

Disorganization and How to Support it – Reflections on the Design of Wireless Information Devices

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This paper examines concepts behind people's personal data organization, and considers the idea that new technologies support us in remaining, or becoming, disorganized. Examples are given of three technologies which support various forms of disorganized behavior. A study, designed to investigate the ways in which people store and access personal data, is then summarized. Results suggested considerable variation in the extent to which people have structured strategies of information management; four user types are identified. The implications for data management via wireless information devices (WIDs) are considered. It is suggested that the key to designing effective and pleasurable personal data systems for a majority of users is 'flexibility' in interface design.

Keywords: disorganization, wireless information devices (WIDs), information management, new technologies

Introduction

Wireless information devices (WIDs) are already available on the market. Most commonly, these take the form of 'smartphones'. Smartphones are mobile telephones which are enabled to communicate with servers, giving access to the internet and other services.

WID technologies have the potential to support a vast array of functionality, including m-commerce, location based services, group communication, voice- and text-based communication and the storage and retrieval of personal data. The latter is the subject of the study reported in this paper. Personal data covers a wide range — from bank statements and travel documents, to personal communications and photographs.

New technology has helped us to become more efficient in terms of the way in which we manage our lives. We can store reams of personal and professional data in our computers and access it at the touch of a few buttons. Mobile phones mean that we need never be out of touch with our friends or colleagues. Internet access keeps us up to date with the latest news and professional developments and provides e-mail for us to keep in touch with our friends. WIDs have the potential to enable access to vast

amounts of personal data, whether this be stored in the device itself or stored on a server and accessed via the device. A much vaunted benefit of this is that constant access to this data via WIDs will enable us to lead more organized lives.

This paper explores another paradigm — the idea that one of the major benefits of new technology is that it has allowed many of us to become more disorganized, whilst still maintaining a level of efficiency. In the first part of the paper, the benefits to disorganized people of three technologies are discussed —the word processor, the automatic teller machine [a.k.a. cashpoint] and the mobile phone. It is argued that, for many of us, the joy of these products lies in their support for disorganized and poorly planned behavior.

In the second part of the paper a study is summarized which looked at the way in which people organized information. The outcomes of the study illustrate a number of archetypes by which people's information management behavior can be categorized — these archetypes differ in terms of both levels of organization and in attitudes towards information organization. The outcomes of the study seemed to support the idea that new technology can succeed as effectively through supporting disorganized behavior as through helping users to become more organized. In the third part of the paper, this idea is explored in the context of the design of wireless information devices. It is argued that the interfaces to these devices should be designed to support both people who wish to be organized and those who wish to be supported in their disorganization.

New Technologies and Disorganization

In the following sections three technologies, and the benefits they bring to the disorganized person, are discussed. Although their use is not reported here as anything 'new', the link to their support for more disorganized behavior is considered.

Word Processors. The popularization of the word processor has changed the way in which people write and has considerably reduced the severity of the penalty of making an error when compared against the typewriter. Typing a page of text using a typewriter requires users to structure thoughts in advance. Once something has been typed on a page the cost, in terms of time and effort, in moving the text or altering it in some way is large – huge when compared to the cost of moving or editing text in a word processor. Word processors allow users to commit even the most speculative thoughts to text and then edit or move them with very little effort. Similarly, the cost of a typing error when using a typewriter is potentially severe. A mistyped letter,

might be remedied by the use of whitener, miss a word however, or put a word out of place, and the user is probably going to have to rewrite the whole page. With a word processor meanwhile, these sorts of errors are very trivial, solved with a few clicks of the mouse and a couple of key presses. Error recovery is in effect simple and taken for granted.

Automatic Teller Machines (ATM's). Before the days of the ATM it was usually necessary to go to the bank in order to draw out cash. This meant that people had to go to the bank, decide how much cash they required until their next visit, and draw out that amount. If they spent the money more quickly than they anticipated, they would have to make another trip to the bank in order to get more cash out. Given that banks tend only to be open during working hours and that withdrawing money tended to require queuing for often considerable lengths of time, this was likely to be a major inconvenience. With the advent of the ATM people were no longer 'punished' for failing to plan their financial affairs.

Mobile Phones. From the point of view of the disorganized person, one of the major advantages of the mobile phone is in the area of logistics. In particular, it is possible to arrange meetings at the last minute and with very little pre-planning. In the days before it was common for people to carry mobile phones it would have been difficult to get hold of someone unless they were at home or at their place of work. However, provided someone is carrying a mobile phone they can be contacted anywhere. Friends may work in different parts of the city. If any of them wants to meet up after work, they can call up friends, choose a bar to meet in and head off on the underground to the nearest station. Mobile phones are also particularly useful if a person is late — the ability to contact the person you are meeting to let them know is often reported as a major convenience for the mobile phone user. This is also true for the disorganized travelers. For example, if someone has missed their train, or got lost when driving, it is possible simply to call the person being met and reappraise the estimated time of arrival (ETA). In fact it may not be necessary to even set an ETA in advance, but rather the traveler can simply agree to "...give you a ring about half an hour before I get there."

