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Abstract

This paper reports on an exploratory study of early adopters' perceptions of the effects of technology on the way they work and live. Narrative enquiry was used to gather early adopter stories and grounded theory to analyse the data. Narrative enquiry allowed participants to tell the stories that they perceived to be important and grounded theory permitted emergence of a meta-narrative that revolved around the <u>transformative</u> effects of technology on the way the participants work and how technology transforms the participants and their relationship to work two transformations that are inextricably linked. This narrative of <u>transformation</u> is based at the intersection of <u>people</u>, <u>technology</u> and <u>work</u> and revolves around concepts of <u>enablement</u>, <u>communication</u>, <u>flexibility</u>, <u>relationship</u>, <u>ability</u> and <u>management</u>.

Keywords: Narrative enquiry, Grounded theory, Transformation, Work-life balance, Early adopters

Introduction

This paper reports on a pilot project that investigates early technology adopters' perceptions of the effects of emerging technologies on work as ICT continues to play an ever increasing role in New Zealanders' lives.

Using narrative inquiry and grounded theory techniques to gather and analyse data, we allow these early adopters to tell their own stories about how they use ICT in work and how these technologies influence and affect the way they work and live. Because they have had relatively long experience with technology, their stories are often rich and incisive and from them emerge themes that provide insight into the often significant changes that New Zealanders are experiencing. We have chosen these methods to collect and analyse data rather than beginning with theory, as we wanted to attempt to get the fullest and most personal accounts of the human technology interface without the limits that a theoretical lens might impose (Gudmundsdottir 1996). After collecting and analysing the data we discuss applicable theory development in the Conclusions.

The contents of this paper are as follows. First we provide a brief picture of ICT availability and use in New Zealand. We then discuss why and how we are using narrative inquiry to collect data and grounded theory techniques to analyse the data. We then present and discuss the key emergent themes that these early adopters have identified as significant to them. Finally, we draw out implications for research and practice.

ICT Use in New Zealand

New Zealand can be regarded as a developed Western capitalist economy with all the appropriate uptake of technologies in the business and domestic sectors. In 2003, it had a per capita computer access rate of 41.38%. There was a 3.6% adoption of broadband connections which caused New Zealand to be ranked 24th in the OECD (Mishra, Ryan et al. 2005). PCs in the home remain the dominant Internet access device for most households in New Zealand. Work Internet access was available to 34% while 60% of the population had access at home and mobile phones were used by 78% of the population (Mishra, Ryan et al. 2005).

Wireless applications for businesses in NZ can be summarised at a macro level as follows:
- 72% of wireless technology applications are used for business to business (B2B) activities rather than business to customer (B2C).
- Technology consists mainly of hand-held computers (31.5%), mobile telephones (29%), laptop computers (8.7%), and tablets (2.4%).
- Wireless applications are mostly used for mobile employee empowerment (business to employee–B2E) rather than for business transformation or the development of market value through existing or new products and services. (Barnes and Scornavacca 2006). Fixed and mobile Internet connected computers have become basic enabling technology for New Zealand business, and they make possible the adoption of other ICTs.

Unfortunately, we do not have the space to include relevant literature in technology use and adoption, mobile and wireless, and work-life balance. This will be included in future papers.

Methodology

This research uses the techniques of narrative enquiry for data collection, and a combination of the methods of narrative enquiry and grounded theory for analysis and understanding of the data. We briefly discuss the two techniques below and the reasons for choosing them.

Narrative Enquiry

Narrative enquiry is enjoying an upsurge in popularity in a number of fields such as nursing and education, as well as organisational studies (Boje 2001; Carter 1993; Czarniawska 1998; Gabriel 2000; McQueen and Zimmerman 2006; Overcash 2004), and information systems (Dalcher and Drevin 2003; Tan and Hunter 2003; Wagner 2002).

Narrative is commonly identified as the artefact of the interaction between one telling a story, and the listener (Frank 2000; Riley and Hawe 2005) or, as Søderberg (2006) suggests, a retrospective interpretation of the story. Generally, researchers use narrative method and story in order to access the worlds encountered by the storyteller. Conventionally a story is understood to be

> … a first-person oral telling or retelling of events related to the personal or social experiences of an individual. Often these stories have a beginning, middle, and an end. Similar to basic elements found in good novels, these aspects involve a predicament, conflict, or struggle; a protagonist or character; and a sequence with implied causality (i.e., a plot) during which the predicament is resolved in some fashion. (Carter 1993) cited in (Ollerenshaw and Creswell 2002).

While others insist that stories must embody a plot, Boje (2001) usefully liberates story from such constraints, and characterises as "improper storytelling" those stories which are "fragmented, non-linear, incoherent, collective, and pre-narrative" . Consistent with the notion of retrospective interpretation, he defines story as antenarrative, or the precursor to narrative. Experience tells us that many of the stories encountered every day are of just such a character, as opposed to the formally composed complete and tidy performances implied in the conventional definitions.

