

Designing the Social Life of Books and e-Books

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Abstract

E-books have seen a significant proliferation over recent years. In the UK, about a third of the population today owns an e-reader with about half either owning an e-reader or tablet. Nevertheless, only about 4% of readers have moved to reading e-books only. These numbers suggest that, while e-books have caught on among a large number of users, they seem to complement rather than replace books. In light of the significance of books to past and contemporary cultures and societies it is little surprising that the emergence of e-reading technologies has sparked a plethora of writing on the topic, particularly in journalism and the humanities. With a common focus on the relative merits of books and e-books, and ultimately, their respective futures (some writers go as far as either mourning or celebrating the death of the book), the debate largely suffers from a technological determinist stance, neglecting the role of social practice as a driving force in technology adoption and use. Regardless, the sheer volume of the discourse suggests that something important is at stake in the move from analogue to digital reading technologies and that books continue to be valued as physical artefacts in the digital age, if not with more fervour than ever. What is surprising then is the lack of empirical research aiming to understand how books and e-books are used and valued in everyday life. Existing work in the area is almost exclusively concerned with practices of reading, with a particular emphasis on reading in academic and professional environments, thereby not only disregarding the social and material nature of reading, but also the rich life of the book beyond its role as a reading technology. The aim of this thesis then is to provide an understanding of the practices and values surrounding books and e-books in everyday life. Based on this understanding, it further aims to explore alternatives to the current e-reading ecosystem through designs that are sensitive to some of the broader values people associate with books and e-books. To do so, it takes a situated approach to studying books and e-books as they are used over the course of their lifecycle inside and outside the home. Through a combination of a series of in-depth interviews, guided 'home tours', and participant diaries 'context-rich' data on people's uses of and orientations towards books and e-books are gathered. Subsequently, design responses are iteratively developed before being returned to readers for analysis. The contribution of this thesis is fourfold: (1) an account of the socially and materially situated practices associated with books and e-books inside and outside the home, (2) an explication of the distinct, yet complementary, values reflected in and driving book and e-books use, (3) an explication of the ways in which developing a sense of self and connecting with others are actualized through the use of books and e-books, and (4) the development and in situ analysis of a design exemplar in support of these goals.

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1 Introduction

1.1 Book Cultures

Books are possibly one of the most significant technologies ever invented. The analysis of spoken language and its representation in a system of signs that can be combined into sounds and words, constituted a major breakthrough in the development of humankind. From the days of its inception writing has been a material practice. The earliest writing was done in the sand, but mankind soon started experimenting with other materials and arrived at stone walls and tablets to begin with, followed by papyrus, the scroll, and finally the codex or book, which is still with us today. In its early days, books used to be a scarce resource, only accessible to the educated few. Nevertheless, with the availability of more pervasive, persistent and mobile writing and reading technologies, we were able to communicate and spread the word across time and space, soon accelerating our cultural development at an unprecedented pace and scale. Books made possible developments in human rights, the sciences, the arts and philosophy, enhancing our understanding of ourselves, irreversibly changing the way we live with each other, and make sense of the world around us. In the process of making and re-making the written word in its form and material, humanity re-made itself. While our ability to speak is innate, it takes many years and endless hours of practice for us to learn how to read and write. In acquiring this important skill we both draw on old brain structures and develop new ones, leaving our brains physically altered in the process. The effort we put into acquiring these skills suggests that we expect great benefits from them, and we are right to do so, as they are powerful tools indeed. Reading and writing allow us to externalize our thoughts and make them available to others. For the first time we are able to develop more elaborate and complex thoughts. Through reading and writing we are able to reflect on our past selves and others and imagine alternative future selves and situations. More so, by teaching our children to read and write we are able to pass on our skills, knowledge and experience from one generation to the next, meaning that others can pick up where we left off, as individuals and cultures. The pervasiveness of the book today speaks of its success and key role in this cultural process. The UK today, and many other countries in the world, have achieved near universal literacy, books have become widely available through affordable paperbacks, a large used book market, libraries, and free digital books on the internet.

Despite its success, the book is not without rivals threatening to push it off its pedestal. With the invention of the e-book we finally seem to have found a replacement for books fit for our digital age. The rise of the e-book only really took hold with the development of dedicated e-readers, again highlighting reading as a very material practice. E-books themselves are really only formatted text, now often embedded in digital rights management software so as to prevent illicit copying and editing. Most e-books today are digital versions of print books (or vice versa, since books today are typically written digitally), but other forms of e-books exist on the fringes of publishing, such as hypertext or mobile phone novels. Arguably, e-books were invented in 1971, when on the fourth of July the founder of Project Gutenberg made available the declaration of independence online for public download [23]. Even before Amazon launched its first Kindle in 2007, e-readers had already been ten years in the making. In 1998, two companies launched the Rocket eBook and the SoftBook Reader. However, their low storage capacity and lack of connectivity made them market failures. A few years later, in 2004, Sony launched the first e-reader using e-ink screen technology. Until then, we had been reading electronic texts for a while (e.g. in e-mails, texts, web pages, digital documents, etc.), but the existing screen technologies proved unsuitable for more sustained periods of reading that are common for books. E-ink paved the way for a breakthrough in the adoption of a new set of reading devices. The second breakthrough came with connecting e-readers to a range of digital services. Amazon's success with its Kindle is largely down to selling not simply an e-reading device, but first and foremost the digital content and infrastructure associated with it, which also allows the company to sell its devices at a loss. At first glance, e-books seem in many ways superior to books: they are light and ready to hand, we can carry more of them on a single device than we are ever likely to read in a lifetime, e-books are instantly available and many for less than print books or even for free. And the numbers seem to prove them right. As far as I could discern there is no public data available on e-book sales and device ownership in the UK, so we'll turn to the US for comparative data of an English speaking country in which Amazon operates. During the period in which this research was carried out, e-book sales rose from one in six sold books being e-books in 2011 to one in four in 2013. E-reading device ownership rose in the same period. In 2011, 12 per cent owned a dedicated e-reader, 8 per cent a tablet, 35 per cent a smartphone, and 77 per cent a laptop. By 2013, e-reader ownership had more than doubled and tablet ownership more than tripled. Smartphone ownership had gone up just over 20 per cent whereas PC /laptop ownership remained stable. Certainly, ownership doesn't guarantee use, and the most recent trend suggests that e-books are complementing books. Nevertheless, the numbers hint towards a shift in our reading practices from print to digital. Over half of the English population expected books to be replaced by digital technologies in the next 20 years [60]. Are e-books eventually going to make books obsolete? And if so, does it matter?

1.2 Le livre est mort! Vive le livre!

Over its long history, the book has not been without competition from other media, such as the radio, television and the internet, and from technologies of its own kind, including e-books and audio books. At times, mankind itself has been its worst enemy, such as when books were censored and destroyed under dictatorial regimes, or Aristotle strongly objected to books for threatening to displace oral culture and thus the need for internal human memory. Still, the possibility and actuality of emerging digital reading technologies, and particularly the increased

popularity of e-books, has incited the minds of cultural commentators for over 20 years. Advocates of the book highlight its sensory qualities (its smell, touch, etc.) that are essential to a complete reading experience, which e-books fail to deliver. Those celebrating the e-book dismiss these arguments as the nostalgic lamentations of luddites who fail to appreciate e-books' clear technological superiority (e.g. "you can carry your whole library in your pocket!"). On the book defender side, Darnton's [42] characterisation of the book as a 'marvellous machine' echoes common sentiments:

"Consider the book. It has extraordinary staying power. Ever since the invention of the codex sometime close to the birth of Christ, it has proven to be a marvellous machine - great for packaging information, convenient to thumb through, comfortable to curl up with, superb for storage, and remarkably resistant to damage. It does not need to be upgraded or downloaded, accessed or booted, plugged into circuits or extracted from webs. Its design makes it a delight to the eye. Its shape makes it a pleasure to hold in the hand. And its handiness has made it the basic tool of learning for thousands of years." [42:68]

According to these commentators, books are future proof due to being a highly refined technology whose basic shape and form have remained virtually unchanged for more than 500 years. More commonly, e-books are seen as being unable to evoke the kind of sensual reading experience we associate with print books. It is particularly the latter reactions that guardians of the e-book dismiss as "emotional, and curiously physical, as if stories are defined by their containers" [23]. In their view, there is nothing lost in moving from the physical to the digital as the move is a merely superficial one from one text container to another. After all, it is the content or the book's function that counts, not its form. Gomez' 'Print is Dead' [64] that precedes Darnton's 'The Case for Books' by a year, is a case in point:

"Burgess was on the right track in realizing that a physical book is merely a container, and that its printed form and shape is a concession to the marketplace... What's important is the knowledge, and most of this knowledge can be contained in a variety of digital formats that are much more efficient than a simple 'box' of physical print... Even the most rudimentary electronic reading experience offers more features and overall utility than a print book does... Yes, some people will continue to hug novels in bay windows on autumn days, basking in the warm glow of a fireplace with a cup of camomile at their side. But many more will embrace the convenience and advanced usability that digital technology and electronic reading provides, and for them nothing will be lost in the equation." [64:18]

Having made clear that books are 'primarily the information they contain', and contrasted the preference of 'novel huggers' for a physical reading experience to those 'embracing' the superior functionality of the e-book, Gomez goes on to make various predictions about the future of the e-book, which under the pressure of digital natives will become 'microchunked', edited, and shared for 'bite-sized' consumption.

Despite an apparent deep rift between the two camps, they have in fact more in common than divides them. What both strands of this debate share is the technological determinism underlying their arguments, in which a technology acts as an independent force bringing about deep and irreversible social change. What drives changes are the intrinsic qualities of the technology rather than the needs and preferences of people. The e-book replaces the book because it is technologically superior, and vice versa. Both parties justify their projected futures by drawing a straight line from technological developments of the past. For book

lovers the deep history of the book means that there'll be an equally deep future awaiting it; e-book enthusiasts see history as one in which new and better technologies have replaced the old, and will always do so. Artefacts, people, and activities are abstracted into mere conceptual entities. The variety of books on the market is condensed down into 'the book', an 'age old technology' or 'a container of information'. The population of readers is a homogeneous mass neatly divided into those embracing the future of reading and the luddites who will be left behind. The different types and reasons people have for reading are never mentioned. A dichotomy is drawn between emotion and reason, where arguments emphasizing physicality, experience and the past are labelled 'emotional' (i.e. feminine) and those emphasizing digitality, functionality, and the future are rational (i.e. masculine)¹. The very idea that books and e-books must be in competition, fighting out a fierce battle, too, is a rather masculine notion. A scenario in which books and e-books may continue to exist alongside each other remains unexamined. In sum, the arguments, while neither entirely wrong nor right, are theoretical and speculative. Divorced from considerations of actual human practice they abstract and overgeneralise. People hardly feature in their discussions and if they do they are assumed rather than actual subjects, and if real, limited to the author's own experience.

1.3 From Theory to Practice

What seems undisputed is that digital reading technologies are changing the ways in which we read and relate to books. While it looks like e-books are complementing rather than replacing books, the prevalence and persistence of the debate is nevertheless striking and suggests that something valuable is at stake in the shift from print to digital. To Bolter [16] predictions of the future of the book, whether they are supportive or critical of the e-book, are part of "the ambiguous present that constitutes the late age of print", during which we should expect "a transformation of our social and cultural attitudes toward, and uses of, this familiar technology" [16:3], and to Pearson [153] "the changes on the horizon are likely to affect not only the ways in which we transmit and read the kind of information which was traditionally contained in books, but also our whole framework of values around them; they will affect our relationships with books individually, and collectively in libraries" [153:21]. What is at issue then is not whether we can predict the future of the book or e-book (we can't), but what these changes might entail, and what exactly might be lost or gained in our interactions with books or e-books. How does our relationship with and through books change in the light of the emergence of digital reading technologies? And more specifically:

- How do people integrate e-reading into their existing everyday reading?
- What are the everyday practices and orientations associated with reading e-books for leisure?
- How do the practices associated with e-books change how we use and value books?

¹ Despite the majority of readers being women, women writers are conspicuously absent from this debate.

- How can we design digital technologies that support people's current and possible future values associated with the everyday uses of books and e-books?

Despite the urgency of these questions, there is surprisingly little empirical research that attempts to answer them. Across the disciplines, from the arts and humanities, to cultural studies and the social sciences, books have been variously understood as texts to be interpreted, as artefacts of cultural production, and as tools for supporting or hindering cognitive processes and psychological experiences of reading, none of which help us understand the role books play in everyday practice. Early work on digital reading technologies aimed to establish an understanding of the impact of digital technologies on activities of reading and how screen based reading compared to reading from paper. Much of this work was initially concerned with performance measures, such as reading speeds and comprehension. It was not until later that researchers paid attention to the actual practices and processes involved in reading, which highlighted the situated affordances of paper and its role in supporting active reading and collaborative work practices. With the emergence of e-books and e-readers the focus on active reading and outcome measures remained, but shifted to evaluating the usability of e-reading devices (mostly e-readers and tablets, rarely smartphones) in knowledge work environments, such as schools, universities, research institutions, and offices. Similarly, design efforts aimed at improving or re-conceiving current e-reading activities continued in the same tradition, focused on supporting active reading practices, storytelling and learning, and information access.

While this body of work has made some important contributions to giving us a good understanding of the ways in which digital reading technologies aid or hinder reading based practices, it is limited in helping us understand their broader role in everyday life. Specifically, there are three main reasons why the findings do not easily transfer to an everyday context. First, much of the work focuses on two particular settings, namely educational and work environments. As a result, the work focuses on a certain population of readers, such as students and knowledge workers, and excludes those reading outside of work and academia. Related to this, existing research considers particular types of reading, i.e. the type of non-linear, active reading that we do for learning and writing, involving a number of secondary tasks, such as cross-referencing, annotation and note-taking. Reading in everyday life, by contrast, tends to be done for its intrinsic enjoyment rather than be motivated by some external goal, such as passing an exam or writing a report. Finally, the work tends to be exclusively concerned with practices of *reading*, thereby failing to appreciate the broader set of practices that surround reading in everyday life, such as buying, organizing, and gifting books. In sum, much of this work then focuses on a single activity (reading), in particular contexts (educational and professional), and on particular types of reading (active reading).

1.4 Practice, Practice, Practice

In light of the lack of research into the broader set of everyday uses of books and e-books, the aim of this thesis is to (1) develop a situated understanding of the everyday practices and values surrounding books and e-books in order to (2) identify opportunities for change through design. Specifically, the work takes its focus by applying three particular lenses on the topic: the everyday, experience, and the social life of things.

The Everyday

The focus of this work is on everyday practices and values surrounding books. Particular settings and practices work together to create the everyday. In this work, I use either aspect of the everyday as a point of departure from which to illuminate everyday book and e-book use. For instance, my investigation may take as a starting point the home as an everyday site of reading, or leisure reading as an everyday practice, while allowing my focus to expand or shift as the investigation proceeds. The everyday tends to become elusive as we try to pin it down, but it also tends to be messy. It is for this reason that clear boundaries between work and home life or public and private life cannot be drawn. So while my focus is on reading book and e-books for leisure, most of which will be done at home, I understand that some people read work-related books in their leisure time, that some of our leisure reading takes place outside the home, and that not all our leisure reading consists of books, but also magazines, newspapers, blogs, etc. Rather than drawing a priori boundaries, my approach is to embrace the messiness of the everyday, while maintaining a core focus that is being dynamically adjusted in response to emerging findings.

