Chapter 4

INTRODUCTION

The focus of this chapter is to review electronic time management or calendar tools. This review is presented to support the underlying motivation for this book, which is to improve time management by providing better electronic time management or calendar tools that incorporate more types of temporal structures than those being managed with existing tools. The chapter begins with a discussion of paper-based calendars, which have served as the primary structure for representing time usage for all subsequent time management aids. This discussion relates time management practices to the types of temporal structures the paper calendar manipulates and to the paper calendar successor, the electronic calendar. A comparison is made between the advantages of paper-based tools and electronic tools to illustrate the types of advantages that were moving to electronic means. This comparison is also made to illustrate that the advantages developed for the electronic time manager are simplistic and somewhat obvious, such as simplifying repeated entries and announcing time-based events.

Following this comparison, a list of the types of computer-based features that are found in most existing electronic calendar tools is provided. This list is used to characterize the types of improvements that electronic calendar tools have brought to individual time management and also to demonstrate that these improvements are not based on a person’s understanding and use of temporal structures. This electronic calendar feature discussion is followed by a presentation of user studies on calendar usage.
Calendar Tools

which begins to suggest the type of temporal structure features that might be included in new electronic calendar designs. A set of creative new electronic time management designs is presented following the user studies. These are organized into tools which help a user visualize schedules better and tools which help a user coordinate schedules with other users. Throughout each new design presentation and at the conclusion of this chapter, additional analysis points out where the designers have implicitly tried to incorporate temporal structures as a key element in the design. Since a key proposal of this research work is to design electronic calendars that incorporate more types of temporal structures than the limited explicit temporal structures they now support, the review is focused on identifying what attempts, if any, have been made to do this by other researchers with a temporal structure perspective.

PAPER-BASED CALENDARS

Paper calendars have been around for a very long time. Almost every culture today uses some form of paper-based representation of time on which individuals record their personal usage of this time. The representation is invariably clock-based and structured according to astronomical phenomena such as the phases of the moon, the daily rotation of the earth and the movement of the earth around the sun. Such representations were naturally useful since these movements had a dramatic impact on weather which affected harvests and the availability of food sources. Today’s paper calendars represent the accumulation of this knowledge into months of the year, weeks, days and hours.

Today’s calendars also represent sociotemporal norms that are built into the structure. For example, in a western calendar, the month is divided into weeks so that the first day of the week is Sunday. The fact that a week has seven days is another norm that arose for religious reasons. For a personal scheduler, the day starts at 8:00 a.m., not at 4:00 a.m., and it does not go beyond 9:00 p.m. following the biological clocks of humans but also following the norm of what is considered a standard work day. Thus, paper-based calendars, although clock-based, exhibit in their format temporal norms accepted by an entire culture. In addition, some calendars come with additional temporal structures that are inserted for a subset of users. For example, a Yankees fan can purchase a calendar that shows all of the games played by the team. Paper calendars also show the key holidays (temporal events) of the culture that the calendar is designed for. Thus, paper-based calendars can be seen to already incorporate sort of temporal structures in their design. However, because of the limitations of paper, these structures are explicit clock-based temporal structures only.

Paper calendars are everywhere. They are the basic time management tools and have been regarded as an extremely valuable and important aid in people’s professional lives (Kincaid et. al., 1985). Kincaid et al. write:

*Calendars are ubiquitous and important tools of office workers, particularly of office principals and their secretaries. Paper calendars are available in a wide variety of shapes, sizes and styles to suit almost any need. They are used to plan and record times of appointments and meetings, jobs to do, telephone calls to make, and time utilization in general. Most people regard them as critically important tools. Realizing their central role, the manufacturers of integrated electronic office systems have included electronic versions of the calendar in almost every system they offer, and, as with the paper versions, a variety of styles and structures are available (Kincaid et al., 1985, pp. 89-90).*