Providing for Paper, Place and People in Personal Projects

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ABSTRACT

How do people go about planning and completing personal projects? What can be done to help? These questions are important in their own right. Also, in a digital age of information, managing a project often means managing many forms of information over extended periods of time including paper documents, electronic documents, email messages, and several forms of web information (conventional web pages, blogs, wikis, etc.). Questions, therefore, have relevance to the study of personal information management (PIM). This article describes qualitative results gleaned from an in-depth study of people completing personal projects. Participants from a range of professions and backgrounds each selected a personal project meeting certain criteria (the project could be freely discussed, involved several forms of information and was expected to last for several more weeks). For each participant, progress on the selected project was then tracked through a series of situated interviews over a period four to twelve weeks. Results point to the enduring importance of paper and "place" in any system of supporting tools. Participants used paper in several ways – to brainstorm, to remind, to motivate and to track their efforts. Participants often needed to give information a place – whether in physical or digital space. Other people were also an important factor in a project's timely completion. People sometimes complicated or impeded a participant's efforts to complete a project. But, more commonly, other people were a source of motivation and assistance. Study results suggest that the factors of paper, place and people should each be considered in efforts to support personal information management.

Keywords: Personal information management, human information behavior, ethnography, problem-solving, project planning

Introduction

At any point in time, most of us are working on several different projects. Some of projects are work-related (e.g., "complete annual report"); some projects are not (e.g., "buy a new car"). Some of our projects are part of a larger project involving other people (e.g., "submit a plan for re-structuring my group as part of the larger company re-organization" or "get legal advice as part of my work on the board of directors for our condominium"). These projects are "personal" to us because they're important to us and because we're responsible. The projects won't get done without us. Sometimes we have help and are mostly doing the planning and supervision. On other occasions, we may be doing things mostly on our own from start to finish.

The study of how people manage projects in their lives has relevance to several fields of inquiry. For example, personal projects involve planning. As such, results have relevance to the basic study human cognition. Mumford, Shultz & Van Doorn (2001) note that the study of planning in psychology has proceeded in "fits and starts" over the past 50 years and remains under-developed.

The study of personal projects is also relevant to the study of personal information management or PIM. A key challenge in the study of PIM is to understand how people manage information of

several forms over extended periods of time (Jones, 2007). Personal projects in our lives often involve information in several forms – paper documents, electronic documents, email messages, and several forms of web information (conventional web pages, blogs, wikis, etc.). And personal projects often last for weeks or months from start to finish. Personal projects are, therefore, potentially a manageable unit of analysis for the larger study of PIM.

A project such as "Trip to Boston" is composed of tasks such as "make plane reservations" or "get travel authorization". A number of studies in recent years have looked at how people manage tasks in their lives (for example, Bellotti et al., 2003, 2004; Czerwinski et al, 2004; Gwizdka, 2002; Wolverton, 1999). These studies point to the challenges people face as they are interrupted throughout a normal working day and must switch between several tasks.

More recently, studies have begun to provide insight concerning how people go about managing personal projects and the information needed to complete these projects. In a study looking at how people organize different forms of information (files, email messages and web references) Boardman and Sasse (2004) found that projects were a common basis for creating and naming file folders. Projects, sometimes the same projects, were also frequently reflected in the choice of email folders. But, perhaps more commonly, as Bergman et al. (2006) discovered in another study, information relating to a project was "fragmented" across very different organizations – one for documents, another for email messages and another for web references. A study by Jones et al. (2005) revealed that the structure of subfolders under a project folder often served multiple, albeit ad hoc, purposes in a person's efforts to manage a project. Subfolders were, for example, a reminder of tasks to be done as well as a means of grouping the information needed to complete these tasks.

These studies are especially useful for their informational scope. The studies do not narrowly focus on the use of just one form of information (e.g., email messages or web references). Instead, the studies look at how people organize across different forms of information. This larger scope of inquiry reveals important patterns and problems in PIM. From all three studies, for example, we learn that folder structure is generally more elaborate for a person's electronic documents and other files than for email messages and web references. And all three studies point to a problem of information fragmentation: A person's informational challenges are often multiplied by a proliferation of informational forms each with its own organization and its own constellation of supporting tools.