Grounded theory
Traditional grounded theory is a methodology for developing theory that is grounded in data systematically gathered and analysed, in which theory emerges during actual research, through the continuous interplay between analysis and data collection (Strauss and Corbin 1990). Central features of this analytic approach include the general method of (constant) comparative analysis, theoretical sampling, theoretical sensitivity, and theoretical saturation (Glaser and Strauss 1967). Strauss and Corbin (1990) later introduced a paradigmatic framework to assist in structuring data in meaningful ways. Recently there have been a number of studies in IS that have made selective use of grounded theory techniques, usually in data analysis (Maznevski and Chudoba 2000). The most commonly borrowed elements from traditional grounded theory are the coding techniques (open, axial and selective) used to analyse data. These coding techniques were used in this study.

Using narrative enquiry and grounded theory to gather and analyse data
In this pilot study, in the course of 30 – 60 minute one-on-one meetings, the researchers gathered a collection of stories from a convenience sample of six adults in Wellington, New Zealand. The participants were self-described early adopters of technology. Each participant was invited to describe a typical day and in particular, the ways in which they encountered technology in the course of such a day. Participants were encouraged to share their experiences with technology in their own way. Some respondents were not comfortable as storytellers, and gave terse responses to the prompting questions, and the researchers were then obliged to prompt for clarification. The recorded stories were transcribed and checked for accuracy with the participants.

There are many possible approaches to the analysis of narrative, and it is generally acknowledged that there is neither a fixed recipe, nor even one "best way" to do it (Mishler 1995). In this study we used the constant comparative analysis techniques of grounded theory in conjunction with the three-phase approach of McLeod and Balamoutsou's (2000) narrative analysis. Each approach commences with an exploration of the fine detail, and progresses to higher levels of abstraction, but iteratively returns to examine the detail in the light of the insights gained from the higher levels until saturation is achieved.

Data collection and analysis continued simultaneously (constant comparative method). We first imported the narrative transcripts into an NVIVO™ database and commenced open coding. Each narrative was perused, and broken into "speech units" containing one or more sentences embodying at least one significant idea. We examined each speech unit relevant to the research topic, looking for concepts relevant to the research topic. For each new concept identified, a code was created as a "free node" in the NVIVO™ database (Table 1). Each speech unit was linked to as many existing or newly created nodes as the context required.

The coding process required us to interpret the speech acts holistically, drawing upon our theoretical sensitivity in such a way that we could associate them with abstract concepts even though the precise word had not been used by the participant. Approximately 130 codes were identified in the early iterations. Subsequently, concepts were merged where cognate codes had been used, changed where the researchers disagreed on original coding, and occasionally eliminated when the codes were judged to be trivial.

Borrowing from McLeod and Balamoutsou's (2000) first phase, we read and became intimately familiar with the narratives obtained, noting any striking features and identifying stories within the narratives of special relevance to the subject being explored. By this means we became better informed for the purposes of the next phase.

After several transcripts were analysed, axial coding was used to put data together in new ways, through seeking to identify concepts and the relationships between them by grouping the codes at a higher level of abstraction or meta-narrative of the combined transcripts. Using the iterative process of the constant comparative method we were able to strengthen our understanding of the stories and topics in the context of each narrative. In this part of the process, the researchers: (a) identify narrative fragments of particular interest and relevance in the context of the topic being explored; (b) to the extent that it is useful to do so, apply the principles of deconstruction analysis using the guidelines offered by Boje et al. (1994), looking for dualities; and opposites, seeking what has not been said; and (c) seek to identify a meta-narrative that emerges from the narrative provided.

Table 1: Examples of Open Codes Derived from Narratives

Code	Speech Unit (passages from stories)
Flexibility	*If I want to go home and take work home in the evening or if I want to be at home because I've got a tradesman coming, or I don't feel 100% and I decide I want to work at home rather than taking sick leave, then I'm able to do that and it means that other people in the team that I work in can get in touch with me."*
Mobility	*To and from work but even at the moment to and from lectures, when I travel between [home] and [the city] other than a little thirty second stretch [on the railway line] where there's no coverage, I tend to be on the telephone constantly to people both personally and people at work and just wanting to, I really feel the need to catch up with them more than I did and even though it's only over the telephone the verbal interaction is really important.*
Dependency	*It's allowing me to be much more flexible, however the trick here is to actually learn how to use it and not to become a slave of it or you know not go to the compulsion like do I have an email or you know necessarily it will hardly ever see me, unless I'm really bored.*

Approximately twenty themes eventually emerged from 130 initial codes. Extensive discussion took place around these themes. Examples of these themes were technologies, social impact, personal impact, business impact and attitudes towards technology.

