Chapter 1

Living with Technology

> "As social scientists we have long given too much weight to verbalisations at the expense of images. Lived experience, then, as thought and desire, as word and image, is the primary reality " (E.M. Bruner 1986, p.5).

A friend who works in a library is having a normal working day: checking books in and out; helping people to find the author they were looking for; organising inter-library loans. Until he receives a mobile phone text-message from another friend who is visiting New Zealand. It is a short message, no more than 160 characters long, yet it feels like a very personal, intimate contact – a hug or an affectionate touch. He is moved to send a reply. It is even shorter than the message he had received and in a personal, intimate style not typical of him. For a moment, the two friends, though a world apart, feel intensely present to each other.

A nurse has just spent an hour caring for an extremely ill patient. Having ministered to the patient's medical needs, she sat with him for a time; encouraging him to eat some of his yoghurt; talking to him about his family; helping him to get more comfortable in the bed. As she walks back to her station she feels sad for the patient who has by now become something of a friend. Still involved with that patient, she starts to write up her notes on her rounds this morning recording carefully any changes in condition and any medication that she has administered. She is comfortable doing that. It feels like a few moments quiet time reflecting on her patients, how they are, what she is doing, and what more she can do for them. But now she must enter the relevant patient movement and bed management data on the hospital's information system. Which patients are moving to another ward in the hospital? Any patients due to move into this ward? Who is due to be discharged? Who is due for a procedure in the next 24 hours? Bed vacancies? What drugs have been administered and to whom? It only takes ten minutes twice a day, but this really frustrates her. She feels she is being taken away from her patients. This is time she could be spending with them. She feels this information system has nothing to do with her work.

A father comes home from work. As he rushes into the hall, he keys in the password to disable his house alarm. His daughter comes in behind him. He needs to get the dinner prepared so he switches on the computer in the study for his daughter and sets up her favourite game for her. Once she is settled in, he goes to the kitchen, prepares the food, and places it in the oven. He listens to his phone messages while doing this. Eventually he sets the temperature and timer and leaves the food to cook. As he passes down the hallway to the sitting room he pops his head into the study. His daughter asks him to play with her. "Back in two minutes love." In the sitting room, he programmes the VCR to record a drama that he and his wife want to watch later. Now he is heading for the study to play his daughter's computer game with her.

We *live* with technology. We don't just use or admire technology we live with it. Whether we are charmed by it or indifferent, technology is deeply embedded in our ordinary everyday experience. Arnold Pacey (1999) noted in his book *Meaning in Technology* that academic and professional comment on technology resists discussion of personal experience. It seems too subjective. But as we have seen in the vignettes above, our interactions with technology can involve emotions, values, ideals, intentions, and strong feelings. According to Pacey, much academic framing of technology plays down this side of the relationship between people and technology in favour of something more objective, on the basis that objective analysis is required to advance theory and change practice.

Although there is an overlap, our interests in technology are narrower than Pacey's. Whereas Pacey ranges from industrial and scientific to military technologies and from architecture to civil engineering, our interest is in relationships between people and interactive technologies or information and communication technologies. Aspects of these relationships have been addressed by research and practice in areas such as Human Computer Interaction (HCI) and Computer Supported Cooperative Work (CSCW) since the late-1960s and mid-1980s respectively. In recent years there has been a perceptible shift in nomenclature towards Interaction Design or User Experience Design when referring to relationships between people and interactive technologies. This reflects a broadening of focus from computers to a wide range of interactive technologies and from work-related tasks to lived experience. At least in some quarters then, academic and professional comment on relationships between people and interactive technologies is open to discussion of experience. The web sites of many computer and mobile phone manufacturers promote their attachment to ensuring that their technologies enrich user experience. Books about the Internet are as likely to consider how people have accommodated to it and made it part of their relationships and activities as they are to consider the technical accomplishment that it is. Indeed, in HCI, the profile of experience seems constantly on the rise. For example, Shneiderman (2002) has recently argued that we are entering into the era of 'new computing'. According to him:

> "The old computing was about what computers could do; the new computing is about what users can do. Successful technologies are those that are in harmony with users' needs. They must support relationships and activities that enrich the users' experiences" (p.2).

The vignettes at the beginning of this chapter speak to the ways in which interactive technologies have become part of our ordinary everyday experiences at work and home. We recognise them and identify with them. We know those moments in our own interactions with technology. The vignettes draw attention to the importance of experience in each person's interactions with technology and raise the question of whether the technology supports relationships and activities that enrich experience.

The hospital information system does not enrich the nurse's experience. In fact, it takes her away from what she finds meaningful and rewarding in her work. The problem is not so much the time involved in recording data on the information system as it is the experience of being pulled out of the world of relationships and activities that is nursing for her. Her

commitment to nursing centres on the experience of nurturing and caring relationships with patients. She may well put up with inadequate pay and difficult working conditions as long as *they* leave her to get on with what she got into nursing for, caring for patients. For her, caring for patients involves really getting to know them, spending time with them, and looking after them as people. The hospital information system takes her away from these experiences and, by focusing on management and financial aspects of ward activities, requires her to treat the people for whom she cares as bits of information. This fractures her experience of nursing.

