address incoming issues. None of the individuals who used their home office in this manner had a sense of the total amount of time spent working during these periods. Again, the desire for the firm to “get something” extra out of the teleworking arrangement is often cited as the motivation behind this activity.

The qualitative and self-reported nature of this research does not make possible a quantification of the effect teleworking has on the duration of the workday for all the relevant parties. However, it is possible to say that teleworkers have the impression that they work more in a given day now than they did previously. Additionally, managers of teleworkers share this same impression. However, the colleagues and direct reports of teleworkers do not have the impression that the amount of time worked by the teleworkers has changed. These different perceptions may be explained by the difference in the nature of interactions a

teleworkers has with his manager and colleagues. Managers are likely to be judging changes in the teleworkers performance based on deliverables; if the quantity or quality has increased, then they may assume the teleworkers is working more. However, colleagues and reports likely to be judging the teleworking based on their interactions with them; if the number and content have stayed the same, then it is not at all surprising that this group does not perceive an increase in work among teleworkers.

2.3 Timing and structure of the workday

“What you have to do is schedule and plan things better...you have to think ahead...”

--Gary, a manager of teleworkers

Teleworkers feel more in control of their teleworking time than of their non-teleworking time. In fact, most could give very specific and detailed descriptions of their teleworking days, while the descriptions of their non-teleworking days were far more scattered and less specific. Teleworkers attribute this sense of control to the increased ability to plan and structure work activities because of increased control over interruptions.

Teleworkers actively plan and structure their teleworking days more than they did previously. Although nearly all the teleworkers in this study indicated they

were already “planners” before teleworking, an increased need to keep colleagues “in the loop” regarding activities and an improved ability to enact their plans has caused them to become more overt in planning. Additionally, teleworkers increase their planning because of the practical need to ensure that all the necessary materials are available to them to be off-site. Whatever the reason, the small amount of time spent planning seems to have a significant effect on productivity as reported by both teleworkers and their managers.

Several teleworkers indicate they often tried to plan their non-teleworking days as well, but express frustration with the frequent inability to enact work plans at the office. They believe frequent interruptions are the primary reason plans are difficult to follow through at the office.

The “planning effect” magnifies as the number of days out of the traditional office increases. Those with only one day out of the office attributed less significance to their planning activities. Those who telework three days were more emphatic about the importance of planning.

“I think a telecommuter can be more productive than a worker in the [office] environment.”

--Gary, a manager of teleworkers

Improved ability to control interruptions while working is an important element of why teleworkers are successful at imposing structure to their workdays. While all of the teleworkers maintain business telephone lines and have access to e-mail, they experience a significant reduction in interruptions. Teleworkers retain control over who has access to their home office lines, thus reducing their availability to many people. Furthermore, teleworkers feel more empowered at the home office to decide which interruptions to accept and which should be put off until a later time, allowing them to enact the plan or structure they had envisioned for the day.

The teleworkers in this study all pursued telework as a way to structure some workdays around non-work activities. While this area will be explored in greater detail in Chapter 4, this theme is also relevant here. The need to fulfill inflexible personal obligations is an important element that allows (or forces) the teleworker to apply structure to their workdays. For example, nearly all the teleworkers interviewed started work earlier than they would on non-teleworking days and took a morning break of an hour or more to spend time getting school-aged children ready for school. Most of the participants indicated that they used the time before the break to “catch up” or “get ahead” efficiently by doing work that did not require interaction. In fact teleworkers used this time to actively avoid interaction, for example making telephone calls knowing that the recipients are not at work yet and leaving a voicemail.

All but one of the teleworkers interviewed are also participating in flextime arrangements and working non-standard hours. However, they are uniformly very careful to avoid varying their schedules on a weekly basis. Teleworkers cited the need to maintain the “professionalism” of the arrangement by being consistent with regard to whatever schedule was adopted. Additionally, they felt that consistency helped to alleviate the negative perceptions regarding teleworking, for example, assumptions that the individual is not really working. This consistency has paid off with regard to the comfort of colleagues with the teleworking arrangement. For the most part, coworkers were able to “rattle off” the schedules of their teleworkers and commented that such consistent availability made the teleworking more acceptable.