By analysing the themes from a variety of perspectives — transcripts, coding, stories, narrative fragments and meta analysis — it became apparent that newer and higher levels of abstractions and relationships were forming. After further analysis and reflection, it became clear that transformation had emerged from the data as a key theme (Glaser 1978). The key theme is often the same as the basic social process, which can be understood as theoretical reflections and summarisations of the patterned and systematic flow of social life (Glaser 1978). Transformation was the key basic social process that concerned participants as they

worked and lived with technology; it incorporated and explained the relationships between all the conceptual categories. At this point, coding was delimited to only those variables that related to the core category in sufficiently significant ways (Glaser 1978).

We have adopted an additional step from the third and final phase of narrative enquiry according to McLeod and Balamoutsou (2000). In the findings section that follows, we create a descriptive summary representation in the form of a meta-narrative that lays out our understandings and findings of the narrative data.
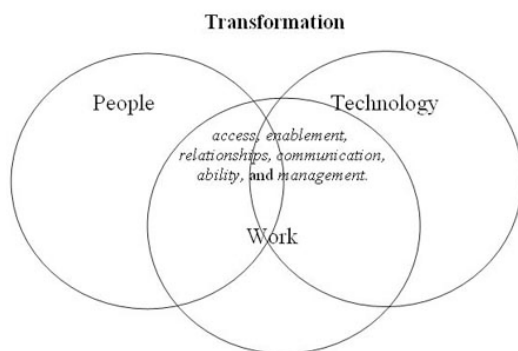
Preliminary findings

In this section we first introduce the participants and using their own words show that they are early adopters, whose long experience has engendered clear and discerning thoughts about technology. We then very succinctly present the key findings of our analysis in the form of a descriptive summary representation that lays out our understanding of the narrative data that describes the basic social process of transformation.

Participants and their Attitudes toward Technology

In this paper we are focusing on the stories of six participants who describe themselves as early adopters of technology. Three of these participants work in the public sector, one as an academic, one as a consultant and one as an independent entrepreneur. Two of the public sector participants work in a mid-level managerial capacity. These participants viewed technology as something central to their lives, particularly their work lives. While participants were generally enthusiastic about technology they also recognised its place in the greater scheme of things, and occasionally identified the negative impacts of work-related technology on their private lives. The participants in this study regularly use a wide range of available technologies in a variety of work and home contexts. They used computers, cellphones, and PDAs. Connections were via wireless and broadband. They were inclined to use the latest software whenever possible. Some participants confessed to an uncomplicated fascination with the technology for its own sake.

The meta-narrative – transformations in work (and life)

Transformation emerged as the meta-narrative that linked all the stories of these early adopters. The focus was on the nature of this transformation as it relates to people, technology and the workplace. Specifically we look at how technology transforms the way the participants work and how technology transforms the participants and their relationship to work (Figure 5), two transformations that are inextricably linked.

However, the participants' stories made it very clear that work and life outside of work (home) were very strongly linked. The the key themes in the transformation concern *people*, *technology* and *work* and the main concepts are *access, enablement, relationships, communication, ability,* and *management*.

Figure 5: The Transformation of People, Technology and Work

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It is very clear from the participants' stories that technology transforms the ways they are working (and living). It does this by enabling the participants to expand the scope of what is possible for them. This is done in a number of ways: technology-enabled geographically and temporally distributed collaboration; the ability to work from just about anywhere; access to information and services across international time zones. More controversially, technology allowed participants to blur not only the geographical demarcation between home and office but also the temporal one allowing them to access and be accessed anytime. Technology also allowed participants to expand and enhance relationships with their families by allowing participants to achieve flexible work schedules that allowed them to work from home or office, whichever was convenient to meet family and work obligations. Technology, according to the participants, is clearly a two-edged sword. It enables greater flexibility in work and home life, but the participants were quite clear that they needed to have the ability to manage the technology. For many of them, this was a skill that they learned over time and usually without training. It was pointed out that technology could outstrip the ability of people to use it effectively. The quality of work and work-life transformation was highly dependent on their abilities to manage both the technology and themselves.

Conclusions

Participants in this research have not waited passively for their lives to be changed by technology. Rather, they have willing embraced "anything that winks, blinks, has motors, lights" deliberately seeking positive transformation in their lives at work and at home. Even with such ordinary technologies as laptops, wireless connectivity, and cellular phones, they have each transformed their private and professional lives so as to get more out of both. Mobile technology in particular has enabled the participants to live and work in ways that were previously not possible. No truly radical technologies were reported in the narratives, but several stories told of liberating technologies enabling significant levels of business transformation. From a people perspective, whether as an employer or employee, all participants claim to be fitting more into their day and achieving higher levels of satisfaction at work and in leisure. Such claims naturally invite an exploration of the viewpoints of their family members to see whether this extra level of productivity is perceived to isolate them socially from their friends and family.

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