Experience

I take a holistic approach to understanding the role of books and e-books in our everyday lives. Rather than merely focusing on what people do and their motivations for doing it, I am also interested in what our doing and thinking does to our being in the world (and vice versa). By experience I mean the active, moment-by-moment construction of our thoughts and feelings in our conscious minds. This is not to say that experience is a purely mental phenomenon. Rather it is embodied and situated. It is embodied in the sense that our bodies are an extension of our brains (and vice versa) and consequently take an active role in the way we experience and act in the world. Experience, while often considered to be subjective, is better thought of as inter-subjective and situated in that it emerges in interaction with our environment. In other words, how we act, think, and feel is a response to the particular situation we find ourselves in, while at the same time it is modulated by the interaction of our dispositions, past experiences, current moods, and future intentions. Finally, our experience gives rise to and is framed by a unique sense of self through which we express affiliations with some people and differentiate ourselves from others. As a result, I'm interested in both our shared and idiosyncratic ways of interacting with books and the understandings of our selves and others they give rise to and express.

The Social Life of Things

In this thesis I aim to understand everyday experience through the lens of the social life of things [5], or through our social interactions with things in space over time. In the case of books and e-books these interactions are not limited to activities of reading, but encompass the entire lifecycle of use, from the moment books and e-books enter our lives, move through them, and out of them. In doing so, I necessarily understand social practice as materially constituted. The reason for this is that only through an understanding of what people do with things (i.e. books and e-books), we can come to learn what things do for people. I appreciate that the life of the book and e-book starts long before a reader holds it in her hands. However, much has been written about the real and expected impact of

digital technologies on the publishing industry, and while production and distribution are important topics of investigation, they are outside the scope of this thesis. Acquisition will be discussed as part of the consumption lifecycle, but the emphasis is on practices of use.

Taking a holistic approach to studying our everyday experience through books and e-books necessarily requires a focus not just on the entities themselves, i.e. things and people, but more importantly, the relations between them, which are characterized by being mutual and unfolding in space and time. To do so, I combined design ethnography with research through design to gain a situated understanding of the current and future social and material practices surrounding books and e-books, and the values that drive and emerge from them. Specifically, I conducted two exploratory field studies about the everyday uses of books and e-books followed by design work aiming to promote social practices around physical and digital book collections. The first study was a diary study aimed at understanding how e-books were used for leisure across e-reading devices (e-reader, tablet, smartphone, and PC) and settings (inside and outside the home). This involved asking participants to document any activities related to the use of e-books, such as acquisition, use, discussion, sharing, etc, using a photo diary. The diaries were used in conjunction with two interviews to elicit background information and discuss the diaries in depth. The findings made apparent how e-books were integrated into people's daily lives after an initial period of experimentation by which participants came to understand the extent to which the technology catered to their existing and desired reading practices. Over time, participants learned to draw on the particular physical and digital affordances of e-books and e-reading devices to find new opportunities for leisure reading inside and outside the home. The study has several implications for the design of everyday e-reading technologies, most important among which are the need to better support sharing activities, to move from ownership to use, and to provide and interface between digital and physical e-book collections. The aim of the second study was to understand the lifecycle of books as they entered, moved through, and out of the home, such as their acquisition, ownership, use, exchange and divestment. Here, I conducted a series of unstructured interviews as people took me on a tour around their homes. This allowed me to observe and discuss the participants' various situated uses of books in the setting in which they were most commonly kept and interacted with. The findings revealed the range of practices related to the ownership, organization, use, and exchange of books. Again, participants drew on the particular physical affordances of the book to support a rich array of social practices that go far beyond the pleasure of reading. Displaying and hiding, placing and re-arranging, taking books apart and putting them together, preserving and destroying books, receiving them and passing them on to others were some of the ways through which people were able to develop a complex sense of self and to connect with others inside and outside the home.

What these studies suggest is that there are some broad differences in the ways in which books and e-books are perceived and used. To begin with, books tend to be owned and e-books used. Over the course of their life books support a much broader set of practices that go beyond everyday reading. Books help enact a broad set of values related to developing a complex sense of self and connecting with others. The ownership, placement, modification, and sharing of books, for instance, allowed people to reflect on their past, develop a certain sense of self in the present, and project into their future; to re-negotiate one's position inside a

shared household; to connect with others outside the home; and pass on part of oneself to others even after one's death. E-books and their associated infrastructure, on the other hand, are designed to encourage a certain kind of reading that is solitary, linear, and intensive. This is because, unlike books, e-books don't have a life outside their role as a reading technology. E-reading software and digital rights management severely restrict the ways in which e-books can be discovered, modified, organized, navigated, and shared. As a result, books allow people to reconfigure their everyday experience in a more flexible way than e-books do. Finally, people regard e-books not so much as a replacement for books, but as yet another reading technology that suits their lives in some ways and less so in others. We find that people's relationships to books and e-books are neither simply 'rational' nor 'emotional', although they are probably both, but first and foremost practical. People make practical choices about whether a particular reading technology (book, e-reader, smartphone, tablet, or PC) suits the particular situation they find themselves in by drawing on the technologies' particular physical and digital affordances. Being able to buy a book in a shop, read it in the bath, display it on a shelf or pass it on to others after reading versus being able to instantly download an e-book on a holiday, being able to read while waiting for a bus or having breakfast, or being able to keep one's reading private in public informed the choices people made about whether to buy, use, or give books or e-books.

Based on these insights from the studies I undertook some design work that aimed to foster social practices around the use of books and e-books inside and outside the home. To do so, the design (1) enables the bridging of physical and digital book collections, and (2) supports the sharing of digital and physical reading activities. To understand how and whether the design might change people's everyday experiences with and through books and e-books, I took a mock-up of the design back into people's home. Here, the mock-up acted as a probe that was to elicit responses to how and why people saw themselves using the device in terms of (1) collaboratively building collections inside the home, and (2) sharing their own reading activities and learning about those of others outside the home. The findings showed that the device could to a degree transcend the digital-physical divide. People valued being able to collaboratively build and discuss their collection inside the home, reflect on their past reading, plan their future reading, connect with close family members or friends, and learn about the reading of prominent members of the public.

The thesis is relevant to interaction designers who wish to design everyday digital reading technologies that are sensitive to people's practices and values surrounding the use of books and e-books. It does so by explicating people's everyday situated practices and values that inform their choices around reading technologies. In addition, it highlights the ways in which these practices reflect and enable a broader process of finding and re-negotiating a place for oneself among others inside and outside the home, and in doing so, shape our everyday experience. Beyond these analytical insights, the thesis further offers a design exemplar and design analysis that give some indication as to how these insights might find a tangible expression in a design that aims to be relevant to people's everyday lives, and in what ways it may actually change them. Finally, it proposes a set of sensitizing concepts that should help designers to inform their choices around the design of everyday reading technologies. Drawing on principles of well-being they offer practical guidance on how to design alternative ways of

experiencing everyday life through books and e-books. To summarize, this thesis makes the following contributions to interaction design and HCI research:

- An explication of the everyday practice and values surrounding books and e-books, including
 - An account of everyday e-book uses across e-reading devices (e-readers, smartphones, tablets, PCs) and settings (inside and outside the home) and lifecycles of use (from adoption to archiving)
 - An account of the practices surrounding books in the home over their lifecycles of use (from acquisition to divestment)
 - An explication of the distinct values emerging from and driving book and e-book use
 - A discussion of how the particular affordances of books and e-books support processes of developing the self and connecting with others
- Design reflections and recommendations for the design of digital reading technologies, including:
 - A reflection on the rationale underlying the design process
 - *Book-e*, a design exemplar facilitating the sharing of physical and digital book collections inside and outside the home
 - A series of design recommendations for the design of everyday digital reading technologies based on an in situ analysis of *Book-e*

1.5 The Road Ahead

The thesis is structured as follows. *Chapter 2: Related Work* gives an overview of the literature related to book and e-book use, highlighting how books and e-books have been understood across the arts and humanities, as well as social sciences and in human-computer interaction. I begin by providing a quantitative background to book and e-book use by drawing on national and international statistics on book and e-books sales, device ownership, and reading as a leisure activity. The arts and humanities have a long tradition of studying books as historical, cultural, and literary artefacts. The approach here is usually theoretical and speculative, understanding books as disembodied texts to be interpreted, thereby neglecting its social and material dimensions. In cultural studies, books are seen as artefacts of cultural production. Across the social sciences books have been examined as tools for activities of reading. Sociology, with its primary focus on social practice, has given much attention to activities of reading, particularly the kind of ‘active’ reading done in educational and professional settings. These empirical approaches give us a good understanding of the cognitive and behavioural processes and situated practices involved in activities of reading for work and education, yet fail to give us insight into the broader situated practices involved in reading for leisure. Finally, I review design work done in both academia and industry aimed at enhancing reading experiences, including

applications and devices replacing or augmenting existing e-reading technologies. None of this work has looked at crossing physical and digital book collections for sharing inside and outside the home. Having positioned the approaches and contributions of this thesis in relation to existing work, in *Chapter 3: Methodology* I outline my own methodological approach, which combines design ethnography with research through design as a way of understanding current and future situations of book and e-book use. I start with building the theoretical foundations underlying human experience by highlighting the relationship between practice, self, materiality and spatio-temporality, as well as discussing the foundations of designing for experience. Across these two approaches, I combined observational methods, such as diaries and home tours with interview methods, such as contextual and in-depth interviews. These observational methods allowed me to understand the situated practices surrounding books and e-books, which in conjunction with the conversational methods gave me insight into the experiences and values emerging from and underlying their uses. Building on insights from the studies, sketching methods allowed me to articulate tangible alternatives to the design of current e-reading technologies and present them to households of readers for analysis. *Chapter 4: e-Books in Everyday Life* and *Chapter 5: Books in Everyday Life* present findings and insights from the fieldwork on everyday book and e-book use. These include an account of the initial motivations and expectations surrounding the adoption of e-reader ownership, of practices related to the discovery, acquisition, and organization of e-books to support processes of reading, as well as an account of routine and opportunistic reading practices inside and outside the home. Based on these findings, I discuss some of the implications of these findings for the design of everyday e-reading technologies, including a need for a shift from designing for e-books as a commodity to designing experiences and services surrounding e-books, for improved support for the discovery of e-books and the organization of large e-book collections in order to help people manage their reading process, support for non-linear forms of reading, for reading recommendations that are more sensitive to the reader's context of use, as well as for sharing reading experiences inside and outside the home. Chapter 5 gives insight into the everyday situated uses of books in the home. Here we find that books support a range of temporal, spatial, material and social practices that act as the basis for creating value around the social life of the book. These include practices of acquisition, ownership, use, and divestment; of storage, organization, placement and display; of creation, modification, replication, appropriation, augmentation and preservation; and of discussion, sharing, gifting, and passing on. I discuss how through these practices people are able to develop a certain sense of self and connect to others inside and outside the home. Both chapters are versions of papers published in the CSCW and Interact conference proceedings, respectively ([84], [86]). *Chapter 6: Book-e: Designing the Social Life of Books and e-Books* offers a reflection on the process of designing for social activities around the everyday uses of books and e-books inside and outside the home. I explicate the rationale behind the design of *Book-e*, a situated device for organizing and sharing one's digital and physical book collections inside and outside the home. An in situ analysis of the design with four households of readers suggests that participants most valued being able to build shared and personal collections across formats, to reflect on their past reading and envision their prospective reading, to have a physical means of gifting e-books, as well as the opportunity to receive reading recommendations from experts outside their social network. In *Chapter 7: Discussion* I discuss the contributions of this thesis in more

depth, including an account of the situated practices surrounding books and e-books inside and outside the home and across their lifecycles of use, a discussion of how books and e-books complement each other due to the distinctive affordances that give rise to these practices. An explication of the distinctive values associated with books and e-books that are reflected in and drive these practices. And, finally, an analysis of a design exemplar, *Book-e*, that enabled people to reflect on and articulate possible future uses of everyday e-reading technologies. In *Chapter 8: Conclusion* I summarize the contributions this thesis makes to the literature of human-computer interaction and offer some possible directions for future research in the area.

2 Related Work

2.1 Introduction

Given the key role books continue to hold in making and reflecting our culture it is unsurprising that books, and more recently e-books, have gained a considerable amount of attention inside and outside of academia. Across the arts, humanities, social sciences, and information sciences, but also from governmental research bodies, the uses of and meanings of books and e-books have been studied and debated. As a result, the amount of literature on books and e-books is overwhelming, and my reading of it is necessarily extensive rather than intensive. I have thrown the net widely to give us a sense of the various different angles from which books and e-books have been studied and understood, so we can come to understand how they came to be the multi-faceted and ambiguous artefacts they are, whose cultural role is forever contingent. I shall argue that the voice that is being drowned in this cacophony of viewpoints is the one that understands books as an everyday technology, as a material artefact that is deeply embedded in our social lives. If we listen to literary studies, books are texts to be interpreted. In history, books are material evidence of a time gone past. In the arts, books speak to other books rather than readers. In psychology, books are visual stimuli. In the information sciences (and human-computer interaction), books are educational and professional tools. In other words, books and e-books are largely framed as carriers of information. This view ignores, on the one hand, that books are read for a broader set of reasons, such as enjoyment or connecting with other people and places, and on the other, that books are not just read, but have a physical presence in the world that makes them part of a social and material ecosystem, such as the home or a coffee shop.

The chapter is structured broadly according to the various approaches taken by particular disciplines or fields of study. I begin by giving a *demographic* overview of who and how many people in the UK and US actually read books and e-books and how much time we spent reading for leisure in comparison to other everyday activities. I then discuss *archival research* in the history of the book and books as history to enable us to see the most recent developments in the history of reading technologies in their larger context. I outline some of the *theoretical and speculative* approaches to understanding books taken in literary studies and cultural studies before introducing *empirical* investigations of book and e-book

reading in cognitive science, psychology, sociology, and information science. Finally, I review *practice-based* approaches to the design of digital reading technologies in human-computer interaction.

2.2 Books and E-books in Numbers

In light of various predictions of the future of the book and e-book it is worth looking at some numbers. Statistical data on book and e-book sales over recent years suggests that e-books have indeed gained in popularity but still account for a minority of overall book sales in the UK and US.

2.2.1 Book and e-Book Sales

For the UK, I was unable to find publicly available primary data on book and e-book sales. Secondary sources, such as the media, cite Nielsens Bookscan, but their reports are conflicting. The numbers most commonly reported are 80 million e-books sold in 2013, a 20 per cent increase from the previous year [75]. With 323 million books sold in 2013, books still account for the majority of sales, but fell by 4% over the previous year. E-books have a bigger share in adult fiction of about 40%, and three in five fiction purchases were made online. Over half of all book buyers had access to a tablet or e-reader in their household and three quarters to a tablet, e-reader or smartphone. Owners of e-readers bought e-books half of the time and tablet owners about a third.

2.2.2 Device Ownership

Data on e-reading device ownership in the UK is equally hard to come by. More comprehensive sales data is available for the US market [161]. Between 2010 and 2014, the period during which my research was conducted, reading device ownership saw a sharp increase. In 2014, 32% of the US population owned an e-reader, 42% a tablet (both up from 4% in 2010), 58% a smartphone (up from 35% in 2011), and 75% a laptop or desktop computer (unchanged). Among e-reader owners, 62% owned a Kindle, 22% a Nook, 2% a Sony Reader, 2% a Pandigital, 1% a Kobo Reader, 3% some other device, and 9% didn't know. Further, those who owned e-readers or tablets were most likely to be female, white, middle aged, educated, affluent and urban.