Despite awareness of decreased accessibility of the teleworker during regular work hours, coworkers are not bothered by it. In fact, I observed a certain respect for the apparent work/home life balance demonstrated by their teleworking colleagues. I observed significant comfort with alternative work arrangements among all of those who participated in this study. In fact, several of the non-teleworking participants also partake in alternative work arrangements, such as flextime. Also, non-teleworkers indicated they do not plan or structure their days more because they are working with a teleworker. However, this claim is

inconsistent with the fact that nearly all of the colleagues identified specific activities that they schedule around the availability of the teleworker.

2.4 Number of days worked per week

“If I had to drive an hour to get there [the office], to do a few minutes’ work, I probably wouldn’t go in on a Saturday”

--Fran, teleworker

“...Case in point: Saturday morning we get up, the kids have breakfast, they want to watch cartoons for an hour...I may say ‘Hey, I’m going to run upstairs and do some e-mails...’ And so, I’ll pick up an hour. Well, that is an hour that I wouldn’t have had without the teleworking because I am certainly not going to drive into [the office] for 45 minutes and the 45 minutes back for just an hour’s [work].”

--Lisa, a teleworker

These quotes are indicative of the attitudes of teleworkers regarding weekend work. All of those interviewed have standard “five-days-per-week” jobs; however, most reported at least working some portion of day over the weekend as well. Teleworkers commented that it is easier to work an hour “here and there” now that they have the office set-up at home. Before having the home office set-ups they would need to make a judgment about whether the work they planned to do was important enough and long enough in duration to justify “the effort” of going to the office on the weekend (commute time, etc). Colleagues of teleworkers are generally unaware of this additional work time and, in fact, teleworkers often

mentioned their concern that they may not be getting appropriate credit for the extra time they put in because it is not apparent to others.

2.5 Shifting Work Activities Over Time

“Often times, my days are really spent in just about back-to-back meetings, because those are the days I’m in the office. And where I do need to interface, face-to-face with people, those are the days that I do it.”

^--Chris, a teleworker

“[There were some things that had to be changed]. They were minor, but they were easy to get around. There were things that didn’t need to be processed the same day. They could wait a couple of days...”

--Ed, manager of a teleworker

The diversity in these comments reflects the difference in responses to questions regarding changes in the content of work. For the most part, changes are more tactical rather than substantive in nature. For example, one manager reported that there needed to be some minor rethinking of when certain things could be done, but no real change in the content of what is delivered.

There is little awareness of adjustments to when certain work is performed despite evidence suggesting that teleworkers make changes in this area. For example, all teleworkers responded affirmatively when asked if they saved certain types work for teleworking days. These activities are described as project- and

deliverable-oriented. Additionally, they describe the work they perform while teleworking as requiring a large amount of concentration and focus. Some participants also indicated that there is certain work—requiring specific software or equipment—that always needed to be done in the office.

Furthermore, despite maintaining availability via telephone and e-mail, most teleworkers indicate they try to keep collaborative work to the days they are in the office. This is likely attributable to the teleworkers' recognition of the importance of personal contact with those with whom they work closely. Also, there is evidence that the coworkers of teleworkers think more critically about using the teleworker as a resource on both the days that they are teleworking and those they are not. As one colleague said:

"I am more sensitive to that [whether the teleworker is really needed for an activity]. It's oh, well, she's off, I don't need her anyway."

A notable exception to these examples is the case of a teleworker whose work group reorganized to accommodate the desire of three members to telework. While no one's job description changed, some activities were "shuffled" to make the teleworking arrangement more effective for all. For example, this group has many internal clients in global locations. The teleworkers agreed to take more responsibility for these relationships since they have greater flexibility regarding the timing of their work.