The father returning home from work interacts with a variety of technologies that are part of the prosaic experience of home life for many in the Western World today. People are used to videos and remote controls and have become blasé about barcode programming of their VCRs and rewinding precisely to the start of a TV programme. Security alarms have become incidental to the owners. Timers in cookers, caller ID on telephone displays, electronic maps and navigation systems in cars, digital cameras – all enchanting when new, all ordinary and invisible now. Unlike the hospital information system for the nurse, these technologies do not take the father out of the relationship with his daughter and the household activities that are most important to him at that time.

The computer is probably still the most obvious expression of the increasingly pervasive nature of technology for those of us who can remember how difficult it was to get our hands on a computer in a university no more than twenty years ago. However as desktop computers have become commonplace in many homes, the initial excitement and playfulness that we experienced with computers is reserved for particularly enchanting applications or product designs. The Titanium G4 Powerbook was the first computer in years that enchanted me, and that was before I had any sense of what it could or could not do.

Shneiderman and other commentators point to mobile phone text messaging, electronic mail, and Internet chat as technologies that succeed in supporting relationships and activities that enrich the users' experiences. Shneiderman argues that they have been as successful as they have because they provide people with alternative ways of doing with they already love doing – communicating. They augment people's ability to communicate and fit in with a value system that treats communication and relationships as important. This may not sound like a convincing argument to readers who see teenagers absorbed in text messaging and assume that they are wasting their time or worse actually diminishing their ability to 'really' communicate. But studies that look closely at the teenage experience of text messaging do not support such scepticism.

Many studies of mobile phone use and text messaging describe the teenage experience with these media as expressive and creative (see Katz and Aakhus, 2002, for example). Teenagers put a lot of effort into composing short messages that convey precisely what they feel and what they think will be understood by the recipient. They seem to evoke the other person, how they think and feel, while composing a message to them. The constraints of the medium and their desire to express themselves clearly make text messaging very personal for them. They collect personally significant messages to evoke the moment they were

received, to recall, and reminisce. Some are reluctant to give up their old mobiles for a newer model because the old model holds messages that are dear to them. A downloaded or handwritten version would not do. The phone, display, and format of the text, the sensory activity of holding the phone and calling up a particular message, all help to evoke the first moment. They are like the wrapping and the card signifying that an object is a special gift – put away in a drawer, come upon every now and again, always evoking that moment. The enchantment of technology. And yet a prosaic experience for many teenagers and adults.

We *live* with technology and, as commentators and practitioners, we must consider the implications for theory and practice. We see some of the implications at least being tabled in the emergence of a marketing concern for 'user experience' among manufacturers and distributors of interactive technologies. We also see it in research attempts to define and measure user experience. However, as there is little history of interest in experience in HCI and related research areas, we suggest that a pause for reflection is needed lest we all jump on a marketing bandwagon without knowing what we are getting into. Although HCI research and practice is already moving towards experience as a response to the need to deal with technologies that we live with, there is now more than ever, a need for clarification on what we mean when we talk about experience of technology.

HCI and the user experience

It is no longer considered sufficient to produce a computer system that is effective, flexible, learnable, and satisfying to use – the characteristics of usability according to Shackel (1990) – it must now also be useful in the lives of those using it. The hospital information system mentioned above may have been technically state-of-the-art and it may have been highly usable, but it was not experienced as useful by a nurse who wanted to get on with caring for her patients. In contrast the tools for text messaging in many mobile phones would win no prizes for usability, yet text messaging is experienced by many adults and teenagers as instrumentally and expressively useful (Katz and Aakhus, 2002). It augments people's ability to organise complex and busy work, family, and social lives. For many it also provides an opportunity to express themselves, their feelings and emotions, in ways not previously available to them.

Experience of technology refers to something larger than usability or one of its dimensions such as satisfaction or attitude. However, HCI and related disciplines are not used to dealing with experience. HCI grew out of collaboration between the disciplines of Computer Science and Psychology, the academic aspects of both of which are more comfortable with the laboratory than the outside world, and directed more towards functional accounts of computers and human activity than towards experience. Against this background, it might be worth looking briefly at the emergence of interest in experience with technology and how HCI currently understands user experience. Kuutti (2001) characterises the history of 'the user' in HCI. The user started out in the 1970s as a cog in a rational machine, became a source of error in the 1980s, a social actor in the 1990s, and is now a consumer.