2.2.3 Reading as a Leisure Activity

In order to get a sense for how reading is placed as a leisure activity, we need to take a look at how people in the UK make use of their time, how reading relates to other leisure activities in terms of the number of people who read for leisure, as well as how much time they spend reading for leisure. In summary, the British have nearly five and a half hours of free time every day, of which they spend about half watching television and listening to music, and a further quarter on their social life. They read about half an hour a day for leisure and 70% of the English population mention leisure reading as their main free time activity. Of these, three quarters read at least once a week. Those reading for pleasure in the UK most commonly read in bed, referred to the book's cover and blurb in deciding what to buy, and most enjoyed reading crime and thrillers.

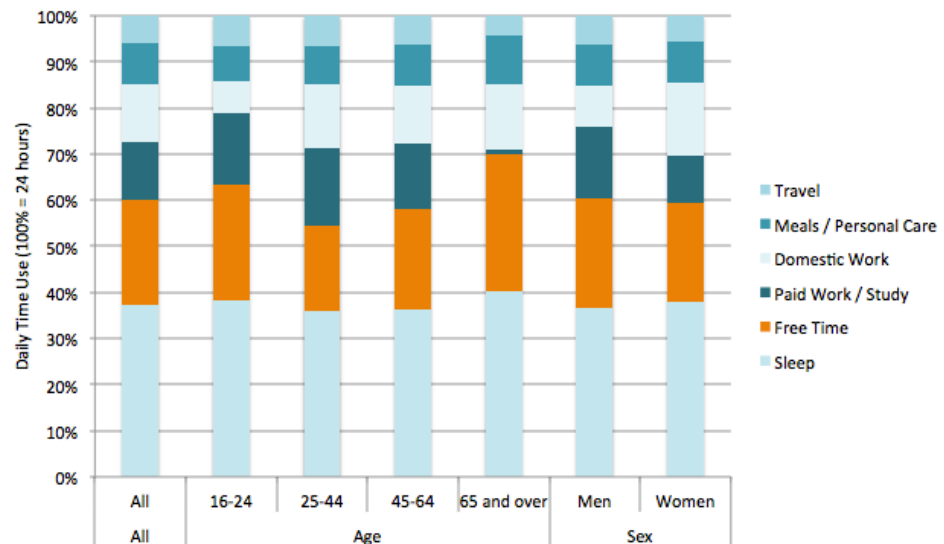


Figure 2.1: Daily time use in Great Britain, 2005. (data source: [150])

Looking at time use data - the most recent data available is from 2005 (Figure 2.1) - we find that people in Great Britain have on average about 5.4 hours of free time per day. With just over a third (9 hours), sleep takes up the largest amount of our days, followed by paid work/study (3.1 hours), domestic work (3 hours), meals/personal care (2.1), and travel (1.5)². As would be expected, adults between 25 and 44 have the least free time (4.4) and people over 65 the most (7.1). Men and women spend a similar amount of time on sleep, meals/personal care, and travel. However, women have 30 minutes a day less free time than men, and the relation between paid and domestic work is reversed for men and women. Out of the 5.9 and 6.2 hours men and women spend on paid and domestic work, respectively, men get paid for 3.8 hours a day and women for 2.4 hours.

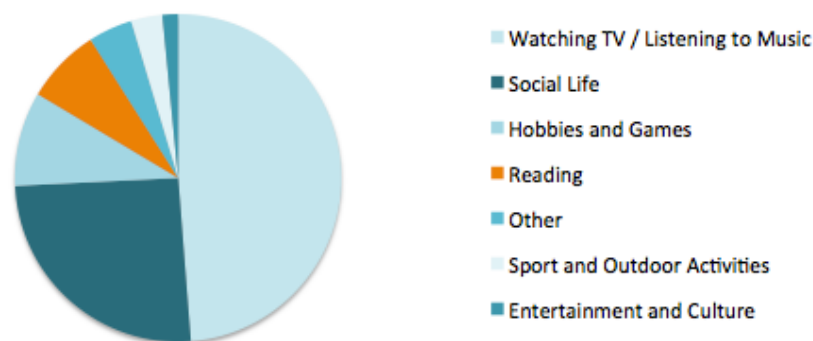


Figure 2.2: Daily leisure use in mins/day in Great Britain, 2005. (source: [150])

Breaking down free time further into types of activities Figure 2.2 shows that the British spend just under half of their free time watching TV and listening to music and a further quarter on social life, followed by hobbies and games, reading, other, sports and outdoor activities, and entertainment and culture. Reading accounts for about half an hour out of 5.4 hours of daily free time. The daily activities they engage in are related to our levels of well-being. Happiness is a feeling, which

² The numbers are averages and include holidays and weekends, as well as part time work and study, possibly making our leisure time look unusually high and paid work hours low.

occurs continuously over time and fluctuates over the course of a day. Like any feeling, at any particular moment happiness is influenced by memories of past experiences and anticipation of future ones. Happiness varies with the activities we're engaged in, who we're spending time with, and even the time of day [110]. A survey among a group of Texan women, for instance, showed that activities that made them happiest were sex, followed by socialising, relaxing, praying, eating, exercising, watching TV, shopping, preparing food, talking on the phone, taking care of their children, computer/e-mail/internet, housework, working, and commuting. The same women were happiest in the company of friends, followed by relatives, spouse/partner, their children, clients/customers, co-workers, by themselves, and their boss. Their happiness increased after a low at 8am until noon, fell back to morning levels until 4pm and steadily increased thereafter until bedtime, which is when they were happiest. While I expect the particular rankings to vary across the British population, the activities that make us happiest are invariably social activities, and most of us will be happiest with their friends and family. This is significant considering that we spend half of our free time watching TV, but only a quarter on our social life, and even smaller fractions of our time on exercising and engaging with community and culture, all of which have been shown to be associated with higher levels of well-being [4].

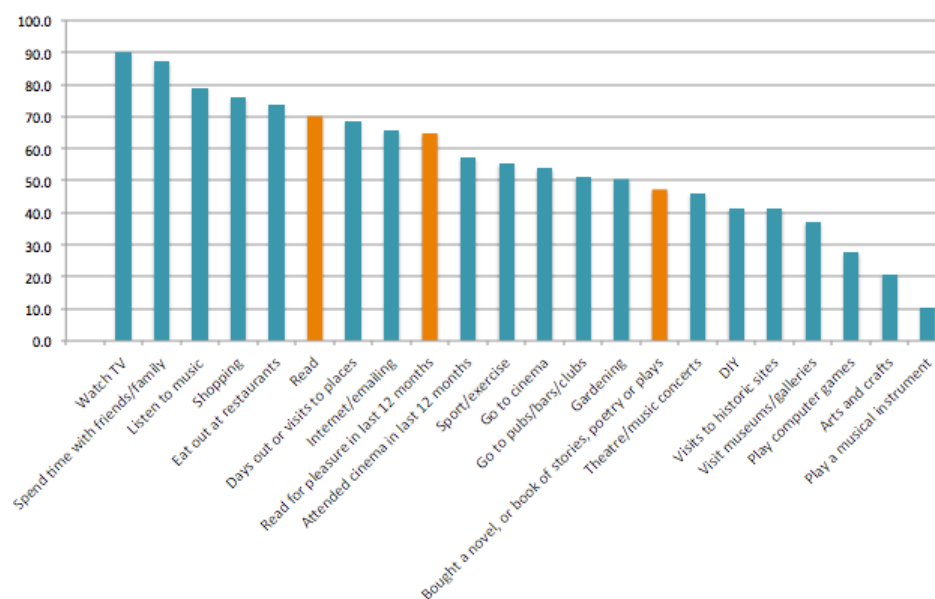


Figure 2.3: Main free time activities in per cent, 2011/12. (data source: [149])

A more detailed insight into our leisure activities is available from a 2011/12 survey on free time uses (Figure 2.3). In agreement with the 2005 data, the three most popular free-time activities in England were watching TV (90.2%), spending time with friends or family (87.3%), and listening to music (79.0%) [149]. Reading was mentioned by 70.2%, reading for pleasure by 64.8%, and buying a novel/stories/poetry/plays by 47.3% as their main free time activity. The survey differentiates reading for leisure from reading for pleasure. The difference is no further qualified in the report, but it is suggested that reading for pleasure is pursued voluntarily, whereas reading for leisure may be any reading done during our free time, presumably including work-related reading, as well as a range of

reading materials, such as newspapers and magazines.³ The data suggests that consumption activities (e.g. watching TV, shopping, etc.) rank highest and creative activities lowest (e.g. gardening, arts and craft, etc.), thereby suggesting a tendency for the most popular activities to be less cognitively and/or physically demanding.

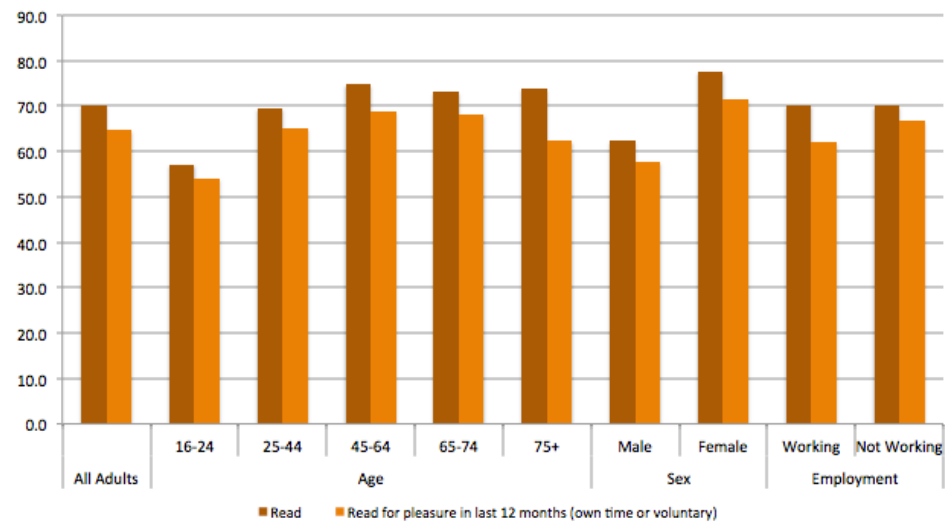


Figure 2.4: Reading and reading for pleasure as the main free time activity by demographic, 2011/12 (data source: [149]).

Breaking down reading for leisure (70.2%) and pleasure (64.8%) further by age, sex, and employment status (Figure 2.4), we find that reading for leisure gradually increased in popularity between age 16 and 45, at which level it stagnates at around 75% mentioning reading as their main free time activity. There is a similar trend in pleasure reading, except the decline is sharper after age 64 falling from 68.9% down to 62.4% for those over 75. The numbers for pleasure reading are lower than leisure reading for both men and women by about 5%, but women are more likely to read than men both for leisure (+15.2%) and pleasure (+13.9%). Whether someone is working or not makes little difference as to how likely they are to read as a main free time activity, but the non-working population is slightly more likely to read for pleasure.

³ The data is slightly misleading in other ways. The categories are ambiguous (e.g. does eating out with friends count as eating out or spending time with friends?) and free time activities are ranked according to popularity, thus telling us little about us what proportion of the population engaged in a particular free-time activity or the amount of time spent on a particular activity.

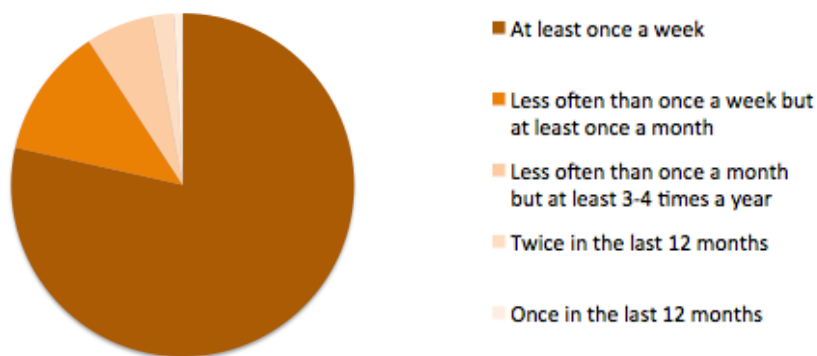


Figure 2.5: Reading for pleasure by frequency, 2011/12. (data source: [149])

In terms of the frequency of pleasure reading (Figure 2.5), two thirds of adults read for pleasure as their main free time activity in 2011/12 (64.8%). Of these over three quarters read for pleasure at least once a week (78.5%). The number of readers then gradually declines with decreasing frequency, with 12.3% reading for pleasure at least once a month and 6.4% at least three to four times a year. At the bottom of the scale, just under three per cent read for pleasure once or twice in the last 12 months [149]. According to a survey by the Booktrust [60], the top ten genres readers in England found most enjoyable were crime and thrillers (33%), biographies (27%), history (16%), science fiction and fantasy (13%), romance (12%), historical fiction (10%), hobbies (9%), classic novels (8%), modern fiction (8%) and horror (5%). In deciding which books to read, respondents most commonly referred to the book's cover and blurb (40%), recommendations from friends (33%) and family (23%), followed by reviews online (9%) and in magazines/newspapers (9%). For pleasure, books are most commonly read in bed (51%), in the living room (48%), on holiday (12%), public transport (8%), in the garden (8%), and during work breaks (6%).

2.3 Books and Reading in the Arts and Humanities

The Arts and Humanities have had a long-standing interest in books and book reading. I first review work on the history of the book and reading, then treatments of books and reading in literary theory before I discuss studies on contemporary book culture and commerce and the role of books in the home decoration literature.

2.3.1 The History of Books and Reading

The history of the book is a dialogue between material, technological, social and cultural developments. An academic field in its own right the history of the book is well documented in the literature. I present a much abbreviated version here as understanding the history of the book is understanding the social and material influences that led to one of the possibly most successful designs in the history of mankind, the codex, as well as its latest incarnation, the e-book, which draws on its legacy. Following Lyons [117] we can identify six milestones in the history of the books up to today: from scroll to codex; from oral reading to silent reading, alongside a transition from oral culture to a written culture; an explosion of recreational reading in the 19th century; near universal literacy; the industrialization of book production; and the electronic revolution.

The History of the Book

The earliest writings are found on cave walls from around 15000 BCE, but even as early as 4000 BCE, peoples wrote on a variety of materials, including bark, wood, shells, leaves, clay, papyrus and silk. Papyrus (made of plant fibres, invented in the 5th century BCE)) and parchment (made of animal skins, 1st century CE) were early precedents of paper. Writing and reading in the ancient world were then restricted to only a small minority of the population, a professional elite, such as bureaucrats and clerics. It was in China that paper was invented in 105 CE, which was not to reach Europe until 1000 years later, as well as stone and woodblock printing and an early form of moveable type, which failed to come into widespread use due to the large number of Chinese characters and a continued reverberation of calligraphy, but preceded Gutenberg's printing press by about 400 years. Meanwhile, the alphabet was invented in Greece in the 5th and 6th century BCE, which was purely phonetic. In ancient Greece there was a close connection between written and oral culture and people relied extensively on the memory of individuals. Accordingly, text was written seamlessly on scrolls and only acquired its meaning by being read out loud by a minority of literates, who had the obligation to give voice to the written word. It was not until punctuation developed by the end of the 4th century that silent reading became more common, but by the 9th century it had developed into a form not dissimilar to what we see today, all with the aim to further ease silent reading. Silent reading made it possible to read uninterrupted and more efficiently, a development that was encouraged in the monasteries to speed up the hand writing and copying of manuscripts, but also allowed time for reflection [119]. Finally, in the 1st century CE the codex appeared among Christians. With individual pages loosely attached to each other at one side the codex was more compact than the scroll, easier to hold with one hand, handle, navigate and carry. Printable on both sides of the pages it could hold more text than the scroll, at least one full text per volume, and could be indexed, cross-referenced, and formatted into headings and paragraphs. Yet despite these many advantages, the scroll continued to be used by certain groups, including the English monarchy and actors.