Two managers indicate that they consider teleworking status when making work assignments. Despite popular perceptions that teleworkers get less-important, lower profile projects, the interviews did not bear this out. While one respondent did indicate that as a teleworker he was given projects that were less directly related to “bottom line” activities, several others believed that they were often given assignments of particular importance because managers were confident they could get work done more effectively because they were teleworking. Mike, a manager agreed with this assertion:

“I think there are certain tasks that I have assigned to the people that telework because I know that they’re going to be in a different kind of environment on that day...”

2.6 Summary

Telework has clear effects on the timing of teleworkers’ schedules and when they perform certain tasks. In particular, the data in this chapter shows that teleworkers start their days earlier and often end their days later than they do on non-teleworking days. Additionally, the introduction of an office environment has the effect increasing the temptation and likelihood that individuals will work more during personal time.

3. Impacts on Temporal Aspects of Professional Interactions

Research suggests that part-time telework has little influence on communication among workers.⁷ This may be because there is strong tendency to identify positions well suited to teleworking rather than to retool positions that present challenges to accommodate a teleworking arrangement. Most participants indicate the general content of their jobs had not changed to adapt to teleworking. Furthermore, teleworkers, despite being team members, report having job functions that are independent in nature. All participants, however, work with others as part of their jobs. This section explores the impact telework has on these interactions.

3.1 Case illustration

When Alex decided to quit his job so he could move several hours away from the office, his manager suggested that he try teleworking instead. Alex agreed and now teleworks three days out of a four-day work week. While his job function and his team responsibilities have not changed “officially” since he began teleworking, he has noticed that his colleagues do not like to contact him at home. As a result, he often does not get important information until he is in the office. He also observes that he is often brought “into the loop” on issues relating to his responsibilities later than before. He attributes this to an “out of sight, out of mind” mentality, but is more concerned that this causes problems with efficiency. Additionally, he finds that it is nearly impossible for him to do any “actual” work on days when he is in the

⁷ Duxbury LE and Neufeld D.1999. An empirical evaluation of the impacts of telecommuting on intra-organizational communication. *Journal of Engineering and Technology Management* **16**:1-28.

office, because all of the interactions that would normally have occurred over the course of a week are now relegated to a single day.

Alex's observation about his colleagues' willingness to contact him on his telecommuting days is very common, and participants in this study have had varying levels of success addressing this problem. His impression regarding his office workday is relatively unique among participants. Most teleworkers do not observe a significant difference in their office workdays, though there may be changes that are difficult for them to notice. The changes in Alex's workday are probably particularly acute because he has reduced his office presence to only one day per week.

3.2 Coordination

"...She'll be in this whole week because there are some physical things that...the other person does, but [she] is filling in for. Now, if that hadn't been so easy to schedule, it could have made teleworking far more difficult. But she is extremely flexible and is always there when we need her."

--Ed, a manager of a teleworker

The teleworkers in this study do not perceive many issues with regard to coordination because of the independent in nature of their work. However, there is not much effort made to coordinate "around" the schedule of the teleworker. Although, mundane activities (such as team meetings) are easily coordinated

around the teleworking schedules, other, more pressing activities are not. In several cases, teleworkers were excluded from activities rather than accommodated. Whether this effect is more positive or negative is hard to say. It is true that more time is cleared up on the teleworkers' schedule, which allows them to be more productive on personal level. However, it may also be true that teleworkers are not being included in activities in which they should be participating, which could reduce efficiency in the long run. Additionally, when the teleworker's participation was needed, the activity was sometimes scheduled on a non-teleworking day. The teleworkers are often included remotely (generally using teleconferencing), but also are often asked to come to the office site that day. Managers indicated that, while they tried to respect the teleworker's commitments, they were not uncomfortable requiring the teleworker to change to accommodate the activity. Furthermore, teleworkers differed a great deal in their comfort with this variability. Some thought flexibility was essential to maintaining the support of their manager(s) and peers; others felt that they were taking advantage of a program offered by the firm and that the firm (and its managers) should be prepared to put in the needed effort to make it work—meaning finding creative ways to resolve this conflict.