The user as a cog in a virtual machine

During the 1970s and 1980s the dominant approach to understanding relationships between people and technology assumed a single user sitting in front of a computer screen and keyboard performing a fairly well prescribed task. In terms of attempting to develop a science of human-computer interaction this could be seen as a sensible place to start. It contained within it the scientific virtues of reduction and generalisation, assuming that this human-computer system captured the essence of what it was like for any person to interact with any computer. Its simplicity also made it a good model for engineering HCI systems. It also had face validity in the business context as the single-user approach matched the management style in many offices and factories where workers were assumed to use computers to execute their individual part of the work of the office. In this context, the computer was seen as a tool through which set work was accomplished. Underlying the scientific and organisational reduction was a model of the structure of action that was a deliberate simplification of action. Instantiations of this class of cognitive model of action can be found in Card, Moran, and Newell's (1983) GOMS model and Norman's (1988) seven stages of action, which can be found in his book *The Psychology of Everyday Things*. Norman's seven stages included: one for goals, three for execution, and three for evaluation.

Norman was very careful to describe his model as approximate. It was a useful model for answering the kinds of questions that Norman thought were central to understanding how people interacted with the objects of the world, including interactive technologies. As far as he was concerned the central question was: What makes something – like threading a film projector, sending a text message, or editing a spreadsheet – difficult to do? Norman was well aware of the limitations of the model. In hindsight we can now read his critical evaluation of the model against the character of everyday activity as prescient of where the study of human-computer interaction would go after it appropriated the relevant aspects of the cognitive science that informed Norman's model. In his critique, he pointed to the opportunistic aspects of everyday activity.

> "For many everyday tasks, goals and intentions are not well specified: they are opportunistic rather than planned. Opportunistic actions are those in which the behaviour takes advantage of the circumstances. Rather than engage in extensive planning and analysis, the person goes about the day's activities and performs the intended actions if the relevant opportunity arises" (p.48-49).

As long as we stay with performance criteria and the planned actions of individuals, Norman's model of action is a very useful resource in specifying what makes something difficult to do or error-prone. However if our interests include how people feel about sending a text-message, what participating in text-messaging culture does for their sense of self, and what values are implicated in texting, then Norman's model is seen to be lacking

The user as a social actor

During the late 1980s and 90s the opportunistic or contingent aspects of everyday activity became the central focus of challenges to the dominance of information processing

psychology. These challenges came mainly from the disciplines of sociology and anthropology and were geared towards asserting the salience of the social context of activity in discourse about people and technology. One way to see this is in terms of these commentators claiming that the contingent character of everyday activity is at least as important if not more important than mental structures in shaping human-computer interaction. By moving everyday activity centre-stage, and by insisting that all action is richly contextualised, this approach began the process of promoting experience over abstraction. It fits comfortably with our vignettes of text messaging and domestic technology and helps explain the sense the nurse has of the technology interfering with her primary preoccupation of patient care.

Lucy Suchman and Jean Lave have been two of the most prominent figures in contextualising action in human-computer interaction. Their emphasis on the situatedness of action offers a radical alternative to the task-based, information processing accounts of action characteristic of the single-user approach. For example, Suchman (1987) argued that, in contrast with task-based frameworks where the situation is characterised as an aspect of the means to achieve ends or part of the conditions for accomplishing a goal, situations and actions are intimately linked: "… the detail of intent and action must be contingent on the circumstantial and interactional particulars of actual situations" (p.186). For Suchman, the inherent openness of situations defies carefully planned responses and any regularity emerges not as a result of plan-based action but as a result of local responses to contingencies.

Lave (Lave, 1993; Lave & Wenger, 1991) also offered an explicitly relational account of socially situated practice insisting that people acting and the social world of activity cannot be separated. "Theories of situated activity do not separate action, thought, feeling, and value and their collective cultural historical forms of located, interested, conflictual, meaningful activity" (Lave 1993, p.7). Moreover, Lave proposes that the character of situated practice is heterogeneous and multi-focal. She points to the ways in which people who constitute 'a situation' together, know different things and speak with different interests and experience. For Lave, the unit of analysis is the person-acting-in-setting through culturally constituted resources for learning and sense making.

Although our work has benefited greatly from the way in which approaches such as Lave's and Suchman's have opened up human-computer interaction to the contingencies of ordinary everyday life, and our interest in experience has in part been primed by their work, we shall argue in Chapter 2 that their approaches miss some of what we want to insert into discourse on experience of technology. While fully accepting the contingency of action, we are keen to develop a stronger sense of the felt life and the emotional quality of activity in our approach to experience. We are also keen to embed these dimensions in the sense-making aspects of experience. Specifically, we are referring to the affection, hopes, and imagination of text-messaging teenagers and the fears, frustrations, and anxieties of the nurse obliged to use a hospital information system that cuts against her sense of who she is as nurse. These emotional, sense making aspects of experience seem underplayed in situated accounts of action.