Gutenberg's invention of the printing press in the 1440s coincided with a high demand for books and other printed materials from universities and judicial, administrative, and clerical institutions. Alongside the press, character moulds, metal characters, and oil-based inks had to be invented. The printing press quickly took hold in the commercial centres throughout Europe, before spreading throughout the rest of the world. The press made both religious and scholarly works, such as publications by Kepler and Galileo widespread, as well as maps and novels, such as Cervantes' *Don Quixote*, all of which faced the risk of piracy and prohibition. Still, only a small amount of the population was literate at the time (only about 3 to 4 per cent in Germany). During the 18th century French Enlightenment we see an increase in book production and the emergence of a large urban reading public. Recreational fiction, in particular, began to dominate in urban areas, such as the Gothic novel in Britain, whereas in rural areas slim and low-cost chapbooks and prayer books remained more common. Near universal literacy was not achieved in Western Europe until the 1890s, which brought with it a mass reading public and an unprecedented growth of the book trade. Nevertheless print runs of novels remained small until around 1830 when industrialization brought mechanical presses and paper-making machines, which significantly reduced the cost of book production, and an expanding railroad

system facilitated the wider distribution of printed material. By the end of the 19th century there was a mass market for cheap fiction and newspapers, a trend made possible by a primary education system, near universal literacy and an increase in leisure time. The rise in demand for books, in turn, helped establish the publishing industry, the rise of the bookstore and a renaissance of public libraries. In 1886, the first international copyright agreement was signed that protected authors and publishers from piracy around the globe. It also raised concerns about the impact of reading on certain social groups, particularly women and the lower classes. Today, a handful of small independent publishing houses sit alongside established publishers and large-scale media corporations, while at the same time, print on demand has made small print runs more economical for niche publications. Small independent booksellers face competition both from large bookstore chains and online retailers selling new and used books. The book itself, virtually unchanged in its form for nearly 2000 years, is undergoing its most recent transformation in face of the emergence of e-reading technologies.

Books as History

In addition to reading a history of the book, we can also read books as history, i.e. as historical documents. The particular characteristics of a book's design and production in conjunction with its particular history of use, or provenance, is what historians can draw on as evidence, such as providing an indication of the origin of the book, the owner's standing and values, or contemporary reception of a text. Focusing on the materiality rather than textual qualities of books, Pearson [153] specifically considers the ways in which books accumulate personal histories by being "made, owned, written in, mutilated and bound" [153: 5]. Today, modern printing gives books their own visual identity (author, title, cover, binding, ISBN, etc.), but due to a largely automated production of books each copy that reaches the bookseller is typically identical, and glitches during printing, cutting or transport are rare. In the early days of book production, however, when books were still set, printed, gathered, folded, sewn and bound by hand, each copy was unique. Apart from inevitable differences introduced during the handcrafting process, individual copies were deliberately designed and made in differentiation from others. As the printing and binding were often done by different craftspeople, clients could place custom orders for more luxurious versions, for instance, containing larger pages, more durable paper, or more intricate cover designs. During the early days of book production, when paper still constituted a precious resource, paper from discarded books would be invisibly integrated into new books as spines or coverings, for instance. More generally the design of a book, the choice and synthesis of its typography, imagery, layout, material, etc. vary from period to period and not only reflect the idiosyncratic preferences of its maker and owner, but more generally, the aesthetics and values of its time. Apart from the variety introduced during production, both today and in the past, it is ownership that leaves the most distinct marks in the history of a book. Despite a common practice among new owners to remove any signs of previous ownership, there remain a variety of ways in which owners leave individual traces of use, including writing their names in books, marking, highlighting, or adding supplementary materials, such as bookplates, flyleaves, autographs, or images, as well as removing elements, such as crossing or cutting out offensive passages. Books also obtained significance by association, for instance, with a saint, famous individual or historical event, and entire private collections of books have been preserved as historical evidence.

Learning about the history of the book helps us understand the design rationale of the book as codex, the social drivers for its particular functionality, aesthetics and materiality, as well as to contextualise its latest transition into a digital technology. Pearson's insights into reading books as material objects rather than texts, and by emphasising the particular ways in which their design and use write histories, make an important point about the need to move away from the notion of book as a textual container, a passive vehicle in the process of written communication, towards the book as a social and cultural artefact. Nevertheless, Pearson's focus is on the book as an index into a historical past of a handful of typically prominent individuals rather than our everyday lived present. So while many material practices, such as annotation and inscription, persist today the ways in which we relate to each other through these practices is likely to have changed as the book's relationship to other information technologies has changed.

2.3.2 Books in Art and Literary Theory

Books and e-books have obviously had its most sustained attention from the arts both in the form of the production of new literary works and the analysis and interpretation of existing works of literature.

Literary Studies

Literary theory is the "systematic account of the nature of literature and the methods for analysing it" [40:1]. It is a discursive practice that concerns itself with the canon of literary works or 'literariness'. Part of its aims is to establish what literature is. Of all printed matter only some is considered to be of 'literary merit' regardless of genre [105]. In literary theory the line is drawn even closer as it understands literature as 'fine writing of an imaginative/creative kind with moral seriousness', including 'poems, novels, dramas, short stories, sagas, legends, and satires' [105: 571]. Whether a work joins the literary canon is subject to a set of cultural arbiters who deem it worthy of a certain kind of attention, i.e. the kind of attention given to works of art [40]. What constitutes literature is therefore subject to change. In the absence of a set of necessary or sufficient conditions that assign a work of writing literary status, the term remains open to debate. Nevertheless, there is agreement that literary works share some common features: they foreground language, integrate the elements of language (i.e. its aesthetics), are fictional, and intertextual, i.e. they establish relations to the body of literature preceding it. Yet, these features are neither necessary nor exclusive to literary works as institutions - or the world of literature - continue to establish 'conventions for creating, appreciating and evaluating literary discourse [105: 574].

Over the course of its history the field of literature has clustered into certain schools, which variably focus attention on the text in its form and content, the author, or the reader and their mutual relations. In New Criticism, for instance, meaning is derived from a close reading of the text, without making reference to either the reader's interpretation or the author's intention. In reader-response criticism, it is the reader who gives meaning to the text through the act of interpretation [50]. It needs to be understood, however, that in none of these theories the reader is an actual reader, but an ideal or universal reader, an abstraction. If considered at all, at no point are readers or the act of reading discussed in terms of their real world specificities. The lack of social and material engagement in literary studies has been criticised by Littau [114], who highlights the embodied and situated nature of reading: texts are embedded in objects and

reading is a concrete bodily act, both of which condition our reading and are historically variable. Her work is a critical re-reading of the histories of reading which exposes the privileging of textuality over materiality and thought and reason (masculine) over the body and emotion (feminine). A second limitation of literary theory is that it is concerned with literary works, thereby ignoring all non-literary printed matter people read in their everyday lives, such as non-fiction or works lacking 'literariness'. The lack of attention to 'popular' or 'mass' writing has been much criticized in the field and ultimately led to the formation of cultural studies which began to problematize the categorization of culture into highbrow or the literary canon and lowbrow or mass culture. Readers started to be seen as members of an 'interpretive community' whose varied responses to books were based on their particular values and tastes [20].

Electronic Literature

Hayles [72], a Digital Humanities scholar, discusses the implications of a shift from print to digital media to the humanities, and in particular, the ways in which they change the production and analysis of literary works. She argues that although digital text appears superficially similar to print, it "differs profoundly in its internal structures, as well as in the different functionalities, protocols, and communicative possibilities of networked and programmable machines" [72:6]. She advocates an approach called Comparative Media Studies that integrates digital media studies with the techniques, knowledges and theories developed within print traditions, and vice versa, to explore synergies between the two. In addition to traditional techniques, such as close reading, digital technologies give rise to further modes of reading, such as hyper reading and machine reading. Hyper reading includes "skimming, scanning, fragmenting, and juxtaposing texts" [72:12], as we commonly do when we browse the web, and stands in contrast to close reading which gives sustained attention to a single cultural object (e.g. a book). Machine reading is the analysis of a text by an algorithm and is suitable for revealing patterns, particularly across a corpus of text that is too vast to be read or analysed by an individual reader. Rather than being in competition, close, hyper and machine reading complement each other.

In addition to changing the way books are read in the Digital Humanities, digital technologies change the way books are written. Electronic literature, vaguely defined as "work with an important literary aspect that takes advantage of the capabilities and contexts provided by the stand-alone or networked computer" [72:3]. Electronic literature thus needs to be differentiated from the digitization of books, such as Google's initiative to scan millions of library books to be made available and searchable on the web, or digital publishing, which prepares digital texts for their publication as print and/or e-books. The field of electronic literature "interrogates networked and programmable media as the material basis for artistic innovation and creation" [72:20]. Examples of electronic literature include hypertext fiction, whose structure is based on hyperlinks; network fiction that makes use of "hypertext technology in order to create emergent and recombinatory narratives" [72:8]; interactive fiction, which has more pronounced game elements, but whose primary interest remains narrative and the literary; locative narratives, which use GPS and mobile technologies to create narratives specific to a real world location or a site-specific installation; and generative art which uses algorithms to generate randomized texts or re-arrange pre-existing texts to create non-narrative forms. While these works are likely to remain an experimental arts practice on the fringes of the world of literature, and are

unlikely to reach a mainstream readership, they nevertheless put into question what we mean by 'book' or 'reading'. Works like hyperfiction, that use hyperlinks, which are digital versions of references and footnotes, and generative art that is indebted to the experimental literature of William Burroughs illustrates the field's close connection with print literature and artists' books [47], and makes obvious the need for this new field to both acknowledge and differentiate itself from its print legacy, which electronic literary works both draw on and transform. Another concern is the preservation of digital media in light of the fast-paced technological developments and to offer guidelines for the creation of sustainable media, such as "preferring open systems to closed systems, choosing community-directed systems over corporate driven systems, adhering to good programming practices by supplying comments and consolidating code, and preferring plain-text to binary formats and cross platform options to single-system options" [72:41] .

The design and outputs of digital writing and reading technologies and print media are mutually informing and transforming. Materiality is key in this process, which Hayles [73] characterizes in the context of electronic literature as follows: "materiality thus emerges from interactions between physical properties and a work's artistic strategies. For this reason, materiality cannot be specified in advance, as if it pre-existed the specificity of the work. An emergent property, materiality depends on how the work mobilizes its resources as a physical artefact as well as the user's interactions with the work and the interpretive strategies she develops –strategies that include physical manipulations as well as conceptual frameworks. In the broadest sense, materiality emerges from the dynamic interplay between the richness of a physically robust world and human intelligence as it crafts this physicality to create meaning." [73:33]. Kirschenbaum [39] expands this notion of materiality, which he calls forensic materiality, with formal materiality or "the simulation or modelling of materiality via programmed software processes" [39:9]. Forensic materiality "rests upon the principle of individualization (basic to modern forensic science and criminalistics), the idea that no two things in the physical world are ever exactly alike. [] Whereas forensic materiality rests upon the potential for individualization inherent in matter, a digital environment is an abstract projection supported and sustained by its capacity to propagate the illusion (or call it a working model) of immaterial behaviour: identification without ambiguity, transmission without loss, repetition without originality" [39:10] . Kirschenbaum is one of the critics-practitioners whose aim is to understand the specificities of working with digital media. To do so he proposes to draw on bibliography and computer forensics to treat and examine digital artefacts, like electronic literature, as material phenomena. Hayles' and Kirschenbaum's theoretical writings build on earlier concepts in the field. One of these is Bolter and Grusin's [17] concept of remediation as a defining feature of new digital media. Remediation is the representation of one medium in another and is based on the recursive dynamic between immediacy, or the unmediated access to an experience, and hypermediacy, an overemphasis on the mediation of an experience, e.g. through multiple channels. Manovich [120], mapping out differences between physical and digital media, offers five principles of new media: numerical representation, modularity, automation, variability, and transcoding. The final principle transcoding, probably the least obvious, but to Manovich the most important, is the translation of ideas and artefacts from culture (or the 'cultural layer') to the design of digital technologies (or the 'computer layer'), and vice versa.

Together this work provides some valuable theoretical frameworks for analysing the unique properties of physical and digital media, including books and e-books. They also make some headway towards building a bridge over the gap between the two in highlighting how print and digital practices can fruitfully complement each other in the realm of literary practice and criticism. Nevertheless the work remains focused on a theoretical understanding of the book or literary text as object as opposed to the practices and processes surrounding books, and thus says little about the wider social context in which books and e-books operate, particularly in social contexts outside an elite of literary scholars. Next I review the literature in cultural studies, which has aimed to ameliorate literature's lack of attention to 'popular culture'.

2.3.3 Book Cultures and Commerce

Work in cultural studies looks at the broader role books play as cultural artefacts, and in particular, the ways in which they continue to be firmly embedded in our everyday lives despite recent threats from e-reading technologies and big book retailers. The concern here is to trace the mechanisms by which books variously come to be framed as cultural objects or everyday commodities, as key artefacts in the production and distribution of good (elite) culture or as profitable, but unworthy entertainment for the masses. The taken for granted dichotomy between culture and commerce itself is problematized and re-framed as a social and political process.

Much of this work aims to reconsider the role of books in Western cultures in light of the emergence of e-reading technologies. Striphas [184], for instance, following Innis' communication theory, conceptually distinguishes books from e-books, suggesting that the book's ability to store and preserve information makes it a time-binding technology, made of more durable materials, thereby ensuring the persistence of information across time. The e-book, on the other hand, is a space-binding technology, which is lightweight and facilitates the spread of information. According to Innis, a stable society requires both types of technology in order to maintain a balance between innovation (geographical breadth) and continuity (historical depth), as an overemphasis on either can result in a monopoly of knowledge. As e-book production and distribution is currently held in the hands of a small set of corporations, like Amazon, Google, and Apple, they are able to act as cultural gatekeepers. The goal instead needs to be an expanding culture, one that strikes a suitable balance between space-binding and time-binding technologies. Despite these developments, Striphas argues, books are still very much in and of our time in that they continue to be ubiquitous in our everyday lives. He traces some of the mechanisms by which books have become everyday artefacts, including the promotion of bookshelves in the home, the popularization of gift books, the pass along book trade, big-box bookstores (in the US), the ISBN (making book distribution more efficient), and the branding of books through Oprah Winfrey's book club (in the US).