Organization and Information – A Study

A study looked at the way in which people organize — or, perhaps, don't organize — their personal data and information. Participants were involved in an in-depth, one to one interview which was constructed in order to take a close look at all aspects of personal data and information, both 'official' and not so 'official'. The study is

reported in depth in Peacock, Chmielewski, Jordan and Jenson (2001). The outcomes suggested that there were four broad categories pertaining to the manner in which people organized their personal data.

Levels of Organization

The results of the study suggested that a distinction between participants was the manner in which, and the extent to which, they organized their personal information. They also differed in terms of their attitudes towards organization of personal information. Four typologies — describing the ways in which people store information and their attitudes towards information storage — are described below, based on the outcomes of the interviews and observations.

Happy Disorganized. These participants considered themselves disorganized and reported little or no organization of personal data. They described ‘messy’ drawers or box storage systems and often had little idea of what was in them. They offered little or no explanation for why things were stored as they were. Some relied heavily on the reminders of others (parents and partners) and notes in basic form. These users did not consider the organization of their data as important, and did not recognize the relationship between a ‘valued’ item, and its safe keeping in terms of organization.

Rummagers. These participants attempted some form of ad-hoc information management, using criteria such as security and accessibility as a rationale for storing particular information-related items in particular places. However, these criteria seemed to be applied in a somewhat ad-hoc way. Participants were not always logical or thoughtful in the development of storage strategies and tended to have difficulty in finding particular items. This didn’t seem to bother them too much — they would just rummage around until they found it. Generally with this group, there was not much hierarchy in importance or organizational structure – that s personal items were as important as official items, and were therefore stored as such.

Info Managers. They tended to carry a lot of information on their person — for example by carrying mobile phones full of people’s contact details and bulging diaries crammed with various notes and documents they were strong on using reminders for themselves — Post-It notes being a favorite tool. Although their systems of information storage were not always that heavily structured, they tended to split information quite firmly between official (e.g. driving license, national insurance number) and personal (e.g. friends addresses, telephone numbers of restaurants, shops etc.). Although they tended to keep a lot of information, they

generally knew where things were, and items were recognized clearly as ‘valued’ or important, often why they kept so much of it on their person.

Mega Structured. These participants were very structured and consistent in the way in which they stored information. Files and other storage systems were distinct and labeled, often password protected (if held electronically) and kept up to date. Participants did not hold on to information, clearing out out-of-date information. They also tended to back-up and duplicate information. Their comments suggested that being well organized was a source of pride and enjoyment. These users had a relatively sophisticated hierarchy of personal data, where valued/important items were generally held in secure systems that required maintenance. Complexity of management strongly correlated with the complexity and importance of the data.

Discussion

Peacock, Chmielewski, Jordan and Jenson (2001) drew some tentative conclusions from the study. Firstly, different people managed information in different ways. Secondly, some people were more organized than others. Thirdly, and perhaps most interestingly, people seemed reluctant to change the level of organization at which they current operate. There seemed to be a basic attitude of “...yes, OK, it’s nice to be organized, but if I can get away with being disorganized, then I really can’t be bothered to change my ways.” A corollary of this is that WIDs — like the word processors, mobile phones and ATMs discussed at the beginning of the paper — could appeal to people on the basis of supporting them in their disorganization as much as in supporting information management behavior which is already highly organized. In other words, whilst the Mega Structured might enjoy organizing their data into highly structured systems, what the Happy Disorganized might really be looking for may be something to support them in their disorganization.

Issues for WID Interface Design

One of the key issues that confronts those involved in the design of the interfaces to data management devices is the extent to which the interface structure should dictate the way in which users manage the data [Bergman and Haitani 2000]. Interfaces which impose a rigid structure on data storage can produce gains in efficiency of use, provided that the structure imposed doesn’t conflict with the user’s view of the way in which data should be stored [Jordan 1998]. However, it seems difficult to avoid this conflict arising at least with some users [Grudin 1989]. Indeed, if the diversity of

approaches discovered in this study is at all generalizable, then it might be expected that the conflict would be far from uncommon.

Open structured interfaces allow the user to structure information input as they wish. However, there is a danger that if the structure is too open, they will offer the user little assistance, in particular with respect to retrieving data, which can become very difficult to find, even with the assistance of a search engine [Pane and Myers 2000].

Conclusions

The outcomes of the study suggest that people manage personal data in radically different ways. This is an insight which needs to be addressed in the design of data management devices. One approach might be to look first at the data that people manage in subsets [e.g. financial data] and work towards finding unifying interaction paradigms within that subset. This approach is advocated by Norman [1998], who describes the benefits of using an array of separate inter-communicating information management devices, each designed to deal with a subset of data. However, if the devices are to be mobile, this may be impracticable as it might require the user to carry around large numbers of devices.

Another option may be to use progressive disclosure. Here the interface presents the most commonly accessed types of data to users while initially hiding that less commonly accessed. Progressive disclosure interfaces support universal use by making it easy for users with less structured approaches to learn the interface's most basic data structuring paradigms. Meanwhile, user who wish to use highly structured data management paradigms can find support for this deeper in the hierarchy of the interface [Apple 1996]. This leaves two key questions for future research: what are the types of data that people are most likely to want to access through mobile devices; and what is the relative frequency with which people will want to access each of these data types when on the move?

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