Consumers and the user experience

The last ten years has seen: the development of the dot-com companies and a multi-million dollar games industry; strong penetration of computers into the home; the confluence of computer and communications technologies; and the beginnings of wireless, mobile and ubiquitous computing. The industry vision now is not of desktop computers or even laptop computers but of information appliances and interactive technology consumer products that penetrate many aspects of our lives. As Coyne (1995) put it: "there is a complex weaving of technological making and reflection" (p.4).

Interaction with technology is now as much about what people feel as it is about what people do. It is as much about children playing with cyber-pets, teenagers gender swapping, and elderly people socialising on the net, as it is about the middle-aged executive managing knowledge assets, office staff photocopying, or ambulance controllers despatching ambulances. The emergence of the computer as a consumer product has been accompanied by very explicit, in-your-face attention to user experience. For example, Preece, Rogers, and Sharp (2002) in a leading text book in the area present user experience goals as one of the sets of goals of interaction design, related to but not subsumed by the more readily recognised usability goals.

> "... user experience goals differ from the more objective usability goals in that they are concerned with how users experience an interactive product from their perspective rather that assessing how useful or productive a system is from its own perspective" (p.19).

While any attempt to move the industry's attention towards experience is to be welcomed, we have reservations about some of what is being offered in the name of user experience. In this area, it seems that technological development and business momentum may have outstripped reflective commentary and analysis.

Computer manufacturers aspire to designing computers as fully-fledged consumer products and as part of that process they are concerned with creating the total user experience. Employing the phrase 'user experience design' as a reminder or motivator to designers to pay attention to people's experience of technology is one thing. Employing the phrase to indicate that a particular user experience can be designed is another thing altogether. The latter suggests a return to the simplicity of a technologically determinist position on what experience is. This neglects the agency of people interacting with technology, a focus that has been hard won by the likes of Lave and Suchman. While giving those who use 'experience design' and similar phrases the benefit of the doubt, it is part of the job of a book that claims to examine experience of technology to take the language of user experience seriously. For example, the Apple Mac Developer page defines user experience as follows:

> "User Experience is a term that encompasses the visual appearance, interactive behaviour, and assistive capabilities of software."

The orientation to user experience here is technology driven. Although the authors are interested in enriching user experience, they have a technological vision of how this can be achieved. Their approach is similar to the approach described in many books on designing web-site user experiences. For example, although Garrett (2002) attends to both business and user needs in his book directed at improving user experience of web-sites, his attempt to resolve them depends on a conceptual integration of information design, information architecture, and interface design. Two quotations from the book illustrate his conviction that experience can be shaped or controlled by good design.

> "The user experience development process is all about ensuring that no aspect of the user's experience with your site happens without your conscious, explicit intent. This means taking into account every possibility of every action the user is likely to take and understanding the user's expectations at every step of the way through that process" (p.21).

> "That neat, tidy experience actually results from a whole set of decisions—some small, some large—about how the site looks, how it behaves, and what it allows you to do" (p.22).

The IBM website contains a richer, more transactional, approach to user experience design. They set out their stall as follows:

> "User Experience Design fully encompasses traditional Human-Computer Interaction (HCI) design and extends it by addressing all aspects of a product or service as perceived by users. HCI design addresses the *interaction* between a human and a computer. In addition, User Experience Design addresses the user's initial awareness, discovery, ordering, fulfillment, installation, service, support, upgrades, and end-of-life activities."

It is not our aim to dismiss the user-experience design phenomenon or the approach to user experience design outlined on the web sites of some of the major manufacturers. Indeed, as you will see in the following chapters, our own description of experience is quite compatible with the view of user experience design proposed on the IBM web site. And we are heartened by the fact that the consumer metaphor underlying notions of user experience treats activity as emotionally laden. Klein (2000) demonstrates that consumer product branding is concerned with establishing and maintaining emotional ties, the sense of belonging or feeling of warmth that differentiates one product from another. As the HCI construal of users as consumers deepens, the relationship between person and computer can no longer be construed as mechanistic or shaped by relationships with social structure alone, it will develop an emotional-volitional component, which is currently underdeveloped.

Our concern with the consumer metaphor and user experience in HCI is that business momentum may take a potentially rich idea and reduce it to design implications, methods, or features. There are literatures on consumer activity and experience that seem to have been missed by those who imagine that they can design a user experience. DeCerteau (1984), for example, has a framework for analysing how consumers make use of producers and distributors. People develop their own paths around supermarkets tactically resisting the

architecture and advertisements designed to shape their shopping behaviour. Consumers appropriate the physical and conceptual space created by producers for their own interests and needs, they are not just passive consumers. Klein (2000) similarly describes the potential for immunity to advertising and the anti-advertisement culture that suggests a healthy resistance, and even activism, in the face of global consumer capitalism. The general point that we must remember when thinking about interactive technologies as consumer products and people who buy and use them as consumers is that consumers are not passive, they actively complete the experience for themselves.