3.3 Collaboration⁸

"I work very closely with the launch team...we have to be very organized as to when we have our regular meetings face-to-face. But we do a lot of meetings over the computer via NetMeeting as well."

--Alex, a teleworker

"One of the other buyers [who teleworks], for example, I guess I will say there's a major launch coming up in September on his deck...we're evaluating right now the need for him to come off teleworking during the launch phase...because it's such a critical launch that we're going to need, there's the potential that he may need to be called out to the plant where the parts are launching. And that would be difficult to cover from home...I don't see it [teleworking] as a right...You have to address the business needs first and then it becomes a privilege."

--Mike, manager of teleworkers

Most participants (teleworkers and their colleagues) report that teleworking had very little effect on their ability to collaborate with their colleagues. This is partially attributable to the reality that much collaboration occurred at "planned times" any way. Therefore, if there is a need to work together, it is easy enough to schedule around the teleworking schedule. However, some of the interviews are not consistent with this assertion. For example, it is interesting to note that despite the availability of technology that facilitates remote collaboration (such as NetMeeting), these capabilities are not widely used by teleworkers and their

⁸ For this purpose, collaboration refers to the "formal" need to work with others to achieve a joint outcome.

colleagues. Participants strongly prefer to hold collaborative activities at times when the coworkers can meet face-to-face. Additionally, most teleworkers admitted that they struggled with getting their coworkers comfortable calling them at home and reported various degrees of success in addressing this. Several of the colleagues interviewed reported feeling funny about calling their coworker at home, even during scheduled teleworking times:

"I would rather send an e-mail than call her because I feel strange about calling her even though I know that she's working and it's still a work situation. So, I don't have probably as much [personal] interaction that [as I would when] actually talking to the person."

Additionally, the number of days per week spent teleworking makes a significant difference in this area. Those who telework (or work with a teleworker) one or two days per week are more adamant that there is no effect on their ability to collaborate; whereas those who telework three days are more aware of diminished involvement in certain activities. For example, one teleworker complains that he isn't included in as much of his colleagues' work as he would be if he were in the office:

"...The atmosphere is if you can't grab something, the people just [move on]...if you don't see the person, they'll just move on...I think it would be nice to be contacted at home."

He says that despite publicizing how he can be reached on teleworking days, he is rarely contacted. As a result, he is often bombarded with requests on the days that he is in the office, which of course impacts his efficiency on those days. This is an extreme example of collaborative work shifting to non-teleworking days and its effect on productivity.

3.4 Interaction⁹

“... I've got a supervisor who's very supportive ...he's very forceful with getting people to cough up information or give me a call. So, I think he makes up for the lack of communication sometimes.”

--Alex, a teleworker

Teleworkers almost uniformly cited the ability to work uninterrupted as the key driver of the increased productivity they yield from teleworking. However, most are hesitant to characterize the interruptions that occur at work as “unnecessary.” Many mentioned that the social nature of human beings made most interruptions longer than they really needed to be but agreed that there was nearly always an “important” work implication of the interruptions. This admission is inconsistent with the claim that collaboration is unaffected by teleworking. If these interactions bear

⁹ For this purpose, interaction refers to the informal contact and relationships occurring in the work place and having relevance to performance.

value to job performance, then their reduction or elimination must have an effect on teleworkers' work.

Additionally, teleworkers with significant responsibilities towards parties external to their primary work group handled these responsibilities differently when teleworking. As discussed in Chapter 3, some teleworkers make their teleworking telephone number widely available to all parties. Others, however, prefer not to make their home office information available outside of their primary work group. They are concerned that external parties may not respect the home/office boundaries as their own work group does, but are also exercising control over their workday by attempting to minimize interruptions. Interestingly, despite this fact, there is no evidence suggesting that responsibilities for dealing with external parties are reduced in any way to accommodate teleworking.