Miller [137], in her work, discusses similar concerns by considering the history and on-going struggle between small independent booksellers and big chain retailers in the US. In doing so, she examines a more fundamental debate over the positioning of books as cultural artefacts vs. commercial products. Traditionally, small independent booksellers were seen as taking a unique public role in the reproduction and distribution of culture, but they soon started facing competition from thriving big box bookstores and book outlets in malls, whose main

consideration was to sell books for profit rather than for their literary merit, and by displacing small independent booksellers as their guardians, threatening to eliminate diversity in literary culture and the retailing landscape. Independent booksellers accused the chains of having monopolistic designs and engaging in unfair competition. But even before the rise of the chain store, independent booksellers had been criticised for their inefficiency in matching titles with readers who wanted to read them, due to their small number of shops, delays in delivering books from publishers, their ignorance of buyers' tastes, and books going out of stock. The chain bookstore's focus on commerce seemed to solve many of these problems through a process of rationalization, involving the centralization and standardisation of their business practices allowing them, for example, to open stores in more remote locations, keep track of tastes and demand, move relevant stock more quickly from publishers to readers, lower prices, and make book buying overall less elitist and intimidating. The debate over the role and future of bookselling reflects a dichotomy between culture and commerce and the ambivalent position books occupy in the tension between them that we can still observe today. As Miller points out, the culture-commerce framework depicts an oversimplification as neither independent booksellers are immune from commercial considerations if they are to survive in a competitive marketplace, nor does commerce exist outside culture, but economic actions are 'culturally embedded' in networks of social relations that shape economic strategies and goals. Thus, culture and commerce are more suitably regarded as mutually constitutive. Books, by extension, can be seen as 'sacred products', a concept which emphasizes the ambivalent position they attain in transgressing 'the boundary between the incommensurable sacred and the marketable profane' (p19).

Rogers [169] too, is interested in the link between the world of literature and everyday life, but her focus is on the creation and reception of literature. She examines the relationship between novel writers and readers and the world of literature from a phenomenological perspective. Drawing on social theory, her basic argument is that our experiences with fiction – whether as writers, readers, critics or publishers - form part of our everyday lives, which in turn help to constitute the 'world of literature'. Through the world of literature we explore the possible rather than actual by temporarily transcending everyday experience or reality and exploring alternative realities in the safe realm of fiction, while in turn, crossing the boundary into the imaginative re-solidifies our everyday reality. At the same time, it allows us to explore our sense of self. Rogers approach is theoretical, based on the application of social theory to the experience of reading literary works. In relation to readers' experiences, she distinguishes two cultural types of readers, generalists and specialists, who read the range of available literature extensively or intensively: "The generalist comes prepared to accommodate ambiguity, chase meanings, express and further discover a self, and enjoy the expression of as well as communication from another human being. The specialist reader comes prepared to follow a fairly unambiguous lead, largely accept narrators' words at face value, experience the types of selves they already know, and enjoy a story" [169:98]. Texts make constitutive demands on the reader, including readers' knowledge (readers apply their knowledge to make sense of a novel and to amplify its meanings), imaginative inferences (of intentions), familiarity (recognition of experiences similar or dissimilar to the reader's), and meaning (active meaning making through modifying expectations and transforming memories). And finally, "the effects of reading depend on

readers' prior experiences and current purposes. They also depend on what individuals read which, in turn, depends on what is physically, economically, intellectually, and culturally available to them. Then, too, how they read – critically or not, for example – affects readers' outcomes. How they share their reading experiences with others also influences their outcomes." [169:75].

The writings of these authors illuminate our understanding of the more recent history of the book and highlight its broader role as a cultural artefact. However, with the exception of Miller's work, which is based on archival research and interviews with people in the book industry and bookshop customers, as well as an analysis of written materials, both Striphas' and Rogers' take a theoretical rather than empirical approach to studying the role of books in everyday life. In doing so, we fail to learn about people's actual everyday practices, values, and experiences surrounding books and e-books. It is in the next section that we turn to work in the social sciences that have paid detailed attention to activities of everyday reading and the cognitive processes involved.

2.4 Books and Reading in the Social Sciences

The social sciences have aimed to understand leisure reading at multiple levels, including the cognitive processes and skills involved in reading and learning how to read, the psychological experience of reading fiction, as well as the relationship between activities of leisure reading and various outcome measures, such as educational performance.

2.4.1 The Cognition of Reading

Reading has been discussed as part of the cognitive science literature, which due to novel brain imaging techniques has only fairly recently enabled researchers to make immense progress in helping us understand how our brains process information and give rise to thoughts, feelings, memories, and experiences, and in particular, how we read. Wolf's work [208] takes an evolutionary approach to understanding how our brains learn to read both as individuals and over the course of humankind. While we all have an innate ability to speak or a 'language instinct' [164], learning how to read and write requires endless hours of practice as any third grader can attest. The same is true for humanity as a whole. The human brain was not designed to read or write, but due to its 'plasticity' was able to adapt and co-evolve in interaction with the invention of reading and writing technologies:

"We were never born to read. Human beings invented reading only a few thousand years ago. And with this invention, we rearranged the very organisation of our brain, which altered the intellectual evolution of our species. Reading is one of the single most remarkable inventions in history; the ability to record history is one of its consequences. Our ancestors' invention could come about only because of the human brain's extraordinary ability to make new connections among its existing structures, a process made possible by the brain's ability to be shaped by experience. This plasticity at the heart of the brain's design forms the basis for much of who we are, and who we might be." [208: 3]

Wolf identifies three 'epiphanies' that underlie the development of writing systems. The first involved the symbolic representation or "the amazing discovery that simple marked lines on clay tokens, stones, or turtle shells can represent either something concrete in the natural world, such as sheep; or something

abstract, such as a number or an answer from an oracle" [208:25]. Second are Sumerian cuneiform on clay tablets and Egyptian hieroglyphs or "the insight that a system of symbols can be used to communicate across time and space, preserving the words and thoughts of an individual or an entire culture" [208:26]. In order to teach their children how to read and write Sumerians had to analyse the principles of their spoken language, including semantics, phonetics and morphology (the smallest meaningful part of a language). Third is sound-symbol correspondence or "the stunning realization that that all words are actually composed of tiny individual sounds (phonemes) and that symbols can physically signify each of these sounds for every word" [208:26]. Examples include the Greek alphabet, which is cognitively more efficient (the smaller number of symbols can be recognized automatically) and easier to learn (as learners have to be more aware of speech sounds) than earlier writing systems, which in turn makes it more accessible to a wider population and promoting novel thought.

When we read, our eye scans the page in four or five small jumps or saccades per second, picking up about ten to twelve letters per saccade with a maximum speed of four to five hundred words per minute [43]. Depending on a word's familiarity, regularity and frequency we use (at least) two supplementary cognitive routes to understand written words. First, a 'phonological route', in which we break down letter strings hierarchically into morphemes (un-button-ing), syllables (un-button-ing), and graphemes (u-n-b-u-tt-o-n-i-n-g), convert them into pronunciations and try to retrieve the meaning of the sounds. Second is a 'lexical route', in which we directly access a word's identity and meaning and then use that information for its pronunciation.

Our ability to learn to read is based on our capacity to form new connections among existing brain structures (plasticity), to specialize brain areas so as to recognize patterns in information (specialization), and to automatically retrieve and connect information from these areas (automation). As reading is a recent invention and our brains were not designed to read, Dehaene argues [43], our brains had to undergo a process of cultural adaptation or 'neuronal recycling': "[...] Each cortical region or network, because of its connectivity, genetic biases, and learning rules, possesses intrinsic properties that are only partially modifiable during the cultural acquisition process" [43:147]. In the case of reading, this means that in order to be able to deal with visual invariance (e.g. of a capital 'E' and small 'e'), our brains made use of the part of the brain responsible for object recognition and adapted (or recycled) it for reading. To facilitate this task, we developed writing systems that match the way our brains work rather than the other way around. A failure in any of these brain areas can result in a range of reading deficits known as dyslexia, the most common of which is a difficulty of matching letters (graphemes) with sounds (phonemes), a basis of the alphabetic principle, which due to the many irregularities in English pronunciation is particularly common among native English speakers.

As reading technologies continue to evolve so do our brains adapt. Screen-based reading, and in particular reading online, changes not only the way we read but the very physiology of our brains (what Dehaene calls neuronal recycling). As book reading is declining we spend more of our time reading online, which "is characterized by more time spent on browsing and scanning, keyword spotting, one-time reading, non-linear reading, and reading more selectively; while less time is spent on in-depth reading and concentrated reading, and sustained attention is

decreasing" [115:705]. As a result, our reading becomes 'shallow' as "evaluating links and navigating a path through them, it turned out, involves mentally demanding problem-solving tasks that are extraneous to the act of reading itself. Deciphering hypertext substantially increases readers' cognitive load and hence weakens their ability to comprehend and retain what they're reading" [27:126] and [44] for a review of this literature). Online reading then favours a kind of reading that stands in contrast to the linear, in-depth reading of books that allows us to think deeply and creatively about what we have read.

Over recent years, cognitive scientists have made some important contributions to furthering our understanding on how reading is possible, both as an invention and acquired cognitive skill. As literacy is a key skill in our society the work is particularly crucial in helping teachers and parents recognize reading disabilities and develop early interventions. Nevertheless, reading here is understood as a cognitive process emerging from our interactions with the words on the page rather than a socially and materially situated activity.

2.4.2 Everyday Uses of Books

Taking a slightly broader view on reading as an everyday activity, work in psychology and sociology sheds some light on the experience of reading for pleasure, which here is contrasted with 'active' forms of reading as they are commonly employed in reading for learning.

Reading Types, Goals, and Skills

Unlike reading for leisure, reading at work and in education is typically characterized by 'active' forms of reading. Obviously, reading is never entirely passive, as we actively make sense of what we read, but can be characterized as more or less active. The type of active reading we do for understanding, for instance, is more demanding than reading for information or for pleasure (although they are not mutually exclusive). In order to become proficient active readers, we need to master four levels of reading, including elementary reading (word recognition), inspectional reading (systematic skimming), analytical reading (thorough or deep reading), and syntopical reading (comparative reading) [3]. O'Hara [144] highlights how reading activities vary based on their underlying goals and motivations. His typology of reading goals includes: reading to learn, reading to search/answer questions, reading for research, reading to summarize, reading to do, reading for problem solving and decision making, proofreading, reading for critical reviews, reading to write and revise documents, and reading for enjoyment. In addition, there are different types of reading, such as receptive reading, reflective reading, skim reading, scanning, serial/non-serial reading, and single/repeated reading, which are supported by a range of activities, such as underlining, note-taking, outlining (of the main parts of a text) and networking (diagrammatic representation of a text). Related to this, Adler et al [2] present a taxonomy of work-related reading activities, including reading as identification, for information, as a reminder, for skimming, learning, cross-referencing, reviewing, listening, and discussion. Their study shows that reading at work takes many different forms and serves a number of different goals. Particularly common was reading across documents and done in conjunction with writing. Kirsch and Guthrie [97] compared work and leisure reading across different occupations. They found that depending on setting and occupation reading practices varied widely in terms of their contents, materials and uses.

Reading for Leisure and Pleasure

Reading for pleasure has received much less attention than active reading in the social science literature. Whereas active reading is characterized as complex, non-linear and cognitively demanding, reading for enjoyment is often degraded as purely linear and emotional. Historically, reading for pleasure has often been seen as lacking any real value, as being damaging to the human brain in failing to engage the intellect, undermining morality for being emotionally indulgent, and encouraging sloth by being addictive, a moral view that has been based on a more general grounding of our values in the Protestant Ethic [141]. Associated with the kind of reading women and the uneducated engaged in it was hardly worthy of any serious scientific or academic attention. These prejudices against leisure reading are still with us today, though less overtly stated. The lack of research into reading e-books for leisure is possibly a testament to these judgements, and the dismissal of concerns over the loss of books in the face of the success of e-books as 'emotional', and hence 'irrational', continues this tradition. Throughout this dissertation, I use the terms everyday reading, leisure reading and reading for pleasure⁴ interchangeably. It is understood, however, that there are subtle differences between leisure reading and pleasure reading. For instance, most of the leisure reading we pursue will be for our enjoyment, but not any book we enjoy is necessarily leisure reading, but may be work-related or be read at work. Neither will it be limited to fiction reading, but can include any genre. There is no single definition of reading for pleasure, but it is possibly most usefully characterized as being intrinsically enjoyable [31], whereby enjoyment itself means being fully engaged in an intrinsically rewarding activity [39]. The path to leisure reading is often set in childhood, where enjoyable experiences of reading, such as being read to and being encouraged to read for enjoyment, have a positive influence on our attitudes towards and habits of reading in later life [9]. Several factors can work against children picking up reading as a leisure activity, such as parents' uses of media, but also an association of reading with school or being a feminine activity [90]. Indeed, women tend to read more than men, possibly a result of childhood socialization rather than differences in free time or reading skills [191].

Much of the literature on leisure reading, again, is particularly concerned with outcome measures, such as the benefits of leisure reading for literacy attainment and educational performance. Moyer [139], for instance, identifies four educational outcomes of leisure reading, including people and relationships; countries, cultures and history; life enrichment; and different perspectives. Nell [141], who possibly provides one of the earliest and most comprehensive accounts of the psychology of leisure reading, characterizes pleasure or 'ludic reading' as a play activity in that it "absorbs the player completely, is unproductive, and takes place within circumscribed limits of place and time" and is "usually paratelic, that is, pursued for its own sake" [141:2]. Preconditions for ludic reading include reading ability (ludic readers tend to have achieved high levels of reading automaticity), the expectation that reading will be a pleasurable experience, and being able to select books that they will enjoy. Some of the consequences of ludic reading include physiological changes, such as an interaction of excitement and tranquillity, and cognitive changes, such as a deep immersion or 'effortless arousal' to heighten or dull the reader's consciousness. In the process, readers engage in

⁴ Other terms include reading for enjoyment, recreational reading, ludic reading, independent, or voluntary reading.

meaning extraction and an 'other' experience. More recently, Oatley [148] writing specifically on the psychology of fiction reading, characterizes fiction reading as "a simulation of selves in their interactions with others in the social world" [148:x]. Fiction, he argues, is not the false (the opposite of fact or truth), but the possible. Our skill for this kind of mental simulation is based in our ability to draw on past experiences and our ability to put ourselves into the minds of others, i.e. develop a theory of mind. Thus, fiction is a safe place to imagine and explore alternative selves in interaction with other fictive selves, and in the process, learn to better understand our selves and others as well as the dynamics of people interacting in relationships and groups. Oatley further highlights the benefits of discussing fiction with others, as it helps us complement our 'inner libraries' composed of the fragments we retained from reading and to "re-introduce this material – fiction – about what people are up to in the social world, back into the social world of conversation and relationships" [148:178].

Radway's research is a rare example of work aiming to understand everyday practices of book reading. To do so, she conducted two interview studies on romance novel reading among middle class women in the US [166]. She found that the texts they read tend to be short and formulaic, make use of a limited vocabulary, demand little attention, and are built on affective involvement. Reading romance novels, often on a daily basis, allows these homebound women to anchor their daily routines, enjoy reading despite other demands on their attention (such as from other family members), and to enjoy time that is exclusively their own by creating a temporary personal mental space in a shared home. The novels thus offer a format these women can practically incorporate into their daily routines and deliver emotional gratification. At the same time, they face criticism from their husbands, who consider the time and money spent on romance reading an unnecessary indulgence that creates a personal space away from their shared home life that their husbands don't have access to. Radway [165] also employed ethnographic and historical methods to uncover the selection processes and practices of editors at the book-of-the month club and how they position themselves and their readers against academic literary culture. As opposed to the high culture of academia, whose members read with detachment in order to make aesthetic judgments about the literary canon, the book-of-the-month club fosters a 'middlebrow' culture of the general reader who reads broadly and for enjoyment. Her work is related to a body of literature on reading groups and book clubs (e.g. [116]). Boyarin's collection of ethnographies highlights the socially embedded nature of reading canonical literature as part of social groups, and the close connection, rather than opposition, between textuality and orality [22]. While both authors address reading as an everyday practice, their research remains focused on particular set of readers and a particular set of reading materials.