This brief review of the history of perspectives on people and computers in HCI suggests that although interactive technology designers and manufacturers have taken a shine to the idea of user experience and consumer products, their understanding or use of experience is limited. For some of them experience is a fuzzy concept - you know when you have had an experience. For others it is inherent in interface and information design and architecture, as if consumers will not make of the interface and architecture what they need and desire. The lesson of the mobile phone, and particularly of text-messaging, that seems not to have been learned yet, is that the quality of experience is as much about the imagination of the consumer as it is about the product they are using. It is our aim to fill some of these lacunae by developing an account of experience of technology that mines the rich conceptual resources already available to complement the technological and business momentum towards experience.

Toward a deeper understanding of technology as experience

Perhaps it would be useful to view interactive technology in general as an experience, even if it is sometimes an experience of indifference or resistance. This is the position that this book sets out to explore. Given the lacunae in our treatment of experience in HCI to date, a central part of our exploration is a critical discussion of the approaches to experience that are current in HCI and a characterisation of experience that enables us to interpret the influence of technology in our lives. Although the detail of our position is developed through the rest of the book, we will briefly describe it here to provide an overview against which the detail can be read. The overview can be seen as a series of six propositions.

- *Our first proposition is that, in order to do justice to the wide range of influences that technology has in our lives, we should try to interpret the relationship between people and technology in terms of the felt life and the felt or emotional quality of action and interaction.*

Klein (2000) reminds us that, in a world of signs and meanings, a Starbucks' coffee is not just a coffee it is an experience of warmth and homeliness that provides a space of belonging. Likewise a car is not just a car and a mobile phone is not just a mobile phone. In both cases, the colour, shape, and manufacturer's name convey something of our selves to ourselves and to others. I may think that I am purer than pure, and think that I am immune to this kind of branding. For me a car is a car - mine is 15 years old and a very bland model - and I don't have a mobile phone. But Apple know that image matters to most people in some circumstances. I wasn't too taken with the transparent casing of their iMacs. But they

got me with the Powerbook G4. The large screen, the lightness, the titanium casing. Resonant of space travel, evoking the mobility and robustness I had always expected from a portable computer but never quite had. Most of the time I use it on my desk at home but still feel good about having it. For me the Powerbook G4 is not just a computer, it is an enchanting experience.

On a long train journey, some people would feel lost without their mobile phones; they so need to feel connected. Others on the train become annoyed and irritated by the constant noise of phones ringing and people talking aloud to absent others. As one of those who get irritated I am sure it is not the idea of people talking on their phones in a public space that annoys me. Rather it is the sensory or physical quality of the intrusion. The noise seems to permeate a boundary. The noisier it is or the more grating the ring or the voice, the more violent the intrusion. Curiously the absent other – the emotionally and sensually absent other – is also a source of trouble for me. I generally enjoy overhearing other people's conversations, but not one side of a conversation.

As we indicated earlier when discussing the popularity of mobile phones and texting, those who love their mobiles very often do so because of their expressive quality. They keep messages sent by friends and prefer to keep an old phone rather than swap it in order to have those messages in their original state. There seems to be something about the felt and sensual quality of the phone, the snug fit, the sound of a friend's voice, the signature tone associated with a particular caller, the shape of a text message, and the pleasure of scrolling through it. For those who engage with these practices, the sensory and emotional qualities of phone and text message constitute the felt experience of calling and texting. Again it is not the abstract idea of communicating, perhaps not even the social practice, but the felt and sensual quality of the particular communication that gives it an expressive quality.

Returning to the vignettes at the beginning of this chapter, we are arguing that in order to understand the relationship between the friends texting each other across the world and their mobiles or between the nurse and the hospital information system, we must understand what the experiences of texting and using the information system feel like for those people. We must understand the emotional response and the sensual quality of the interaction.

Because 'experience' already expresses the felt-ness of life for us, when we write about experience of technology, we have this felt quality very much in mind. We have become used to interpretations that emphasise the lived-ness of experience in HCI, especially with the significant contribution of practice and activity theories since the mid-1980s. In this book, we prioritise felt-ness to emphasise the personal and particular character of experience with technology. For us, *felt* experience points to the emotional and sensual quality of experience. Our first proposition is that these qualities should be central to our understanding of experience of living with technology.

- *Our second proposition is that social practice accounts of interactive technologies at work, home, education, and leisure understate the felt life in their accounts of experience.*

Suchman, Lave, Star and others have convinced us that cognitive models of action are not the most appropriate models of human action for human-computer interaction. Instead of looking for an account of coherence of action in psychological processes in the head, they have convinced us to look to the particular social and physical circumstances of action and interaction for interpretations that are more relevant to understanding, designing, and evaluating interaction. The implication in Suchman's (1987) work that the significance of artifacts and actions is intimately related to their particular circumstances has influenced design discourse over the last ten to fifteen years. And Bowker and Star (1999) have shown how artefacts in particular situations create classifications and boundaries that raise moral and political issues. Lave's (1993) orientation towards a broad social and community context elicits questions about people's concerns, values, and identity. She also explicitly addresses experience and how it relates to action or practice.