Also, as mentioned earlier in this chapter, many coworkers are hesitant to contact teleworkers at home. Most teleworkers indicate that individuals with whom they work most closely become more comfortable over time contacting them on teleworking days. However, "secondary and tertiary" contacts are still hesitant. Feelings about this hesitancy are mixed among teleworkers: Some define a successful teleworking arrangement as being "transparent" to those with whom they work and are therefore frustrated by ongoing unwillingness to contact them at

home. Others feel the primary benefit of teleworking is reduced interaction in general and therefore are unconcerned by their colleagues continued hesitance.

3.5 Summary

Teleworking does not seem to affect the number of collaborative efforts in which a teleworker is involved. However, the timing of collaborative work is affected. This work is often held over to days when the teleworker is in the office. Also, there is a reduction in informal interactions, which probably has two opposite effects. First, it helps increase the productivity of the teleworker by permitting more time for focused efforts. Second, it may hurt the teleworker and colleagues by reducing information sharing among colleagues and reducing productivity in the long run. It is unclear what the net effect is.

4. Impacts on the Temporal Patterns of Individuals and Groups

It is often suggested in popular media that the desire for improved work life balance is a driving factor in the decision to telework; however, whether telework improves this balance is unclear. Some studies have found that telework does have benefits with regard to balancing work and family,¹⁰ still there exists a tension between improved ability to meet both work and family demands and the tendency of teleworkers to spend more time working than they did prior.¹¹ The teleworkers in this study all structured their teleworking days around personal obligations. Teleworking allows these obligations to weave through their workdays. This chapter explores the interaction of individual and professional routines, changes to personal routines resulting from the introduction on a home office, and the effect changes in the routines of teleworkers have on their teams and work groups.

4.1 Case Illustration

Fran is a purchasing manager. She only teleworks one day per week but uses her home office nearly every day, including weekends. Fran is a divorced parent of two and appreciates the opportunity to structure work around her family obligations. Her teleworking day is structured around the comings and goings of her children. She starts work before the kids wake up, breaking when they wake and staying with them until they leave for school. She then returns to work, but

¹⁰ Duxbury LE, Higgins CA, Neufeld D. 1998. Telework and the balance between work and family: is telework part of the problem or part of the solution? *The Virtual Workplace* (218-255), Igarria M, Tan M (eds.) Idea Group Publishing: Hershey, PA

¹¹ Source: ITAC www.telecommute.org

breaks again in the afternoon to volunteer at their school. When she returns home, she works until the children arrive home. Depending on the day, she will often log onto the computer after the children go to bed. Fran has even been known to check e-mail and do some occasional work during vacation. Despite the increased presence of work in her everyday life, Fran says she is less stressed because she can manage work expectations around his home obligations and is ultimately a better employee and parent.

While Fran's case is extreme in terms of the amount of time spent working at home beyond "negotiated" telecommuting times, it illustrates many of the important issues that introducing work into the home raises. In particular, it highlights the tension between high performance in an intense work environment and drawing appropriate work/home boundaries. It also shows how the presence of the home office can influence a workers behavior, such as returning to work once the children have gone to bed.

4.2 Implications for Individual Routines

"And when those deadlines are coming up where it would be difficult for me to be in the office late because of the kids, I can go home and I can do what I need to do with the children, and we can do homework and have our family evening and I can put them to bed. And then at eight o'clock, if I want to start working and I want to work till midnight, I can."

"It's great that it allows me [to] balance. At the same time though, it's almost hard sometimes not to go off the other end, to the extreme, because...Like, right now... [with] the losses we've posted, the pressure here is, and I can't even begin to describe it. I have never felt more stressed out in my life. And I'll wake up sometimes at three or four in the morning, and I'll start thinking about work and I can't go back to sleep. I'll think 'Well, maybe I should I should just get up and start working.' And I'll think... You've got meetings today, you've got this, you've got that, if you start working now...by that three o'clock meeting you're going to be falling asleep under the table. And I'll try to make myself go back to sleep, but there is always that pull."

