

The Effects of Life Disruptions on Home Technology Routines

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ABSTRACT

Conflict and disruption are a part of everyday life, yet research in the home largely examines consensus and rituals. In this paper, we use Holmes and Rahe's categorization of major life events in order to investigate disruption within the home. We examine posts contributed to an online technology support board and show how life disruptions fundamentally impact technology practices and routines. We conclude that examining technology in the context of life disruption is a worthwhile area for further work.

Categories and Subject Descriptors

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; K.4.m. Computers and Society: Miscellaneous.

General Terms

Design

Keywords

Disruption, help-seeking, home, family, social computing, technical support, residential mobility

1. INTRODUCTION

Computing research has expanded from studying groupwork in organizations and workplaces to the home. Yet most work in this area assumes relative domestic harmony; people share work on calendars, stay in touch with friends and family, and care for their children [1,2]. Yet the home is not always a place of consensus. What happens when conflict and change arise within the home? How do people manage their home technologies? We contend that HCI research needs to incorporate life disruptions and conflict around home technology use.

In order to investigate conflict and technology within the home, we captured over four years of posts from a large online technical support board focused on support for consumer electronics products sold in the United States. Using Holmes and Rahe's categorization of major life events [3] as a guide, we isolated posts related to common life disruptions and conflicts, such as death,

divorce, marriage, unemployment, and retirement. Our work extends current literature about ICT use when disruptive life events occur and adds new insights into investigating caretaking and support practices for technologies in the home, such as changes in trust, merging and reconfiguring access, and hidden knowledge.

2. RELATED WORK

A growing body of research addresses varied uses of technologies in the home, many of which focus on routines and coordination issues with families. In this area, researchers have studied family calendars [4], digital message boards [5], management of digital photo collections [6] and so on. A related branch of research also examines how people coordinate to *maintain* technologies within the home [7,8]; this work underscores how routine technological caretaking tasks often become the responsibility of one person in the home, usually a family member, a trusted neighbor or friend, or to a lesser extent, a paid technician. Grinter et al. state that when disruptions to household structure and routines occur, caretaking responsibilities may shift to another member of the household [7]. This work, however, does not explain how specific *kinds* of events impact caretaking practices. Rode examined technological caretaking practices with an in-depth ethnographic study, focusing on security and privacy maintenance [9]. Our work builds on Rode's by examining a broad cross-section of disruptive life events as well as investigating ways of managing these disruptions.

2.1. Disruption and Technology Use

A number of researchers have studied how Information Communication Technologies (ICTs) are used in conflict such as in natural disasters [9], war [10], and divorce [11]. Most prior research, however, does not focus on how technology maintenance practices in the home change *after* unexpected disruptive life events occur (though [12] describes changes after long-distance moves.) What breakdowns occur when, for example, a family member becomes ill? What are hidden dependencies related to technology use? Who is affected and who can people go to for help when dependencies are disrupted? Massimi and Charise's work on *thanatosensitive design* acknowledges the inevitable fact that everyone dies, and calls for accounting for the end of life in the design of computer systems [13]. Building on this work, we provide empirical data showing how different life disruptions are not accounted for in the design of home computing technologies.

We used the Holmes and Rahe stress scale (also known as the Social Readjustment Rating Scale) to identify common life disruptions [3]. The scale has been used in over 10,000 studies since its development in 1967 [14] and is grounded in the basic premise that stressful life events influence health and wellbeing. It

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lists forty-three different life events; the top stressful events include death, divorce, imprisonment, illness, marriage, unemployment, retirement, and pregnancy. These events are assigned a point value between 1 and 100 (where a greater number indicates higher potential impact on health.)

3. METHODS

We collected content posted to a technical support board hosted by a large, consumer electronics corporation headquartered in the United States. This company sells a wide range of products, including desktop computers, laptops, peripherals, and portable media devices, and provides consumer-driven forums for people to discuss the company’s products, as well as ask for advice about purchasing, warranty, and technical support issues. The dataset includes content posted from 2003 to 2007, which included 50,000 users with 110,000 unique posts; posters’ technical skill level varied in ability from newcomer to expert.

We merged the top twelve most stressful events in the Holmes and Rahe stress scale [3] (see Table 1) into eight life events: marriage, death, divorce, unemployment, imprisonment, pregnancy, illness, and retirement. We selected sets of keywords based on each item and searched for posts containing any of these phrases. We selected a subset of 112 posts related to personal life events from the dataset. We examine these posts to highlight potential areas for further work in life disruption. We cannot tell to what extent the posts described here are representative of all board users or the broader population of computer users but think this is an important area for future work.