Our aim is not to put ourselves in some fruitless competition with practice-based approaches. Rather, we would like to build on what they have already contributed to HCI by giving a more prominent position to felt-ness in an account of people's experience with technology than they do. In this regard, we part company with practice-based approaches and theories when they play down the emotional and sensual quality of experience. For example, despite developing a very rich account of concerned action, it seems to us that Lave's commitments to dialectical theorising leads her to treat experience as belonging to an analytical order different to the sociocultural order. Likewise, theoretical commitment to the primacy of circumstances and methodological commitment to in situ observation seem to constrain the treatment of individual differences in situated practice accounts. We argue that this simplifies concepts that are crucial to the reflexivity of felt experience such as self, person, and subject. It may be that in order to interpret felt experience we have to enquire from the subject what the activity felt like as felt experience entails reflection, after the event, on the personal meaning of the experience.

Hodges (1998) account of how she felt as a trainee teacher, which attempts to give due weight to both circumstances and feelings, is an example of what we aim for in this regard. It seems to us that discourse on individual differences will have to be enriched if we are to have an account of experience of technology that satisfactorily addresses questions around the presentation of self and the construction and management of identity, which is apparent on the Internet today. The starting point of Sherry Turkle's (1995) analysis of life on the Internet is that people differ from each other in many ways, including how we integrate computers into our lives. In her research, "experiences on the Internet figure prominently" but she argues, "these experiences can only be understood as part of a larger cultural context" (p.10). From our perspective, Turkle's approach is complementary to the situated action approach, its methodology focusing on the personal or felt experience in context.

It would be easy to reduce felt experience to the subjective dimension of experience. This is not our intention at all and our guard against it, like Hodges and Turkle, is to see every situation as emotional or felt but not having separable things called emotions or feelings in them. The possibility of doing this in a coherent and sustained manner is created by a pragmatist philosophical stance, about which we shall say more later.

- *Our third proposition is that we recognise that it is difficult to develop an account of felt experience with technology.*

This is partly because the word 'experience' is simultaneously rich and elusive. It is also because we can never step out of experience and look at it in a detached way. Experience is difficult to define because it is self-reflexive and as ever present as swimming in water is to a fish. However we argue that useful clarifications can be garnered from sources as diverse as philosophy, psychology, literature, drama, and filmmaking. Some examples of what is available should suffice to make this point.

Laurel (1991) set out to interpret experience of computers by analogy with experience of theatre, suggesting, "both have the capacity to represent actions and situations ... in ways that invite us to extend our minds, feelings, and sensations" (p.32). Her interest in the senses relates to her concern for action, engagement, and agency in the context of people interacting with computers. As a consequence, engagement is at the heart of user experience for Laurel. She holds it up as "a desirable - even essential - human response to computer-mediated activities" (p. 112).

In another context, we explored a filmmaker's analysis of people's experience of film in an effort to start thinking about the possibility of enchantment with technology (McCarthy and Wright, 2003). In an analysis of what makes a film "grab, and hold, and move an audience" (p.8), Boorstin (1990), a writer and producer of Hollywood films, suggests that the key is to understand that we don't watch movies in one way, we watch them in three ways. Each way of seeing has a distinct pleasure and magic associated with it: the pleasure of something new and wonderful, the pleasure of emotional engagement, and the thrill of a visceral response. The point is not to try and import this analysis to human computer interaction but to learn about the complexity of technologically mediated experience from it.

Other approaches highlight a specific quality as central to experience. For example, Benson (1993) sees absorption as one of the pivotal characteristics of an aesthetic experience. He describes being aesthetically absorbed as a breaking down of barriers between self and object, as an outpouring of self into the object. Absorption is associated with being completely attentive, engrossed, intensely concentrated, and immersed or lost in an activity. He also uses terms such as entrancement, enchantment, and bewitchment when describing absorption. He associates such words with connotations of pleasure, wonder, and delight.

As mentioned previously, Shneiderman highlights human needs, and social relations in his view of HCI and argues that technologies must support relationships and activities in ways that that enrich peoples experiences and their sense of togetherness. Norman (2002) places enjoyment centre in his new analysis of design. He offers a three level model of enjoyment concerned with relating people's *visceral*, *behavioural* and *reflective* responses to an object or product which has similarities to our own analysis presented in chapter 5 and to Boorstin presented above. He also analyses the everyday and mundane activities of customisation, personalisation and personification to make the case that we are all designers and that we make products are own and come to love them or hate them.

Finally, Dourish (2001) presents a close reading of philosophical ideas on embodiment in order to develop foundations for approaches to the design of human computer interaction that emphasise tangibility and sociality. He argues that Husserl's phenomenology has had considerable influence in turning attention, first, to everyday experience rather than formalized knowledge, and second, to that experience as a phenomenon to be studied in its own right. For Dourish embodied phenomena occur in real time and in real space and are concrete and particular and gain meaning through participative status as objects in felt experience.