--Chris, a teleworker

Most teleworkers indicate that the need to fulfill personal priorities was the primary reason they pursued teleworking; however, they also nearly uniformly admit interjecting work more into their personal life now than before teleworking. As noted in Chapter 2, the convenience of the home office and the desire to provide the firm "extra" benefit from the teleworking arrangement were cited as important factors influencing the increase in time worked. Additionally, workers talked about an increasingly competitive work environment. Individuals do not feel pressured to work more *because* they telework. However, economic pressures at the firm create a more demanding environment for everyone. As the quotes above suggest, teleworkers managed this by putting in extra hours at home, instead of in the workplace.

While participants admit work often encroaches on personal time, it is also evident personal obligations that bleed into work time with most teleworkers. All teleworkers take at least one (and up to four) break(s) in the day to accommodate personal obligations. The level at which managers and coworkers are aware of these breaks varies significantly and correlates to the general amount of collaboration expected on teleworking days (i.e. those who worked mostly independently are less likely to inform their colleagues of these personal breaks. Others felt that informing management of these activities was essential in maintaining a healthy long-term arrangement). Individuals who telework fewer than two days per week generally took fewer breaks than those who telework more frequently.

Table 3: A Sample Teleworking Schedule, Fran's day

Time	Activity
5:30 am	Wake up
6:00 am	Start work. Log onto the computer. Check and send voicemails and e-mails.
7:15 am	Break. Wake children up. Help them prepare for school.
8:30 am	Put kids on the school bus. Return to work. Work of day's projects.
11:30 am	Break. Go to children's school to volunteer,
1:00 pm	Return to work. Participate in conference calls.
3:30 pm	Stop. Kids return home from school.
8:00 pm	May start work again. Kids go to bed or are doing homework. May continue work on day's projects.
11:30 pm	Stop.
12:00 am	Go to bed.

Most teleworkers start work early to accommodate their personal schedules, such as the desire to take breaks during the day or to end the workday early. However, this early start also has an implication for productivity. Teleworkers articulate a "need" to get ahead of the interactive work so as to be able to achieve whatever tasks they have set out for the day. For example, many teleworkers mentioned that they used this time to answer and send e-mail and voicemail

messages without risk of having to interact with people, thus reducing the time these activities take. They then have more time in the day to use toward the project work that they perceive as the more important aspect of their work.

There is high variance with regard to when the teleworking day ends. For some individuals, the day's end is well defined and marked by a personal event, such as children coming home from school or a spouse arriving home. For others, the end of the day is much "softer"; they may break for these personal activities, but then return to working at their convenience. Still others define the end of the workday not by hours worked, but rather by work done. These individuals may end "early" or work "late" despite personal obligations. Most people can identify what their "goal" end time is, but report there is a significant amount of variance within their own patterns.

As discussed, teleworkers take frequent breaks to meet personal obligations. Overwhelmingly, these obligations center on school-aged children. While not all teleworkers have school-aged children, most did. All these individuals indicate they take a break in the morning to spend time with the children and send them to school. Also, the same group either take a break in the afternoon to spend time with the children or ended their "official" day altogether when the children came home from school. Interestingly, no participants had children younger than school age and

several mentioned their perception that it would be near to impossible to telework effectively with young children at home during the day. Children were not the only obligation of teleworkers. One individual identified the care of a sick spouse a primary driver of his teleworking arrangement.

Since teleworking arrangements in this setting are generally developed to accommodate a personal need, most teleworkers are not concerned about having breaks in the day to meet these obligations. However, teleworkers exhibit significant diversity regarding their approach to scheduling one-time commitments (such as a doctor's appointment). Some indicated that they were more likely to schedule these one-time commitments on teleworking days for the following reasons:

- Convenience. These types of commitments are generally closer to home, so less time is taken from the day.
- The teleworking schedule is at their discretion anyway. Lost time can easily be made up without imposing on their personal life (unlike staying late at the office).

Also, while no one explicitly mentioned reduced visibility to managers and colleagues, it surely is relevant coworkers are less able to judge how much time is spent doing these types of personal errands on teleworking days.

Others, however, indicated that they tried very hard to avoid such activities on teleworking days and strongly preferred to schedule them on non-teleworking days for several reasons:

- They do not want to use their teleworking time for these activities because they view this time as their most productive time.
- They want to avoid the impression that they are “taking advantage” or “slacking off.”