We focus our analysis on five categories: relationship management (marriage and divorce), death, unemployment, illness, and retirement. We did not observe any posts referencing pregnancy or imprisonment. One reason may be lack of Internet access or use, especially among prisoners. In both cases, as technology becomes more mobile and ubiquitous; we anticipate that kinds of questions among broader demographics of users will continue to grow. Three researchers analyzed each post independently. The data were coded for the type of support requested and supplemented with a descriptive analysis of content. Researchers coded the data individually and discussed each event as a group until reaching a mutual agreement.

4. RESULTS

4.1. Relationship Formation and Dissolution

Marriage and intimate relationships changed home technology use; device ownership merged, partners had shared accounts, and partners may have had different sets of expectations about technical knowledge and use. For example, Jason’s¹ computer belonged to his wife until they got married. Jason tried reinstalling Windows XP to fix her computer and afterward was unable to reconnect it to the network. He wrote:

“She got it in 2003, but she does not have any paperwork or anything with it and knows even less than I do about computers.”

Divorce and breakups also altered roles and responsibilities. One poster had never managed a new computer because her ex-husband “always controlled these things.” She came to the board seeking to learn skills that her ex-husband had done for her.

¹ Names changed for anonymity.

Table 1. Frequency of observed posts

Keywords Description	Num Posts	Avg Views (Std dev)
Marriage Married, hitched, marry, engaged	7	118.6 (15.5)
Death died, passed away, passed on	13	187.7 (192.4)
Divorce divorced, separated, split, split up, ex, ex-partner, ex-boyfriend, ex-girlfriend, ex-husband, ex-wife, broke up, taking time apart	12	142 (97)
Unemployment lost my job, lost her job, lost his job, unemployed, unemployment, laid off, got fired, was fired, lost their job	23	219 (137)
Illness sick, sickness, cancer, ill, terminally ill, surgery, Alzheimer’s, dementia, disease, heart attack	16	128 (99.9)
Retirement retired, retire, retiree, golden years	41	236 (277)

Relationship dissolution often meant ownership changes and sometimes also name changes. A poster explained that her ex-boyfriend bought her computer and it displayed his name on the Windows login screen. She wanted to remove it but did not know how.

Doubt, suspicion, and lack of trust characterized many relationships after divorce. Individuals expressed suspicion of how their exes were using once-shared technology. Clara was unable to access accounts on her computer and wrote:

“I should note that I am going through a divorce and when my husband moved out I think he did something because I have files on here that I cannot access.”

Clara suspected that her husband maliciously tampered with their once shared computer. Others had stronger concerns, wondering if their ex-partners were stalking them through their use of shared technology. Gemma wondered if her ex-husband might have done something to her PC. She had given the PC to her son while he was at his father’s house:

“we’ve been divorced and he had make my life miserable so i wont be surprise if he have done something to the PC to know whats going on in my house...Is possible that he can put a mic inside the computer, lets say if there’s a sound card that can come with a mic integrated???”

4.2. Death of a Family Member

After the death of a family member or a close friend, posters needed help unearthing passwords and login information belonging to the deceased person. For example, Mark’s wife had passed away and he was unable to login to her computer. He acknowledged that he could have predicted this being a problem before she died but he “got busy” and did not deal with it then.

Another unanticipated consequence of death was the loss of the technical knowledge that the deceased person had. Loss of knowledge snowballed into larger problems: paying bills, managing documents, and archiving photos on someone else's computer, all of which were daunting and unfamiliar processes for someone left alone who had depended on a partner to do these things. One poster wrote:

"My father died and I'm helping my mother figure out her bills. They're 80 and he paid the bills and she hasn't a clue what or who they paid."

4.3. Unemployment

Access to technology was essential for most upwardly mobile job seekers who had changed or lost a job [15]. More so, technological breakdowns limited access to and communication with potential job prospects. One unemployed poster was unwilling to submit his resume online until he knew he it was properly protected from viruses. Technical expertise was also related to managing finances and collecting unemployment benefits. Another poster had problems opening the unemployment benefits file she had to fill out. She wrote:

"This is taking me forever, I am so late I think I'll be denied."

The financial burden incurred with unemployment was a common problem and impacted the kinds of job searches job seekers could perform:

"I spent days going thru [computer company provided] stuff to find an answer, but I can't afford to call their techs. I've been out of work since May and don't know when I can go back."

Many people wanted to develop their technical expertise and increase their marketability, but they were unable to set up the technology needed to learn these skills.

4.4. Illness

Health problems and illnesses presented new caretaking responsibilities for friends and family members. Jim's sister fell ill with multiple sclerosis and he needed to provide Internet access for her:

"My sister recently developed the sickness of MS! Soo now her husband has sorta left her due to her being sick. Anyway i let her move in with me....This is so important, my sister who has MS looks forward to working off computer cause thats all she has. Ill be awaiting."

His sister had no other outlet to the outside world and finding a laptop for her was imperative to him. Jim had tried to install his router software unsuccessfully; he had also tried system restore and had hit abort inadvertently, leaving him with a computer that did not boot.