The study described in this paper takes an additional step in the study of PIM by looking at how people manage different forms of project-related information as projects unfold over a period of time.

The Study

The study involved 27 participants (14 female), ages 19 to 49. Current job or professional endeavor for participants ranged widely. Included in the sample were students (two undergraduates, three masters level students, three doctoral candidates), software engineers (including one video game designer and one system administrator), teachers, librarians and administrators (including two workers in non-profit organizations).

During a preliminary interview, participants were asked to list several projects that they were currently working on and then to select from this list a project that: 1. could be discussed freely, 2. involved several forms of information, and 3. was expected to last for several more weeks. Selected projects ranged widely (see Table 1). Some were for work; some were not. Some involved other people; some involved only the participant.

Table 1. A sampling of projects selected by participants

Image print suite, depicting past, present, and future images of women
Arranging a group visit for children and their mentors to see the children's incarcerated parents
Converting paper files to electronic files
Coordinating a number of local charitable organizations to facilitate cooperation
Curriculum Map for Language Courses
Design a video game
Learning the procedures for new job as a librarian
Writing a guide to fly fishing
Making an interactive (electronic-enhanced) stuffed animal
Masters of information management capstone project
Organizing a summer institute course, in collaboration with 3 faculty members
Planning Star Wars game campaign
Preparing the reading lists for doctoral general exam
Testing new advertising targeting software for his job
Training for a triathlon

For the selected project, participants then completed, depending upon their availability, from two to five follow-on sessions each lasting from 60 to 90 minutes and occurring over a period of four to twelve weeks. Participants were paid $15 per hour for their time. The primary focus of follow-on sessions was the selected project[1].

Participants were asked to show and describe their organizations of project-related paper documents, electronic files, email, and web references. The researcher posed questions to better understand the "how" and "why" behind the various uses and organizations of project-related information. More holistic questions were also asked about the participants' satisfaction with their organization systems, and how those systems might be improved. Follow-up interviews explored any changes that had occurred in the participants' organization strategies in the intervening weeks between sessions, as well as the participants' evolving attitudes towards their chosen strategies. All interviews were audio recorded and transcribed. In the analysis phase, the interview transcripts were coded using a constant comparative technique to elicit overarching themes.

Results

The study produced an enormous amount of data. The focus of this paper is on results gleaned from a qualitative analysis of transcripts.[2] As Malone (1983) notes, the value of such a qualitative analysis is often in the insights and compelling examples that result. In some cases, examples and insights deserve special focus in follow-on studies. In other cases, examples and insights may point directly to implications for tool design.

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[1] Eighteen of 27 participants were able to complete all five sessions of the study. These participants, during sessions two and four, completed a series of performance tasks whose results are not described in this paper.

[2] An article including quantitative results of the study is forthcoming.

Participant comments point to the recurring importance of three factors in the planning and completion of personal projects:

- **Paper**. All participants reported using paper in one way or another during the completion of their selected project. In particular, paper was used in initial brainstorming and in to-do list management.
- **Place**. The concept of place, space and location figured in various ways in the statements of participants. Several participants expressed a desire that information relating to the project should be in the "same place" – in view or easily accessible. **People**. Participant comments pointed to the problems that can arise when other people are resistant to a project-related procedure or an organizational scheme. But more often participant comments revealed the ways that other people provide h**elp th**rough direct assistance or provision of useful information. Potentially more important, participant comments suggest that other people can be a crucial source of motivation and emotional support.

Each of these factors is discussed in turn.

Paper

Fourteen of 27 participants indicated that they used paper in some form for the initial planning of a project. Fifteen of 27 participants indicated that paper figured into their procedures for to-do list management.

The utility of paper to-do lists went beyond this, however. One participant noted that the act of writing the to-do list was more valuable to her than referring back to it later on: *"But I find that once I write it once in the planner I very rarely need to refer to the planner to remember to do things."* – TF147.

This participant also made lists of tasks completed as a way to assess and reward: *"I also make a lot of lists after the fact, to show that I accomplished things in a given day. Making the lists after I have completed the tasks gives me great satisfaction and will also remind me if I have forgotten anything. "*– TF147.