- *Our fourth proposition is that pragmatist philosophy of experience is particularly clarifying with respect to experience and the models of action and meaning making they encompass express something of felt life and the emotional and sensual character of action and interaction.*

Pragmatism also sees knowledge as participative. According to this view, any knowledge we have is dependent on the technology, circumstances, situations, and actions from which it was constructed. It is knowledge in a community of engaged people, in a situation, from a perspective, felt, and sensed. For pragmatists, therefore, knowing, doing, feeling, and making sense are inseparable. Pragmatism is a practical, consequential philosophy, a practice that is concerned with imagining and enriching as much as understanding. The test it sets itself is to improve things. We shall say more about the implications of this perspective for theory and conceptualisation in the next section.

Coyne (1995) argued that pragmatism is the operative philosophy of the computer world, that designers and developers are more likely to be influenced by Marshall McLuhan and John Dewey than by Bertrand Russell and A.J. Ayer. They are more likely to talk about freedom, community, and engagement – the language of pragmatism – than about formality, hierarchy, and rule – the language of analytic philosophy. We have found the ideas of one mainstream pragmatist, John Dewey, and another whom we position as a pragmatist though he would not be universally considered so, Mikhael Bakhtin, to be particularly clarifying in our attempts to conceptualise felt experience.

For Dewey experience is constituted by the relationship between self and object, where the self is always already engaged and comes to every situation with personal interests and ideologies. His perspective on human action – the key to understanding felt experience – is that action is situated and creative. There can be no separation of means and ends in a world where people are always already engaged, rather people create goals and the means to achieve those goals in the height of their engagement with the world. Dewey's model of action is not unlike the way we think of children at play, free to define and redefine ends and means, even to redefine the situations in which they find themselves. For him, action is emotional, volitional, and imaginative and experience is a process of sense making.

Bakhtin, a philosopher with a more literary bent than Dewey, picks up on the emotional-volitional quality of experience and relates it to an account of everyday meaning making that is aesthetic and ethical. In this context he highlights the particularity of everyday experience, the way in which the emotional-volitional quality of a particular activity in a particular

context shoots through felt experience. For Bakhtin, the unity of felt experience and the meaning made of it is never available a priori but must always be accomplished dialogically. It always occurs in the tension between self and other. I only make sense of my self in terms of how I relate to others and to my own history of selves – the way I was and the way I would like to be, which like others are always already in the present. Collapsing the traditional distinctions between speaker and listener, reader and writer, tools and results, a dialogical perspective on sense making orients us to the idea that meaning is a process of bringing together different perspectives and, in this creative bringing together, forging understanding. Bakhtin refers to this as *creative understanding*.

- *Our fifth proposition is that the importance given to the emotional-volitional and creative aspects of experience in pragmatism prioritises the aesthetic in understanding our lived experience of technology.*

According to Dewey aesthetic experiences are refined forms of everyday, prosaic experience where the relationship between the person (or people) and the object of experience is particularly satisfying and creative. Note that, in contrast with analytical aesthetics, the emphasis is on the experience not the formal properties of the object of experience.

Shusterman (2000) has written an interpretation of pragmatist aesthetics in which he describes aesthetic experience as above all an immediate and directly fulfilling experience. He develops his argument by deliberately drawing on forms of music, such as funk and rap, that would never be considered aesthetic by those who define aesthetic in terms of the formal properties of the art object. In taking this approach, he continues Dewey's project of seeing aesthetics in experience or in the particular relationship between self and object. The pragmatist approach to aesthetics opens up for us the possibility of aesthetic experience in work, education, and interaction with technology, not just in interaction with high art objects. This brings us back to Shneiderman's description of New Computing as supporting " relationships and activities that enrich the users' experiences". In Dewey's terms, this is an aesthetic aspiration for computing. For Shusterman, an aesthetic experience (or perhaps an enriched user experience) is "an experience of satisfying form, where means and ends, subject and object, doing and undergoing, are integrated into a unity" (p.55-6).

Pragmatism provides tools for analysing the aesthetic quality of felt experience in the form of, for example, Dewey's characterisation of *an* experience and the internal dynamics of experience. We shall describe and use these later in the book. They are complemented by Bakhtin's aesthetics, which focuses on the struggle to achieve the sense of fulfilment that can be seen as characterised in Dewey's characteristics of *an* experience. For Bakhtin, this becomes a study of consummation of experience, the archetype of which is consummation of self in other.