Joel similarly was caring for his terminally ill brother, who was living in a hospice house and wanted a laptop. However, Joel could not provide one, lamenting:

"with all the hospital bills there is no way I can make such a large purchase."

Joel called the company's support line, and they suggested he post to the forum asking if anyone knew of any charity programs.

4.5. Retirement

Like divorce, retirement disrupted the relationship between posters and their existing tech support systems. Posters had relied on employer-provided tech support; however, upon retiring, they were cut off from these services and found themselves having to learn to fix their own devices. William wrote:

"I am recently retired having worked for many years in a large company with full technical support so I am a novice to my own home computer."

Retirement also meant living on a fixed income, which in many cases introduced new constraints in purchasing technical help. Mary and her husband were both retired, in their early 70s, and on fixed incomes. They had made one small payment on a laptop that broke shortly after purchase, but they could not afford to replace it, and she was concerned of what the next steps should be:

"If this would have been covered under an extended warrantee, my husband was not aware of it. He did receive a phone call about a warrantee, but said no. He has an 80% hearing loss, and probably didn't even understand the salesman."

Retirement also meant more time to devote to hobbies and activities that required technical expertise. Josh was retired and ran a local public access television show. He wanted advice on what sort of computer to get for this activity:

"I spend a considerable amount of time at the studio editing tape. I want a PC I can use for regular tasks, e.g. e-mail, banking, etc., but I also want to be able to at least do preliminary video editing at home.... Though I spent \$2000 to purchase my current computer, I'm now retired and can't afford to spend this much on a new computer."

5. DISCUSSION

A number of takeaways can be drawn from the disruption stories shown here. With respect to relationships, responsibility for technology maintenance can change when relationships are formed. More problematically, technological dependencies can be disrupted when marriage or partnerships dissolve, leaving one or both partners in a state of technological vulnerability. Posts about death of family members or friends similarly revealed dependencies on others' technological knowledge disrupted routines.

Although we did not observe any coordination issues for technological maintenance with respect to unemployment, we did observe broader implications for inequality and access; specifically, those with the lowest incomes might be least likely to not only have access to professional support, but also least likely to have access to technological expertise within their own personal social networks of friends, family, or coworkers [16].

In the case of illnesses, the impact was often largest on caretakers of the person who was ill. Illness not only impacted people's interactions with technology, but also the responsibilities required of their caretaker. Jim's case highlighted the emotionally and psychologically taxing nature of care giving that carried over into technical support for his sister. People with chronic illnesses may need more or different access to technology, and this access becomes imperative when it is their only connection to the outside world [17].

Finally, retirement changed technological needs and support. Those who relied on tech support from their employers had to find new sources of help. Those who started new hobbies faced new costs associated with these activities, and on a more limited income than they were previously accustomed to.

Some key themes emerge across these kinds of life disruptions. When a person leaves another person's life, by way of relationship dissolution, death, or any other means, her expertise and information goes with her. Often, one person in a relationship or household is responsible for technical maintenance; and when she is no longer present or available, an understudy must take on her role. Critical information is also lost—this includes computer or account passwords, financial information, finance management (i.e. bill paying), and other personal data [18].

Technical roles and identities also change after a disruption. After a change in a relationship, death, or when someone falls very ill, the role of who does the technological work may shift. A caretaker of someone who is sick must now assume the role of technological caretaker in addition to responding to health needs; this can also be financially burdensome. After divorce and death, those who did not do the technological maintenance may find themselves bearing this role, or looking for others to fill it. Changes in personal identity, such as last names in the formation and dissolution of relationships, must be reflected in the technology.

Technical trust and privacy also change in relationships, both in formation and dissolution. Sometimes, people trust another person to maintain their information and technologies in the formation of relationship. Later, their trust decreases in the dissolution of a relationship, and they want to protect their personal data and shared technologies from their ex-partners.

Finally, conflict or life disruptions necessitate new technical skills. In the case of unemployment, new technical skills, such as online job search and resume submission, are essential to finding a job. Many government processes of unemployment have become digitized. In this case, new skills may be required even to collect unemployment benefits. Relationship changes, retirement, and unemployment can all require new skills in technical management and maintenance.

6. CONCLUSION

The study and design of technology has expanded from the workplace and public sphere into the private sphere of the home. Research in the home looks at the “everyday” and “rituals”; yet change, conflict, and even violence can be part of ordinary life experiences. This paper illustrates that life disruptions and conflict are indeed intertwined with maintaining home technologies.

By examining conflict and life disruption in the home, we have illustrated how home technological maintenance is affected; namely, by a loss of expertise and information, changes in trust and privacy, changes in technical roles and identities, and technical skill requirements. This work serves as a starting point to consider how conflict complicates home technology maintenance, and how disruptions need to be considered along with the every day.

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