Beyond task lists, for some participants, the tangibility of paper was tied to a sense of accomplishment. As one participant, a doctoral student in communications, noted, *"Umm, paper things, I actually, paper filing is, is fairly satisfying to me. It, uh, because it gets accomplished. Umm, you can see something from it."* NB187.

Another reason for using paper laid in its ability to attract attention when posted:

"For personal items, such as birthday reminders or doctor's appointments, I use a wall calendar. ...I utilize whatever organization tool seems most appropriate for the project -- sometimes that is a flip chart or binder." GH130.

"*For personal tasks that need completing, I keep paper lists (for instance, person errands, shopping lists, etc). I usually keep these on my desk at home, or taped to my front door. For tasks that need completing at work, I keep a paper list on my desk, and also add reminders in my Outlook calendar."* FX191.

Place

The comments above suggest the importance of "place" in participants' decisions to use paper. Paper can easily be placed (on a wall, mirror, front door, etc.) to attract attention. The importance of place goes well beyond paper, however. The impact of digital place, of "knowing where to go" has also been repeatedly affirmed in studies looking at how people access digital information (Barreau and Nardi, 1995; Teevan et al. 2004). Indeed, Bergman et al. (2008) observe a preference for browsing as a means of accessing electronic documents notwithstanding recent dramatic improvements in and widespread availability of desktop search facilities. Consistent with the studies cited in the introduction, participants in the current study used folders as a way to "place" digital information. Use of folders was especially apparent for the organization of digital

documents and other files: All but two of the participants had at least one layer of subfolders under a project file folder.

Participant comments also point to the importance of place and the related concepts of visual space, location and control. For example, a participant described a problem that arose because an item was "placeless" (i.e., it was automatically placed in a temporary folder by an application).

"I'll tell a story and hopefully it'll make some sense. Umm, I, I had a, a document as an email attachment. I, I opened that document, and then I left the network and I started to travel with the document open, making changes on it, saving regularly as I was working on it. Umm, I got to my destination, I was required to hand that document in, I got back on the network, somehow I had closed the document in the mean time, and I knew it was there. I had saved it a bunch of times. It was nowhere that I could easily find. It took me about forty-five minutes of diligent searching on the computer to find it in some hidden Windows temporary folder where they had stashed it." NQ149.

Problems of control can also arise when a document is in a shared space. An administrator (FG130) had all her electronic documents on a shared file server. Midway through the interviews, her most important document was either moved or deleted without her knowledge. "Control" figured prominently into her comments in subsequent interviews.

A graduate student expressed a desire for a tool that would gather all project-related information into the same place:

"You know, something that puts all the stuff in once place instead of having all these different places for, you know, all the electronic stuff, you know, I use del.icio.us for web references, I use my Mail app for email, I use, um, Things for the project, you know, some of the project information but sort of task-coordination, you know, sort of the organization of the project. And so everything's in its own little place and it might be nice if there was some way to have that all in one place." KT199

Similarly, another participant expressed a desire for a tool that *"would help me to organize and consolidate all of the information sources that I use for the project, uh, it would help me save time on finding, uh, information that I need, it would also...help me to organize, uh, new information, uh, emails, Bookmarks, documents and whatnot, uh, incorporate into the project organization." TE200.*

Finally, a third participant described an ideal tool that*: "would allow me to link everything together for every accession. Um. … so it just would be something that unified all of the separate tools and databases that I use." KT182.*