The Everyday Life of the Book

There are various studies, particularly in anthropology that consider artefacts across their lifecycles of use. Since Appadurai's [5] call for a 'methodological fetishism', there has been a range of ethnographic work taking a biographical approach to studying artefacts as a lens for understanding social relationships. Some of this work considers artefacts in their entire lifecycle (e.g. [82]), others studied particular practices or stages in the life of artefacts, such as collecting [51], gifting [127], or divesting [66], etc. In addition, there is a wealth of literature aiming to understand the material culture of the home [e.g. 133, 121]. HCI, too, has

had a long-standing interest in the home often highlighting its mundane and routine nature [e.g. 36]. A range of work has studied particular domestic practices, such as the archiving [96], reacquisition [163], and modification [199] of everyday artefacts, as well interactions surrounding particular artefacts, including photos [186], tableware [85], and mementos [160]. Only a few studies have looked at particular practices surrounding books, such as finding and stealing books. For instance, there is research aiming to understand people's search strategies in bookshops [25], public libraries [151], and academic libraries [79], and the theft and mutilation practices in academic libraries [126]. Much research concerned with the material practices surrounding books can be found in the history of books, and its sub-branch of provenance research that considers material traces like annotations, inscriptions, bookplates, etc., but also examines particular private collections, as material evidence in the writing of history (e.g. [153], [154]). Related to this, Rosner [171] aimed to understand the practices around restoring books. Keeping and displaying books at home is also discussed as part of the home decoration literature (e.g. [49], [56], [193]).

Much of the literature then on reading books for our enjoyment, as little as there is, is focused on the psychological processes involved as well as on identifying its educational merits. While Radway does take a broader view on the place and experience of reading fiction in women's lives, her focus remains on reading and was done before e-reading technologies had become ubiquitous and thus don't feature in her analysis. Empirical research on everyday e-reading is discussed next.

2.4.3 Everyday Uses of e-Books

Human-computer interaction and the library sciences have had a long-standing interest in digital reading technologies and in identifying their potential in professional and academic environments. The literature in this area is therefore unsurprisingly vast. My discussion of the work included below is by no means exhaustive, but rather aims to give an overview of various relevant areas of investigation with pointers to representative works in that area.

Print vs. Screen-based Reading

Early studies on digital reading often focused on the comparison of digital and paper based reading, aiming to understand the particular affordances of paper in order to inform the design of digital reading technologies. Before the launch of e-ink screen devices, this first set of studies looked at the uses of paper-based documents, particularly in the context of knowledge work. These studies found that subjects drew on the affordances of paper by highlighting texts and annotating margins, which allowed readers to commit important sections to memory and impose their own structure on the text for later reference. Readers' navigation within and between documents helped them plan their reading and to check details, and laying documents out in space to gain a sense of the documents' structure, cross-reference ideas and integrate writing tasks. All of these activities were tightly interwoven with reading, but required explicit attention in the online condition, away from the reading task. By examining the process of reading in the context of a real world task their study augments earlier work focused merely on outcome measures, such as reading speed and comprehension, which occasionally found little advantage of paper over screen-based reading (see [45] for a review of this literature). More recent work still finds a lack of support for active reading tasks in online environments (e.g. [78], [187]). With the wider availability of

dedicated e-reading devices the focus has shifted from digital documents to e-books. These studies, again, are concerned with performance measures or preference (e.g. [182], [129], [197]). They find no differences between print and digital books in terms of speed or comprehension, but report a preference for e-readers over paper books among non-readers, inexperienced readers, or reluctant readers, possibly due to the novelty of the device acting as a motivator to read. In order for e-books to become successful in the long term, however, Schilit [175] and Golovchinsky [63] argue, e-readers will need to support active reading tasks, such as annotation, text comparison, quoting, sharing, etc. Others compare e-books to books from a technological, business, or environmental perspective. Rao [168], for instance, attempts a definition of the e-book and discusses its pros and cons, in terms of use of resources, distribution, availability, compatibility, e-reader features, etc, and Kozak and Keoleian [100], found several advantages of e-books over books in terms of resources consumption during production, distribution, use and disposal.

Reading on Single Devices

Another set of studies aimed to understand the uses of e-readers in particular settings or among particular user groups. Thayer et al [192], for instance, present a diary study tracking graduate students' academic e-reading on a Kindle e-reader. Participants were reluctant to adopt e-readers for their academic reading due to a lack of easy annotation, navigation within and between documents, readability and integrated placement of illustrations (images, charts, tables, etc.), and physical cues, such as text length and reading position, all of which are characteristic of active reading tasks. To overcome these difficulties e-readers were often used in conjunction with other reading and writing technologies, such as paper based notebooks for note-taking or PCs for following up on references and viewing illustrations. Other participants performed their reading less effectively to accommodate the limitations of the device or confined their Kindle uses to certain task situations, such as receptive reading during commuting by bus or while walking. Their work is exemplary of a body of research on evaluating e-reading on single devices, such as e-readers (e.g. [24], [206], [32]), tablets (e.g. [183], [180]), and more generally, small form factor devices (e.g. [146], [123]) in educational and professional settings. Finally, there are some studies evaluating the usability of existing e-reading devices (e.g. [118], [202]). Empirical research on everyday e-book reading is rare. Research that does exist typically looks at certain user groups, such as children's (e.g. [34], [94]) and teenagers' [131] or university students' interactions with e-books [32], or the uses of e-books in particular settings, such as reading groups in public libraries [106].

Reading Across Devices

There is very little research aiming to understand reading across devices. Several studies compare reading activities between different reading technologies, such as e-readers, tablets and PCs. Morris et al. [138], for instance, compared active reading tasks across four reading technologies (paper, dual-monitor desktop system, pen-enabled horizontal display surface, and multiple tablet computers) in an experimental setting. Their study revealed that reading done in conjunction with writing was best supported by the vertical display setup, while the horizontal setup was the preferred solution for annotations. The three tablets proved particularly suitable, as participants were able to alter their spatial layout. As none of the setups supported all active reading tasks the authors propose a hybrid

approach combining vertical, horizontal and repositionable devices. Other studies compare e-readers with tablets [35], with a gaming device and smartphone [129], and with a smartphone and tablet [113]. Unfortunately, the research here is focused on active reading practices in professional or educational settings.

The only research taking a broader situated view of everyday e-reading is Rouncefield and Tolmie's study of reading in the home [172]. Based on situ observations and non-structured interviews in three family households in the UK their work offers a detailed explication of the social organization of domestic reading activities, and bedtime reading in particular, as it is constituted by and constitutive of the social organization of the home. It beautifully illustrates how reading has a range of characteristics that are recognizable, not just to the other members of the household, but more generally as reading as a situated practice and experience. Specifically, the authors show that reading is embodied and manifest in that in its particular bodily orientation it is intelligible to others at a glance (e.g. who is reading what, where, when) based on which other members of the household will orient to the reader(s) in particular ways (e.g. Shouldn't she be doing her homework? Is it ok to interrupt?). Reading further has a visible, spatiotemporal, routine and topological order, i.e. it has recognizable material affordances (e.g. putting down a book open or closed), has a particular time and place and recurrence pattern (e.g. bedtime reading is characteristically done in the evenings on the sofa and routinely as part of other routines), and is organized through the placement of books around the existing topology of the house (indicating various stages of reading and availability). Finally, reading is tied in with the broader rights and responsibilities governing the household (such as who can or should read/do what, where and when), is a mechanism for intimacy (e.g. bedtime reading offers a regular occasion for physical contact between mother and child), and is subject to the moral order of the household. They conclude that the reason for co-existence of books and e-books "rests on how the choice and use of physical or digital books is embedded within the social organization of the environment within which a book is being used, and what particular activity is being accomplished at that time" [172:159].

Their work offers an in-depth analysis of how leisure reading is accomplished as part of the everyday routines and accountabilities of a family home. The deep and relatively narrow focus of the work, however, is achieved at the expense of a certain level of ecological breath. First, in making reading its primary focus of analysis the broader set of practices associated with reading, such as the sharing of books, are pointed at but not pursued as an area of investigation in their own right. Second, while the home is undoubtedly the main site of leisure reading activities other sites commonly include public spaces outside the home, such as coffee shops or trains. To be sure, reading in these settings will retain many of the characteristics that have been identified here, but they will likely play out differently. What makes an appropriate choice and use of book in a particular public situation, for instance, differs from a domestic one. At the same time, the study stops at a certain level of detail. Specifically, the particular materiality of books is not considered beyond their functional features as physical objects when many of the differences between books and e-books lie in their aesthetic qualities, which inevitably have consequences for how they find a place in and contribute to the social organization of the home (and outside). Possibly as a result of its particular focus on reading in the family home the study finds books and e-books operate in very similar ways.

Moreover, and related to the points noted above, with its ethnomethodological focus on shared, accountable practice, the work overlooks more marginal practices and individual experiences with and through books. In illustrating how reading is practically accomplished in a professional middle class family home in the UK it not only reveals reading in its ordinariness, but also suggests that reading in other households is as uniformly ordinary. Disregarding the obvious fact that reading is not ordinarily done in a great many households in the UK, even in those where reading has a measure of ordinariness we can expect to encounter a more diverse set of practices that hinge on the particular composition and organization of the household. In addition, even observably similar practices may give rise to very different personal experiences. For instance, burying a book in the garden out of hate for the book or keeping it in a plastic bag out of love are not common but real behaviours that define the individual and their experience with and through books. As designers we are surely interested not just in designing for shared practices, but also for the individual experience arising from them.

Taking its particular scope and approach into account this thesis then very much aims to build on and extend Rouncefield and Tolmie's path breaking work by giving added focus to the materiality of reading in terms of its particular aesthetic, as well as its spatio-temporal aspects by considering practices across its lifecycle of book and e-book use (e.g. sharing, divestment, etc.) in a broader set of settings (household types, inside and outside the home), as well as to shared and individually felt experiences with and through books and e-books.

In sum, empirical research on digital reading in everyday life is extremely rare with Rouncefield and Tolmie's work being the only exception. Instead the focus has been almost exclusively on active digital reading practices for work and education, little of which has looked at reading across settings.

2.5 Designing for Everyday Social Interactions around Books and e-Books

Here I review design work exploring everyday reading as a social activity, including the digital augmentation of books and bookshelves, as well as applications aimed at fostering reading as a social activity.

2.5.1 Bridging Physical and Digital Book Collections

Work in human-computer interaction aimed at creating links between digital and physical books has done so through the digital augmentation of books and bookshelves in order to enhance digital storytelling and to support access to digital libraries, respectively.

Augmented Books

Early work aiming to bridge physical with digital artefacts explored the use of RFID tags to link physical books with their digital representations [201]. Fujinami and Inagawa [55] equipped a paper book with electronic sensors in the form of a bookmark and book cover to detect page flipping which triggers the display of associated content. More commonly, books were digitally augmented with virtual reality applications. Initially, this line of research explored the projection of digital content onto physical books in order to enhance learning and office work. Gupta et al [68], for instance, created the Universal Media Book, a blank print book that can be augmented with a range of multimedia content. Without any particular

application in mind, their goal was to accurately visualise content as pages are turned. Similar applications include the augmentations of physical books with digital content to enhance the spatial abilities of engineering students [124], or 3Book, which projects digital annotations onto a physical book [80]. Another strand of research aimed to enrich storytelling by digitally augmenting storybooks with additional media or interactive elements. One of the earliest versions is the MagicBook [13], an augmented reality handheld display that overlays a print book with 3D content, such as virtual characters. Other examples include the Mixed Reality Book [65], which augments already existing content of a physical storybook and FeelSleeve [209], which integrates haptic feedback into a digital reader for children in order to highlight particular events in the story. Finally, there are some applications directed at making museum exhibits more engaging, such as, Listen Reader, which provides an interactive audio soundtrack [8] or the Haunted Book, which animates illustrations in a poetry book [174].

Augmented Bookshelves

There is a body of work that aimed to digitally augment books and bookshelves. The ‘Bohemian Bookshelf’ [194], is a touch screen interface that uses five interlinked visualizations of metadata facets (book cover colour, number of pages, author, keyword and time of publication) to support serendipitous discovery of books. Aslan et al [6] developed a wall projection display that allows user to show and interact through Microsoft Kinect-enabled gestures with a digital book collection as a decorative element to change the atmosphere of their home. The books area arranged according to relations or adjacencies in their metadata (e.g. number of pages) created by a sorting algorithm. Norrie et al [143] implemented a smartphone-based virtual reality application that augments a physical bookshelf so as to allow a user to spatially view, browse, and organize her e-book collection. A Microsoft Kinect senses the user’s position in relation to the shelf and uses the information as a metaphor for interacting with the collection. For instance, moving towards or away from the shelf provides a detail view or overview of the collection and books can be dragged and dropped through hand gestures. Related to this, Chen et al [28] designed an augmented reality smartphone application that recognizes book spines and provides viewfinder information about their title and price. It also provides information about a title’s position on a shelf.

2.5.2 Social Reading

There is a wealth of design effort directed at supporting active reading activities (e.g. [176], [29], [112], [188]), some of which are designed for social interaction or ‘co-reading’ (e.g. [157], [92], [156]). Research aiming to support everyday social practices around books and e-books has been particularly concerned with enhancing practices of social or connected reading. Specifically, there are various versions of video-conferencing applications that allow children and their grandparents to read together over a distance by synchronizing their reading, for instance, or inserting themselves as characters into the story (e.g. [167], [53]). Massimi et al [125] deployed an application aimed at supporting ‘partnered reading’. IDEO [88] offer a set of three tablet-based concepts around networked digital reading experiences, such as participatory fiction reading application, which introduces game like, interactive location based elements into the reader’s interaction with the book, an application for sharing work-related reading activities and collections inside organizations, and an application for augmenting

non-fiction digital books with web-based information, such as online discussions, press releases and academic publications.

Few of these design approaches aiming to develop alternatives to the current e-reading ecosystem step outside the system to include books. Those that do attempt to bridge physical and digital reading have done so through the digital augmentation of books and bookshelves. Again, this work pays little attention to the broader social and material setting in which books and reading are embedded, but is focused on the enhancement of print based storytelling and facilitating access to physical libraries. Similarly, design efforts aiming to support reading as a social practice are exclusively concerned with the act of reading together and thus fail to acknowledge the broader role books and e-books play in facilitating social relationships, for instance, through the exchange and display of books.

2.6 Discussion

In sum, we find that despite the rich picture we can gain of reading from these efforts, each discipline has tended to take a particular focus with respect to the types of reading and settings in which reading takes place. Across all of these, there has been a lack of studies focusing on the ecosystem of reading technologies, namely the e-reader, tablet and smartphone, across the types of reading and settings in which they are naturally used.