Nearly all teleworkers interviewed indicated that they frequently perform work outside of typical work boundaries and beyond what was negotiated by the teleworking agreement. For example, several indicated that they might “sneak in” a couple extra hours work when the kids were in bed or were otherwise occupied:

“...I will go out and do two hours of work before the kids even dream of getting up, and it's much easier...And if I can work two hours on Saturday, two hours on Sunday and no one's worse for the wear. They've gained four hours and, for me, I've gained four hours.”

Those that did work “extra” in this manner uniformly did not view it as an intrusion for the following reasons addressed elsewhere:

- Working extra as a way to “thank” the firm for providing them the opportunity to telework.
- The home set-up allowed these individuals to meet the high performance expectations without having to “short” their personal obligations.

- Remaining on top of their work increased their sense of control and therefore reduced stress.

A specific example illustrating this tendency is that nearly all the teleworkers admit they perform some work during their vacation time:

"...For example, if I come back from a week of vacation, I log onto the system on the weekend before I go back because I can clean up a bunch of e-mail before I get into the office so that when I actually get into the office, I can work."

--Jan, reports to a teleworker

No one claims to work a large amount of time during his or her vacation (or during the weekend following vacation). Nonetheless, it is interesting that doing some work during these times is so common. Additionally, managers of teleworkers cited this extra time (and used the specific example of working on vacation days) as one of the benefits they gain from allowing teleworking:

"A lot of times, she'll take a vacation day but take her computer with her. And because she is mobile as a teleworker, she can plug in and take care of an hour's worth of business on a day that I would have completely lost her before. So that's been a benefit to me."

--Ed, manager of a teleworker

Both in the case of working extra time and in the case of working during vacation, teleworkers describe the urge to get "ahead" or caught up. They

experienced these feelings before they began teleworking, but the presence of the home office makes acting on this urge both more tempting and practical, because they can do so without added commute time or interaction with people at the office.

Despite both working more hours and the increased presence of work in their personal lives, several participants say they are more comfortable with their work-life balance now than before they began teleworking. Some feel less stressed because teleworking allows them to better meet both their professional and personal obligations. Others, however, said that teleworking was *not the cause of the reduced stress, but a product of it*. Before starting to telework they had decided to step back from work and teleworking was one tool they used to do so.

4.3 Impacts On Workgroups

The colleagues and managers who work with teleworkers report little of the teleworking arrangement on their work. Overwhelmingly, they say that their schedules and work patterns are unaffected by working with a teleworker. Assuming that this perception is correct, the explanation may lie in the fact that at GIANT, local managers have the final decision-making authority regarding who teleworks. In this study, all teleworkers were members of work groups or teams, yet the work itself was highly independent. This suggests a bias on the part of managers to permit teleworking only where the impact on them and on the

proposed teleworker's colleagues will be low. This explanation is further supported by the fact that the managers in this study all said that if an individual's job were to become more collaborative, they would reconsider whether teleworking is still feasible. Additionally, teleworkers are often brought into the office for work that is interactive, rather than using current technology to allow the teleworkers to participate remotely.

The possibility also exists that the impacts on colleagues, managers, and groups as a whole are subtle and difficult to relate back to the teleworking arrangement. For example, study participants (teleworkers and their colleagues alike) cite the reduction of "interruptions" as a major advantage of teleworking. Therefore, it is very likely that everyone is actively reducing their contact and interaction with one another on teleworking days to optimize this advantage. As a result, teleworkers have very little explicit impact on the temporal patterns of their colleagues on teleworking days, because they have been essentially eliminated from the equation on these days. Productivity may even increase for everyone on teleworking days, depending on the amount of interaction that would normally occur. Conversely, if colleagues in the office are interrupted more frequently because of the teleworkers' absence, then even though they may not make the connection, their productivity may be negatively affected. The same situation exists

if important communication is hampered by hesitancy to contact a colleague “at home.”