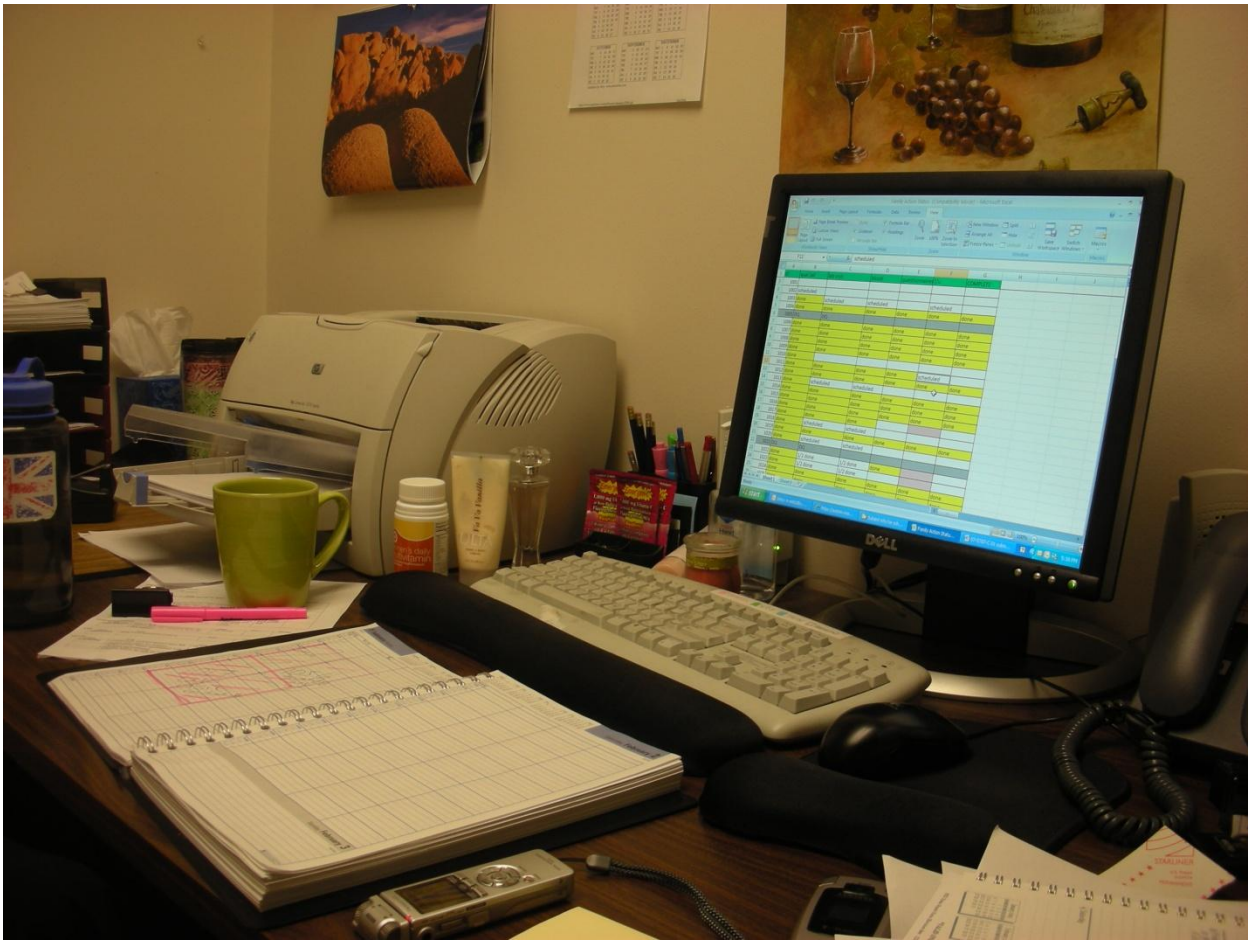

Figure 1. One participant had a scheduling project requiring the coordination of several different forms of information – paper-based and digital.

Another participant, faced with the need to work with several different forms of information, paper-based and digital (see Figure 1), expressed a desire for better use of screen space so that all the information she needed could be visible at the same time: "*I would still do the split screen in quadrants probably so I could see all the information." FL126.*

People

Other people can be a help or a hindrance in a project's completion. E. Jones et al. (2008) describe the importance of a co-adoption factor in the success or failure of a person's efforts to adopt a new system of information management. System success is more likely if other people are also using the system or are at least supporting and appreciating a person's efforts to use the system. Conversely, participants made comments like "why bother?" to suggest that a system is more likely to be abandoned if no one else knows or cares about its use.

People can also support a project through direct assistance or by providing information of direct relevance to a project. Of potentially equal importance, participant comments suggest that other people can be an important source of motivation and emotional support.