Existing research is primarily focused on (1) a particular activity associated with books and e-books, i.e. reading, (2) a particular kind of reading, i.e. active reading, and (3) particular kinds of settings, i.e. educational and professional. Early work in the area, before e-readers entered the market, aimed to understand the impact digital reading technologies had on traditional forms of reading differences between reading documents from computer screens versus paper. Much of this work was concerned with so called 'outcome measures', i.e. the *effects* of reading from screens, such as levels of reading speed, comprehension, or eye strain. Research on the processes and practices of reading from paper versus screens was rare, but had a huge impact on the field when it arrived in the form of a series of publications highlighting the situated affordances of paper, and the role it plays in supporting active reading and collaborative work practices. With the emergence of e-books and e-readers the focus on active reading and outcome measures remained, but shifted to evaluating the usability of e-reading devices (mostly e-readers and tablets, rarely smartphones) in knowledge work environments, such as schools, universities, research institutions, and offices. The little attention given to everyday reading was still motivated by promoting any educational benefits leisure reading might have, such as understanding the role of e-reading for leisure to foster children's literacy, or browsing strategies at public libraries to facilitate online information seeking. Unsurprisingly, design efforts aimed at improving or re-conceiving current e-reading activities continued in the same tradition. Design work in the area can be clustered into three themes of supporting (1) active reading practices, (2) storytelling and learning, and (3) information access. Specifically, in order to support active reading, researchers experimented with the number and orientation of screens (e.g. combining tablets with PCs or tabletops, or vertical with horizontal display surfaces), as well as different input modes (e.g. touch, stylus, etc.). Digitally augmented books were designed to enhance storytelling and learning with children, and augmented bookshelves to change the ways in which we access digital libraries.

Looking at the ways in which books have been studied in the academic literature a different, but no less biased picture emerges. Here, books have naturally received the most attention from the humanities, particularly history, literary studies, and cultural studies, and a little surprisingly more recently, from psychology and cognitive science. With an interest from these fields comes a certain methodological orientation, i.e. theoretical and cognitivist. In the case of the humanities books, readers, and reading are treated as conceptual entities. Books are mere containers for texts, readers are solitary and disembodied, and reading is a technique rather than a situated practice. In psychology and cognitive science, while studying real readers, reading remains something that happens in the mind in interaction with the words on the page. Again, this work is indispensable for understanding books and reading as an artistic expression, cultural phenomenon and cognitive process, which has important implications for how we value the arts and teach our children to read. Nevertheless, it says little about how books are valued as everyday artefacts or the role they play in facilitating our being in the world as social actors.

In terms of designing alternatives to the current e-reading ecosystem, again, research has rarely moved beyond conceptualizations of books and e-books as reading technologies, and again, focusing on what a book is (or can be) rather than what it does (or could do). Thus books and e-books are understood as tools for storytelling – the story that is in the book – and its role as a social technology is confined to stories being read together. The fact that print books are being digitally augmented, rather than the other way around, suggests that books are somehow seen as lacking and in need of ‘spicing up’. Whether or not books need fixing there is certainly a wealth of opportunities for digital technologies to enrich our experience of reading for pleasure both by ourselves and with others. Nevertheless, the work does little to overcome the divide between books and e-books that requires readers to manage two independent systems that in their minds serve very similar purposes, i.e. to enjoy a good read. Neither does the work help enrich activities surrounding reading, such as organizing one’s books, displaying books in the home or passing books back and forth between friends. Finally, the design work limits our social interactions around books to reading together and thus misses an opportunity to design for the rich social engagements books enable, such as gifting an inscribed copy or passing on our mom’s copy of *Alice in Wonderland* to our children.

2.7 Conclusion

In order to understand the everyday uses of books and e-books, then, it is not enough to focus on the goals, processes, and outcomes of reading. What is needed is a much broader view that takes into account the ways in which books and e-books are embedded in the wider set of socially and materially situated practices from which the everyday emerges.

3 Methodology

3.1 Introduction

For this thesis then, the aim was to understand the practices and orientations surrounding books and e-books in order to identify and explore design opportunities for enriching human experience with and through books and e-books. To answer these questions, I combined an empirical with a practice-based approach. The empirical approach broadly draws on and contributes to the phenomenologically-situated paradigm in HCI, foregrounding individual experience as it emerges from our embodied and situated doing and being in the world. The practice-based approach draws on findings from the studies to develop a series of design proposals. By combining design ethnographic methods, such as diaries, home tours, and contextual interviews, with research through design methods, such as sketching and an analysis of the design in situ, I was able to approach the topic from two distinct, but complementary angles. While design ethnography allows me to understand people's current situations – in this case, the place of books and e-books in people's everyday lives –, research through design makes it possible to understand future situations: how would people's experience change if books and e-books were different? In this sense, interaction design in this thesis is very much understood as a form of enquiry rather than merely a fix for problematic situations.

The chapter consists of two parts: thinking and doing. In **Thinking: Theoretical Orientation**, I start with a brief historical overview of the major methodological developments in the field of HCI. I then position this thesis in the field by outlining the two approaches underlying it – understanding current and future experiences - and how they can inform each other. I then discuss each approach in more depth, highlighting my analytical orientation for studying current human experience and my practical orientation for understanding future situations through design. In **Doing: Methods**, I introduce the particular methods applied in each approach. I conclude with a summary on how I addressed the research problem.

3.2 Thinking: Theoretical Orientation

In the following, I position this thesis more clearly within and in contrast to the field of HCI, by outlining my methodological orientation and its implications for the empirical and practice-based approach I took. In doing so, I highlight how the

approaches are not only appropriate to the research problem at hand, but also have a grounding in a 'third wave' of approaches to understanding and designing in HCI that prioritize the in situ nature of felt experience.

3.2.1 History of the Field

My aim in this section is to position the thesis within the field it draws from and aims to contribute to: human-computer interaction (HCI), or more specifically, interaction design research. HCI can be broadly defined as "concerned with the design, evaluation, and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them" [76:5]. As the name suggests, human-computer interaction is composed of three major strands: social science, computing, and design. Interaction design research can be considered a sub-discipline in the field in that it has a narrower definition of design based on creative design practice (as opposed to engineering or systems design). A brief history of HCI should make both its strands more visible and how they tie together into what forms HCI today.

Computer: From One to Many

Human-computer interaction (HCI) is still a relatively young field. It formed in the 1960s around a small number of academic and corporate research labs in the United States, such as Stanford and Xerox PARC [140]. In the early 80s, the development of the personal computer (PC) signified a move from large and expensive computing machinery (mainframes) shared by many to one computer per person, first in the office, then the home. Most recently, the advent of the internet has led to an age of distributed computing in which an individual has access to 'thousands of highly distributed, interconnected, often invisible computers, blended into the natural environment' [204], some of which we access through a single or set of often mobile devices, such as laptops, tablets, smartphones, and most recently, smart watches.

Human: From Cognition to Context

The developments in computing technology were accompanied by an interest in making PCs available to a more general audience of office workers, and ultimately home users. This was where cognitive psychologists entered the field to help design and evaluate user interfaces in order to improve performance and ease learnability []. At the time, cognitive scientists conceptualized the human mind as an information processor, a metaphor derived from the very technologies they were working with. According to this view, the human mind received an input from its environment, formed and executed a plan based on a set of internal goals, which resulted in a certain output. Together with the machine, people formed an iterative feedback loop that could be analysed and optimised.

With the move of computers into the workplace, however, there was an increasing need to understand how to support group interaction and collaboration around computers. Suchman [185], who in the 80s was a doctoral student in anthropology working with Xerox, brought ethnography and ethnomethodology to the study of human-computer interactions. Based on her observations on people's uses of a photocopier, she showed human action (including problem solving and decision-making), and human-computer interaction in particular, to be situated, i.e. accomplished in the moment, in interaction with the particular situation we find

ourselves in. It was a landmark study that refuted the then dominant cognitivist models of human action – the execution of an a priori plan towards a certain goal -, pioneering a series of workplace studies, particularly in the UK. With the shift from cognition to context, information was no longer merely in the head, but drawn on as a resource in the environment (both in terms of people and things), a point elaborated under the distributed cognition label by Hutchins [87]. Finally, the emergence of the ubiquitous and tangible computing agenda - embedding digital technologies into artefacts and environments – produced a shared concern for ‘embodied interaction’ [46]. It is these latter strands of work that HCI researchers today most commonly draw on as a model approach to studying not just the workplace, but also the home or public arena.

While Suchman’s work had a major theoretical impact on the field, it was the Lancaster School that worked on making ethnographic findings available to the designers of computing systems, or systems designers, typically computer scientists [37]. More recently, studying particular settings with a view to design has also gained some foothold in anthropology itself, possibly as a result of an increasing demand for design anthropologists by tech companies. Today, social science typically contributes to the design of interactive technologies through either requirements gathering and/or evaluation: in the early stages of design, the study of people in either lab or field settings provides designers with an analysis of human thoughts and behaviour; throughout the later stages of design, prototype systems are evaluated in terms of their usability or overall user experience. In addition to informing design, findings will often be formalized into design recommendations, guidelines, or frameworks.

Interaction: From Usability to User Experience

As research projects turned into commercial products, industrial design started playing a key role in making technology not simply usable, but enjoyable to use. Before interaction design courses were being launched in the 80s in the US and UK, it was mainly industrial and graphic designers transferring their skills to the design of interactive technologies. Designers brought with them a sensitivity for the particular setting in which a product would be used as well as for its entire lifecycle from production through to use and disposal. The emphasis on a more holistic set of concerns that designers brought to HCI, beyond the optimization of learnability and efficiency of use, marked a shift away from usability to the more inclusive concept of user experience. In the 90s, designers from Goldsmiths and the RCA in London, brought a more reflective and critical approach to technology design, encouraging people to re-think their relationships with current and future technologies, both as individuals and society at large (e.g. [48]). In the 2000s, as ubiquitous computing became a reality, architects were able to bring their spatial expertise to the project, but rather than joining the field, tended to launch interactive architecture programs at their own schools, again, predominantly in the UK and US. Most recently, Miller’s work in material culture studies [135] has been a major influence among designers in HCI, offering materiality as a particular lens through which to understand human practice and experience.

Three Paradigms

In addition to its three major disciplines – computer science, social science, and design - HCI today receives influences from (and contributes to) a much wider range of disciplines. People often work on the fringes of their own disciplines

before coming together under HCI's umbrella by a shared interest in making computing technology available to people. Ultimately, HCI aims to inform HCI practice, which makes it both a *design-oriented* and *applied* field of study.

Despite a shared interest, however, HCI remains a multidisciplinary rather than becoming an interdisciplinary field or even having become a discipline in its own right. As each discipline has brought with it its own traditions, concerns, and approaches, there is a lack of a shared understanding of the phenomena being studied, questions asked about the phenomena, and approaches taken to studying them. Harrison et al [70] discussed these differences in terms of three different paradigms: the human factors paradigm, cognitivist paradigm, and phenomenologically-situated or simply third paradigm. While each coincides with a different phase in the history of HCI, they have not simply substituted each other over time, as paradigms tend to do in science [101]. Instead, they continue to exist side by side, despite their differences and incompatibilities. This might be because they address different parts of the same phenomenon, i.e. interaction, and so should be considered complimentary rather than contradictory.

Nevertheless, differences in the understanding of the phenomenon of interaction affect and are reflected in the way design is understood and done. In the first paradigm, interaction is understood as a coupling of man and machine. Design is pragmatically applied towards the elimination of human error in the operation of (often safety critical) systems. In the cognitivist paradigm, design becomes secondary, often simply being a means for testing hypotheses about the workings of the information-processing mind. The real interest here is on the development of ideally predictive models and general laws of human behaviour that can be applied to optimize human performance in interacting with computers. It is only with the emergence of ubiquitous computing in the third paradigm that the wider context of interaction moves from being a factor in design to being its main concern. The 3rd paradigm takes a "phenomenological viewpoint, in which all action, interaction, and knowledge is seen as embodied in situated human actors" [70:7]. Meaning is constructed in the moment by people in specific situations, in interaction with their particular social and material environment.

Bødker [15], following Bannon [10], too, identified three 'waves' in HCI: a 1st wave of cognitivist and human-factors treatments of one-on-one human-computer interactions in the workplace, a 2nd wave of computer-mediated collaborative work informed by situated action, activity theory, distributed cognition and participatory design, and a 3rd wave of ubiquitous computing outside the workplace, such as in the home and public space taking everyday experience as its focus. Unlike Harrison et al, Bødker's waves place greater emphasis on socio-technical trends (from one to many) than epistemological distinctions. Methodologically, the shift from 2nd wave situated practice approaches to a 3rd wave focus on emotions and experience is hardly 'rebellious', but an evolutionary rather than revolutionary step, augmenting existing theories rather than replacing them. Nevertheless, Bødker suggests there is a gap between their respective concerns with 'rationality' and 'emotion' that needed to be bridged.

The approach in this thesis is exactly this: it draws on and contributes to the 3rd paradigm or wave building on 2nd wave approaches by extending the situated-embodied practice approach with an emphasis on felt experience. Specifically, it combines design ethnography with research through design approaches to be

mutually informing with the aim of understanding our current and future experiences with and through books and e-books. My approach to design ethnography involved paying particular attention to the material and spatio-temporal aspects of practice (the social life of things), as well as how they are experienced through our unique sense of self. As artefacts and practices co-evolve so does our sense of self. With respect to designing and understanding future experience I take an interaction design approach to developing tangible, distinct, and holistic artefacts that can be made available for real world intervention and interrogation. By creating new material situations there is a potential to transform current practices and for new practices to emerge, which are then open to examination in terms of their feasibility and desirability as a design direction.

3.2.2 Understanding Current and Future Experience

This thesis draws on two established approaches in HCI, namely design-oriented research and research-oriented design [52]. Neither of these approaches prescribe any particular sets of methods or research orientations. Rather they highlight the aims involved in conducting a particular type of research, which is to understand an existing situation with the aim of changing it and vice versa. More specifically, I used design ethnography and research through design as two distinct, but complementary approaches to understanding current and future situations. They are distinct in that ethnography “tries to illuminate the present by interrogating its (recent) past. Its methods are observational, descriptive, analytical, and interpretive”. By contrast, “design is a practice of material and immaterial making, but its mode is generative, speculative, and transformational.” [83:35]. It is projective of future situations. In making possible futures tangible and concrete, design can encourage discussion and reflection around the desirability not only of the futures presented, but also around our lived present. Conversely, ethnography makes visible the particular activities, practices, and values operating (in) a particular setting that a design aims to support or disrupt. It is their ability to illuminate different temporalities of human experience – the present and recent past vs. the future – that make design and ethnography complementary.

Ethnographers are social actors, and ethnographies social situations. What a particular ethnographer learns from an ethnography of a particular setting depends to some degree on her knowledge, experiences, and orientations, which inform what she observes, how she makes sense of it, and how she communicates her insights to others. Designers, too, are guided by their skills, knowledge and values in generating ideas and making design decisions. The fact that these factors influence how we make sense of the world and what we do is not exclusive to ethnographers and designers, but the basis of all human activity. In most professions we don’t need to know about a professional’s orientations in order to use her goods or services. Researchers, however, produce a particular good, called knowledge. What constitutes knowledge depends on what the community of researchers, and indeed society at large, deems to be knowledge. In order for others to make up their minds over whether a piece of written text or an artefact constitutes knowledge, researchers need to make explicit their orientations. Both design and design ethnography require reflexivity throughout the process⁵. In the following, I outline my methodological orientation in more detail.