- *Our sixth and final proposition is that the re-visionary theorising of pragmatism is particularly valuable for understanding the relations between people, technology and design.*

Dewey criticised scientific theorising as being backward looking. By this he meant that it seeks to describe and explain the world as it is, it does not concern itself with how the world might have been or might become. In his theorising, Dewey was concerned to change, not to represent. When he practised philosophy of education, he was concerned to improve educational practice. When he practised philosophy of art, he was concerned to enquire into how prosaic experience could become as satisfying, fulfilling, and creative as possible. When we attempt to pragmatically conceptualise people's experience of technology, we are concerned with enquiring into what pragmatism has to offer towards enriching those experiences, even to the point of imagining what a rich experience of technology could be.

A re-visionary theory is valued not so much for whether it provides a true or false representation of the world, but rather whether it helps us think through relationships between for example, people, technology, and design. It is less concerned with representing existing relationships than with imagining new relationships and experiences. When later in this book we describe Dewey's model of action as being something like children at play, we are not suggesting that this represents human action as we have observed and known it. Rather in the spirit of pragmatism we are attempting to reorient the way we think about action to take account of the potential for playfulness and creativity in action. When we conceptualise technologies as experience we are attempting to re-view technology by making aspects of experience of technology visible that would otherwise remain invisible. For pragmatists, theorising is a practical, consequential activity geared towards change, not representation.

Some might argue that re-visionary theorising may not be as well suited to enquiry about technology as it is to enquiry about topics that are more obviously in the domain of the humanities, such as education, art, politics, and literature. However it could also be argued that the very proposition we are testing in this book is that reflective practice on experience of technology could be well served by a humanist cast, the test of which is whether it changes readers' thinking about technology to the point where questions about the expressiveness, feelings, values, and sense of self evoked by interactions with particular technologies are as natural as questions about form and function. Moreover it is worth recalling that both Dewey and Bakhtin were concerned with the production and consumption of artefacts. Dewey's was concerned with the production and consumption of works of art and Bakhtin with the production and consumption of the novel. Many of their ideas about the relationship between producer and consumer, artist and appreciator, author, reader, and character, and about the process of creative understanding may be usefully employed in the conceptualising the relationship between designer, technology, and user.

Representational or reflective theorising only makes sense when the 'world' being explored is considered to be relatively stable. If it is stable, then what was important in technology, is important, and will continue to be important. A representation or categorisation of technology, once achieved, would remain valid. In contrast, when the world being explored is constantly changing, in fact has become a byword for change, as technology has, representational theories are always chasing to catch up with the latest manifestation but one. Moreover an important constructive dimension of theorising is missed with the reflective stance. As technology is ever changing, it is not only reflected, it can also be made.

Cognisant of this potential, people who create new technologies adopt a revisionary or forward-looking reorientation that can also be adopted by theorists whose theories are geared towards developing new ways of looking at technologies rather than reflecting past practice. In this context, theorising becomes active intervention in which we provide a conceptual elaboration of technology that facilitates a re-orientation among designers, users, and observers. Not just any re-imagination, but one that is practically, experientially, and ethically rewarding, and that is oriented towards how technologically mediated action is lived and felt.

Plan of the book

So far, we have sketched the position we intend to develop in this book. The remaining chapters will be used to provide more detail and to discuss in depth the issues that have been raised. The next four chapters, chapters 2 to 5, provide a detailed explanation of our conceptualisation of technology as experience. In chapter 2, we clear the ground by reviewing relevant developments in HCI and CSCW over the last twenty or so years. In so doing we review what we have termed the turn to practice and argue that the felt-ness of experience has been underplayed in practice theories. In chapter 3, we clarify what we mean by experience, outlining the pragmatist approach to experience that we employ and describing the particular contributions of John Dewey and Mikhael Bakhtin, the writers on experience who have most influenced our own thinking. In setting out the pragmatist approach to experience, we describe three defining commitments of pragmatism: the primacy of prosaic action and, in particular with respect to Dewey and Bakhtin, the continuity between aesthetic and prosaic experience; the situated creativity of action; and the relationality or dialogicality of understanding. In chapter 4 we ask what a pragmatist account of people's experience with technology might look like. We describe the threads of experience and then use these threads to analyse some examples of people's experience with technologies, starting with film and moving onto more interactive technologies. Whether watching a film, playing a computer game, or using a spreadsheet, pragmatism tells us that our experiences do not come to us ready made. Rather as meaning making creatures we bring as much to the experience as the filmmaker or designer puts into it. In chapter 5, we provide an account of the variety of ways in which people make sense of their experience, a key analytical resource in exploring relationships between people and technology.

Chapters 6 to 8 are in the form of short case studies about technology use that illustrate some of the ideas developed in chapters 3, 4, and 5. Chapter 6 presents a personal experience of Internet shopping. Chapter 7 is based on a pilot's reflections about his experiences of procedure following and chapter 8 is an attempt to characterise the experience of ambulance control in two different settings one of which involves a high-tech system. The final chapter, chapter 9 pulls together some of the major strands of the previous chapters and considers how they relate to emerging trends in HCI and interaction design.