For example, people may organize their information for reasons similar to those that motivate us to straighten up our houses when guests are coming. We do so as not to look bad in the eyes of others. But we also benefit from the greater order that results.

One participant said that he spent time organizing information (for a video game he and his team are building) even though he was not sure he would really use the organization that much. When asked, why, he replies, *"I don't want to live like a goober. Cuz I get paid pretty well as a senior*

LD, and they have a couple of juniors and I just can't be, you know, perceived to be less competent than they are."

A doctoral student described her positive experiences working in the presence of other students: *"Umm, the somebody to poke at me, mostly, I mean it's that, you know, that sort of motivational tool. And, and, and some of that I get in, with a writing partner, you know, that we really hold each other to, to producing. Umm, uhh, so sort of a, and I'm getting there just because I'll have to this summer, of a, of a calendar that you have to have this done on these days or you're just not gonna get done." NB187*..

Another participant described his use of a blog both as a way of describing his project (an effort to animate a stuffed animal as a hobby) to others and also as a way of keeping track of project-related information:

"I've been using blogs to collaborate for years now, but so this was just a quick one that I originally actually set up for my girlfriend when she was doing – began to do crafty stuff, but she stopped – she never used it so I just co-opted and began just to throw stuff up there as I saw it when I was sitting bored at work or at home. So umm this is pretty much the documentation of the project so far. I, you know, use web links, I ordered the stuff…" -- FU156.

Several participants also referred to the beneficial effects of the study's interviewer on the project's progress:

"I would like to say that because I am held accountable to tell you something each week, I'm probably moving forward on this at a greater rate than I would have otherwise" – FG130. This participant even asked (only partly in jest) if the interviewer could come back and visit her from time to time as she continued to work on the project they had been discussing.

"It's just, I mean it's actually really helped me to be talking about it because it's just made me, it's made me process how I organize, so it's probably made me, it's made me more organized. And it, and it points out some of the things that are necessary for me" NB187.

"I think I've made writing a curriculum map more interesting than it is and um, [laughs] most teachers would tell you it's boring and it's kind of annoying because you don't think about." SS207 – a teacher creating a teach creating a curriculum map.

Discussion

Results point to the enduring importance of both paper and "place" in any system of supporting tools. We may never go completely paperless (Sellen & Harper, 2002) and perhaps we shouldn't try. Paper for certain uses is tough to beat. Paper and the means to write on paper with pencil or pen are nearly always at hand. Paper can be folded, torn and thrown away. Paper requires no power supply and its information won't be lost with a disk crash (though fires and floods are a different matter). Writing, sketching or doodling on paper is easy and satisfying. There is a "feel" to paper that we may never achieve with digital forms of information.

On the other hand, there is still much we can learn from paper's use with application to digital tools of information management. Participant comments provide the following takeaways for tool design:

- Support the digital equivalent of paper scraps that make it easy to record thoughts that may have nothing to do with the active application or the information currently in view (see Bernstein et al., 2008).
- Look for situations in which the greater benefit of writing thoughts down may be in the writing itself and not in the subsequent retrieval of the information. In these situations, make writing fast and easy and don't burden users with lots decisions concerning how the information should be organized for later use.
- On the other hand, there are times when information should remain in view even when the need for it has apparently passed. For example, users may want tasks to remain visible in a

list even after they have been checked as complete, as a way of assessing progress and affirming their own achievements.

Similarly, for place, the challenge is not to attempt a faithful virtualization of physical place. Rather, we need to understand which aspects of place most matter in a digital space of information. Participant comments point to the value of the following features in tool design:

- Control. Placing information in folders may give users a sense of control that tagging does not (see Civan et al., 2008). On the other hand, as the case of the missing document from the shared file space attests, this sense of control is sometimes "misplaced".
- Browsing. Users may continue to invest effort in organizing information into folders, notwithstanding the increasing availability and sophistication of tagging and search systems. In part, this may reflect an enduring preference for browsing as a stepwise, contextualized method of information access. On the other hand, we can think of many instances when we're quite happy to "jump" to the desired information. The challenge, then, may be to understand better the circumstances in which people prefer "orienteering" to "teleporting" (see Teevan et al., 2004).
- Integration. Sometimes users may literally want all relevant information to be in a single view. In other cases, though, they may simply want project-related information "nearby". Perhaps the desire is that items of information that are needed in the same context are somehow connected to each other, so that the retrieval of one item flows easily into retrieval of the remaining items. Our experience is too often the opposite. The information needed to complete a task is often scattered across email messages, web pages and documents, paper and digital, with no connection among these diverse formats and information spaces.