4.4 Summary

The participants in this study may be unique in that they all sought telework as an accommodation for personal obligation. Therefore it is not surprising that telework has significant impact on the personal routines of these individuals. The impacts on groups and teams is less clear, mostly because of the difficulty of relating probable impacts back to the telework arrangement.

5. Summary and Conclusion

Telework arrangements influence temporal patterns associated with individual work. In fact, telework is often pursued as a method of escaping the temporal routines imposed on employees by traditional work environments. These changes are most apparent in the “schedule” aspect of work, where it is clear that teleworkers make significant modifications to enhance the efficiency of the standard workday. Some of these changes include:

- Participating in other alternative work arrangements, especially flextime. Teleworkers start their days significantly earlier on teleworking days. They may end their days earlier or work much later than their colleagues.
- Reducing their weekly commuting hours through telework. This gained time is shared with the employer and the result is a net gain in working hours for the firm and personal time for the individual.
- Defining their teleworking workdays in blocks of time delineated by planned breaks, usually of a personal nature. Work is divided into categories and performed in specific blocks.
- Maintaining “softer” workday boundaries on the days they telework. Several teleworkers spoke about “technically” being done work for the day, but remaining available for incoming issues for several additional hours.

- Accepting more personal responsibility for their efficiency and productivity.
Many teleworkers adjust their working hours according to their own judgment of their performance.
- Working more days per week than they did prior to telework. Also, the home work environment is often used to extend non-teleworking workdays.
- Shifting certain work, such as projects requiring significant concentration, to telework days.

Since many of the schedule adjustments driven by personal obligations, teleworkers experience an increased blending of work and personal time. The influence of this “semi-work time” on teleworkers, their employers, and their families may be an area for future research.

Professional interactions are also shifted to accommodate the needs of the teleworkers. Advances in communications technologies have alleviated the need to change the timing of collaborative activities in many cases, but the preference for face-to-face interaction has not changed. This is suggested by several findings:

- Mundane activities are easily scheduled around the needs of the teleworker. Other activities are sometimes scheduled on teleworking days, requiring the telecommuter to come to the office.

- The quantity of collaborative work has not changed; however, teleworkers report a reduction in the amount of collaborative work they perform on teleworking days.
- Work requiring collaboration or interaction is shifted to non-teleworking days.
- Teleworkers maintain control of who contacts them on teleworking days. Contact with “non-essential” individuals is avoided, in hopes of increased productivity.
- Although uniformly available, collaborative software (such as Net Meeting) is not widely used. Additionally, traditional technologies were used more “to touch base” than to collaborate.

Furthermore, concerns regarding the teleworkers’ loss of interaction and feelings of isolation that surfaced in early research are not apparent in this study. This change may be explained by changes in the way colleagues communicate within the office. The participants in this study point out that their office communications are mostly via telephone and e-mail (versus face-to-face). Under these circumstances, the geographical location of the teleworkers makes no real difference to colleagues. New research might be performed to test whether this finding is valid in a larger sample of teleworkers.

Telework influences individual behavior in several ways. It changes the way home life and work interact: Some examples of this are:

- Increased presence of work in their personal lives. This is characterized by changes when they work and a general increase in hours worked.
- Increased control over their schedules allows teleworkers to better meet the demands of both work and personal commitments, resulting in reduced stress.
- Telework days defined and structured around personal obligations.

Interestingly, the colleagues and managers of teleworkers do not perceive any impact on their own work patterns resulting from their need to work with teleworkers. Assuming that the number and nature of interactions has not changed, this perception may be correct. However, it may also be true that teleworkers impact the routines of their managers and colleagues in ways that are difficult to relate back to the teleworking arrangement. For example, if workers in the office suffer increased interruptions because their colleague is teleworking, their productivity may be reduced. Unless these changes are overwhelming, however, it is difficult, for the individual to relate this problem back to the teleworking arrangement. While this study is inconclusive on this issue, future research might focus specifically on the colleagues of teleworkers and changes in their days after a teleworking arrangement has been enacted.

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