Of potentially greater importance than "paper" or "place" may be the factor of "people". Notwithstanding the "personal" in personal information management, participant comments make it clear that social considerations figure large in their efforts to manage their information. People may organize information for the same reasons that they tidy a messy house -- not because information organized or a house tidied is more functional (though they usually are) but rather so as not to look like a "goober" (in the eyes of teammates or guests). Similarly, notes may be written or re-written if there is intent to share the notes with others (Erickson, 1996; Marshall & Brush, 2004).

We want to avoid the bad opinions of other people. On a positive side, we seek out the company of other people. We may, for example, find ourselves monitoring our email, or a message board, or Twitter or our Facebook account even at the expense of the projects we need to complete and other things we need to do.

What if our need for social interaction could be leveraged in our efforts to manage our information? It is rare to find people who truly want to listen to us as we talk about our personal projects and our efforts to manage our personal information. But information tools – including web services and handheld devices – enable new modes of communication and a more conversational style of expression. Can these tools also support good PIM?

We have the example of the participant who blogged about his project. Whether or not anyone actually reads his blog posts, the blogging style is chatty and conversational. Are people more likely to express themselves when such a style of expression is the norm (vs. the more formal style of conference papers, to take a contrasting example)? If so, the expression can provide a context or, more literally, a text within which to weave references to project-related information – and indeed, the participant's blog posts included references to numerous project-relevant web sites.

Or consider the constructed example of someone, call her Jill, who posts a series of photos to Flickr taken from a summer vacation to Italy. She writes captions. The sequence of pictures and their captions tell a story of her summer vacation. Her travel companions comment. Other friends comment. Jill comments on these comments. As this happens the story is told in greater detail. The pictures on Jill's camera or on her hard drive are a source of guilt and foreboding ("I really

should do something with these pictures before I forget… “ “What if I lose them or delete them???!!”). The pictures on the Web set the stage, instead, for an enjoyable interaction between Jill and her friends. Jill’s motivation for this time and trouble is social. But as a by-product, the pictures are organized and annotated not just for the present but, potentially, for a future 20 or 40 years from now when Jill’s memories of the trip have faded.

Conclusion

Paper, place and people. Each is a consideration in the design of tools to support in the management of personal projects and in the management of the information needed to complete these projects. Affordances for paper and place intermingle. We write things on paper, for example, because it is so readily at hand – “where” we happen to be. There is no need to start up a digital device and click to an accepting application. “Place” as a verb gives us a sense of control and a remembrance of actions completed. We can place paper-based information so that it is in view or close at hand.

A challenge is to realize a digital facsimile of these physical world affordances and in ways that don’t also copy the many obvious disadvantages of the physical world (Russell et al., 2006). A paper document cannot, after all, appear at the same time in several places according to our need. And paper documents stay “in place” long after our need for them has passed. We call it “clutter”.

The factor of (other) people is in a class by itself. It may be tempting to place concepts such as “group” and “personal” in opposition to one another. Indeed, in many cases considerations of one trade against the other. The transactions we make to function in a group, for example, must frequently be done with some compromise to personal privacy (Karat, Brodie, & Karat, 2007). But examples described in this article point to another circumstance wherein one supports the other.

We might call it the “toothbrushing” effect. Our motivations may be immediate and social. We take extra steps to document and organize in order to make contact with our friends and colleagues or for the sake of appearances (i.e., so as not to have bad breath or to appear like “a goober”). But the benefits we realize through our efforts can also be lasting and deeply personal.

Acknowledgements

This material is based on work supported by the National Science Foundation (#0534386).

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