⁵ There are limitations to the idea of reflexivity in that it assumes that researchers’ actions were somehow determined by their knowledge and beliefs, when all human action is

3.2.3 Understanding Current Experience

I took an experiential approach to understanding people with a view to design. An experiential approach takes human experience – as opposed to action or cognition, for instance – as its starting point. In this sense, the approach can be broadly positioned within the phenomenologically-situated paradigm of HCI, and social science more generally. In this paradigm, experience is embodied and situated, i.e. we actively create our experience in interaction with our environment through our bodies as they are bound to a particular time and place. It is this position that this thesis draws on and aims to contribute to. Where it departs (or augments it) is in taking a particular lens on experience, namely materiality, aiming to understand human experience through the materiality of our environment we find ourselves in, i.e. the things and places surrounding us.

The introduction of phenomenology as a theoretical foundation into HCI was based on Dourish's insight that tangible and social computing (or interaction) share a common basis in embodiment, the idea that through our bodily presence we are embedded in the world, and thus "the ways in which we experience the world are through directly interacting with it, and that we act in the world by exploring the opportunities for action that it provides to us – whether through its physical configuration, or through socially constructed meanings" [46:18]. In its most prominent Heideggerian form phenomenology is concerned with our being-in-the world, i.e. our embodied and practical engagement with a world in a network of relations between people and things that renders itself meaningful.

At the same time, the social sciences, and consequently HCI, have experienced a 'practice turn', in which a practice becomes the fundamental unit of analysis as opposed to 'structures' or 'actions', for instance [173]. Here 'the social' is understood as a field of practices, i.e. "embodied, materially mediated arrays of human activity centrally organized around shared practical understanding" [173:11]. Skills and knowledge are embodied and shared in practice; the mind itself is constituted within practices. While subscribing to some shared principles, there is nevertheless a variety of perspectives or theories on how practice should be understood and studied. A line of posthumanist thinking coming out of science and technology studies, for instance, challenges practice theories that locate the social in human relations by assigning nonhumans agency in directing human practice, thereby shifting their role from mere mediators to co-determinants of practice (e.g. [162]). More recently, practice theory has aimed to address the ways in which practices change over time [181]. Here, practices are the active integration of three elements – material, competence and meaning – and change as its elements change and the mutual connections between them are made and broken.

Unlike the social sciences, HCI experienced an implicit turn to practice when its analytical and design focus increasingly moved from 'interaction' to 'practice' [102]. As a design-oriented field, however, HCI's interest is not merely in *analysing* practices, but in *changing* practices through designed interventions. In terms of design then, practices are not only understood as a 'unit of analysis', but also as a 'unit of intervention'. The most common practice approaches in HCI include participatory design, activity theory, and ethnomethodology, all of which share

situated and largely unconscious. However, since researchers are human (usually), their thinking and actions are situated and largely unconscious.

some concern for context, real world complexity, materiality, embodiment, performance, and ecologies or artefacts. Its shared approach is field research: "Because practices are contingent, mediated and cannot be understood without reference to the particular place, time and concrete historical context where they occur, they can only be studied 'close-up', i.e. in their natural setting [102:3547].

With its focus on lived experience as a resource for the practical accomplishment of intersubjective meaning and accountable action practice-based approaches tend to leave little space for our personal experience of the world and our place in it: "In their attempts to radically undo Cartesian dualism, practice and activity theories have replaced a solely individualistic concept of self, always separate from the material world, with a communitarian conception of self that is predominantly external and has only impoverished access to its own mental states [feelings and values]" [130:43]. As part of being *lived*, however, experience is also *felt* as our being in the world is inevitably composed of our doing, knowing, and *feeling* in the world. Yet, feelings and moods are conspicuously absent from practice theories. Feelings or emotions are often misunderstood as an add-on to experience, as a discrete mental state of no practical consequence to how we act on or interpret the world. This view, however, underestimates both the practical and experiential work our feelings do, which is to give meaning to our doing and being. What we need therefore is not an alternative to practice theories but to augment them in a way that makes space for experience to be both lived and felt, as it is produced by our embodied *selves* through our practical and situated engagement with the world.

Experience, at its most fundamental level, is holistic in that we experience the world and ourselves as a moment-by-moment, unique, but cohesive and integrated whole. We are not merely exposed to the world as it presents itself to us, but our bodies and minds actively create experience from a mesh of sensations, thoughts, and emotions. Our attention channels and filters the mix and continuously shifts our focus between inside and outside ourselves, between past, present, and future, between here and there. So while bodily experience is confined to the here and now, our mind can travel. While watching a football match on TV, for instance, we might remember how we injured our finger when we played football as a child, remind ourselves to exercise more, or imagine what it would be like to be in Brazil right now. Neither does the world simply exist in our minds, but has a material reality that very much constitutes how we think and feel about the world, about our selves, and others.

In this thesis I approach experience as both an individual and shared phenomenon that engages our individual minds and bodies as they are embedded in a network of social, material, and spatio-temporal relations. To do so I draw on practice theory that understands experience as embodied and situated, while giving greater emphasis to the material and spatio-temporal elements of practice. At the same time, I make space for experience as individually felt by extending practice theory with social psychological constructs of the self, and by extension consciousness. At a more fundamental level this allows me to approach an understanding of the individual and shared components of practice and the relationship between tacit forms of experience and conscious reflection. Methodologically this means that we cannot offer an account of human experience through in situ observation of a situation alone, but also need to listen to people's

accounts of the same situation, which inevitably points to both their practical reasoning *and* feeling.

In the following, I draw on a range of empirical evidence across the social sciences, including cognitive science, psychology, sociology, anthropology, and human geography to argue that experience is best understood through notions of the self, practice, materiality, and spatio-temporality. While I discuss each of them separately here, I'd like to emphasize that they are simply facets or lenses on the same phenomenon of being in the world. They are thus very much understood as being intertwined and mutually constitutive of experience.

Experience through Self

The physicality of experience has often been discussed in terms of embodied cognition. Put simply, it suggests that our cognitive processes are determined by our bodies [46]. The concept emerged as a counter argument to the idea that the mind takes primacy over, or was somehow independent from, our bodies. While we know this idea to be inadequate, arguing for the primacy of the body over the mind seems equally flawed. I'd like to circumvent any debates about conceptual hierarchies between the mind and body, and by implication, the dualism of mind and body underlying the argument. I will therefore speak of the physicality of experience to emphasize that experience has a biological foundation in being created by our body *and* brain – I prefer using brain as opposed to the more illusive notion of mind - which we shouldn't forget is simply an organ, and so part of our body.

The epigenetic basis of our experience, i.e. experience as a result of the particular workings of our organism designed by our genes in interaction with its environment, means that experience is both shared and unique. It is shared, because our bodies and minds function in similar ways and interact with similar environments. At the same time, our experience is unique, because not only do our genes differ, and thus the way our body functions, but also the situations we are exposed to throughout our lives are different and have been processed in different ways, resulting in an experience that is different for each of us. While we will never know for sure what experience is like for anyone but ourselves, we know of its shared, but unique nature through our ability to share experiences through language and non-verbal means.

Sharing experiences with others, however, requires an awareness of our body, self, and the world, which is made possible by consciousness. Consciousness is made up of physical brain processes emerging from unconsciousness and what we become aware of in the form of thoughts, feelings, ideas, memories, perceptions, etc., in other words, what constitutes reality for us. The fact that consciousness is a creation by our brains as a way of rendering our experience of the world and ourselves coherent is what led cognitive scientists to refer to consciousness as an illusion, a powerful deception created by our brains [203]. Our experience of free will, they argue, is the sense of having made a decision, when in fact, our brain made the decision for us. The claim is based on a now famous experiment in which the decision to press a button was measurable several milliseconds before the participant became aware of having made the decision. Drawing the conclusion that our behaviour must be determined, however, only makes sense if we subscribe to the dualistic tradition, in which case the unconscious processes that initiated the behaviour were somehow not our own, but an independent entity in

control of our behaviour. If we accept on the other hand, that the mind is a product of our brain, the debate becomes meaningless, because we understand that the brain is as much part of our unique self as the self we experience in consciousness. Indeed, given that consciousness relies on attention, which is a limited resource, allocating as many tasks as possible to non-consciousness (whether they be automatic, unconscious or tacit) is not only possible due to living in an environment that is largely stable, but also necessary in order to prevent action paralysis due to cognitive overload, which could be lethal [91]. We might think of consciousness then as the company executive whom her employees (unconsciousness) draw upon selectively if they encounter unfamiliar situations they haven't learned how to deal with (yet).

Emotions are rarely mentioned in discussions of consciousness, but play a key role in not just continuously modulating our experience, but in giving meaning to our thoughts and actions. While we often think of emotions in terms of feelings, such as moments of anger, joy, or fear, in fact, emotions underlie *all* our thoughts and actions, *all the time*. Without emotions, we would be unable to make sense of our thoughts or act responsively, if at all. This is because emotions act as 'somatic markers', assigning any conscious and unconscious brain processes a value (or a combination of them): good, bad, important, dangerous, etc. [41]. In other words, emotions act as motivators. At the most fundamental level (in the amygdala), they make sure we satisfy our basic needs for physical survival (food, drink, sex, etc.). At a higher level (in the prefrontal cortex), they make sure we think and act in ways consistent with our goals and values to ensure our 'survival' as social beings, i.e. successful members of a group or society: "without the executive control of our frontal lobes, we would be at the mercy of every whim, distraction, impulse, tic or urge that could threaten or sabotage any chance of achieving acceptance by the rest of society or fulfilling the goals we have set for our future self" [81:109]. Fortunately, we are generally able to rely on our higher emotions (e.g. "I want to lose weight") to 'veto' more fundamental emotions (e.g. "I really want that cake"). I say generally, because on the one hand, our emotions are fundamentally tied up with our environment (i.e. they are situated), and on the other, our ability to consciously control our environment or emotions is limited, and so the best we can do is to practice more effective ways of dealing with them. It is easy to dismiss this 'illusion' as a mere gimmick of our minds, but the sense of control we gain from the illusion of being in charge of our thoughts, feeling, and actions is fundamental to our happiness and general well-being [190], giving rise to a strong sense of self, which in turn promotes well-being.

I have already suggested that consciousness gives rise to a more or less stable sense of self, the lens or process through which we make sense of the world and our place in it, and which guides our actions. While we have a 'present-oriented, unreflective' consciousness from birth [103], our sense of self only emerges a few years later: at around 18 months we recognize ourselves in the mirror; and at around four years of age, we see other people as goal-directed, purposeful, having preferences, desires, beliefs and misconceptions; at around six, we have 'essential' ideas about others' core components of the self (e.g. gender) that we will tend to see as unchanging and foundational to who we and others are.

Throughout our development our environment plays a crucial role in making and shaping the self. Through observation and instruction we acquire the skills and knowledge as it is being passed down from one generation to the next. In

interacting with our environment, we learn to become like others, a participating member of the human species, and in the process gradually come to discover who we are – our own self. Shaped by the reflected opinions of others around us we may even switch from one character to another, giving us the illusion of possessing multiple selves⁶. The tension between similarity and difference from the social world continues to make and modify our self throughout our adult lives. Given the stable, yet fluid nature of the self, it makes sense to think of it as an on-going process of identification with and in contrast to others: “the self is an individual’s reflexive sense of his or her own particular identity, constituted vis-à-vis others in terms of similarity and difference without which he or she wouldn’t know who they are and hence wouldn’t be able to act” [89:49].

We rely on our self to act, but acting in the world, in turn, makes and re-makes our self. It is only through interacting with our environment that we discover and hone our skills, define and re-define our goals, and build and re-build our values, in other words our self. Further, if the activity is aimed at a purpose, and so integrates the feeling of pleasure with one’s set of goals, we can speak of enjoyment and a genuine expression of the self. Our ability to act according to our goals and values is the basis of a strong self, and ultimately, at the core of what makes us human [38]. In other words, we actualize our being through our doing.

Over time, practice turns into narrative as our experiences become memories. By recounting past events throughout our early childhood, our parents provide a scaffold for our autobiographical memory into which we can organize our own experiences into a meaningful story. Our self is the story of self – a constructed narrative. Yet, our memories are “reconstructed, fluid, modified by context and sometimes simply confabulated” [81:60]. Far from simply being the record of our lives, our autobiography, and consequently our self, is continuously being written and re-written in a process of integrating our past experience with who we want to be today and in the future. Besides ensuring we can maintain a sense of a coherent self over time, our autobiographical memory also supports self-enhancement by allowing us to re-evaluate past events to create a more favourable view of our current self, and connect with others through sharing experiences.

Experience through Practice

We have already seen the importance our social environment plays in the development and shaping of our self, goals, and values. In this section, I would like to unpack a little further what I mean by social and how our experience is fundamentally tied up with it.

In defining the social, the social science literature has broadly taken two views. The first is the top-down view, in which the social is always already out there - in the form of rules, institutions, society, etc. - an invisible and incomprehensible force controlling individual action. The other view takes a bottom-up perspective. Here the social doesn’t exist until and unless it is produced or accomplished by active, reflexive individuals or actors. Rather than siding with either the ‘structure’ or ‘agency’ perspective we may see this duality as a dualism [58]. In this view, ‘the

⁶ Individuals vary in the degree to which they perceive themselves to possess multiple selves. Individuals who are ‘extraverts’ are more likely to present different selves under different circumstances [207].

structural properties of social systems exist only in so far as forms of social conduct are reproduced chronically across time and space'. In other words, 'structures', such as 'the social' or 'culture' only provide the framework for action, and in turn, are provisionally made and re-made through practice [181].

This environment is necessarily social as people are implicated in everything we do. Even when reading a book by ourselves, the book has likely been written and produced by other people, its content may refer to other people, we may read it to improve our skills for or in relation to other people, we may be reading it in a particular moment to take a break from other people, etc. In this sense, practice is always social and is always tied to a situation (or context or setting) that is social. We can therefore say that any action (or activity, or practice, or work⁷) is situated, and so any action is always also interaction [185]. I have already mentioned that our experience emerges in a continuous process of (inter)action with our environment.

Actors are reflexive in being able to understand the whats and whys of their doings [37]. Furthermore, practice is 'naturally accountable' in that we can typically understand and give an account of what other members in a setting are doing and why, at least if the situation is as ordinary for ourselves as for them (hence 'members'). Further, members will actively make their actions accountable to others and themselves, i.e. to make them intersubjectively visible and recognizable, so as to facilitate coordination. As already mentioned, this understanding is largely carried in 'practical consciousness' or tacitly, expressed in our embodied engagement with the people and things around us, and only partly conscious or expressed discursively. The repetitiveness of many of our activities over time turns them into habits or routines, and as we stop paying attention to them, they become tacit. Through routinized practice our practical consciousness becomes embodied in our 'habitus' [21]. Conversely, practices and routines have to be performed in order to persist over space and time. Rarely are they ever simply replicated, however, but made and re-made as they are being performed. Needless to say, there are many occasions or periods in our lives when we turn into 'non-members', such as when walking into a new coffee shop or moving to a different country. It is these situations and times that the most ordinary things can no longer be accomplished tacitly but require our attention (e.g. table or counter service?; look right, then left when crossing the road). So while we all engage in 'interactional work' to make our actions accountable to others, depending on the degree to which we are members of a setting, our particular interactional devices can vary, as will our experience of the situation and ourselves.

Experience through Materiality

By this point, I hope to have shown that our orientation, practice, and experience – in brief, our self – crucially rely on direct and indirect interactions with other people. Equally important are our interactions with and through the non-human world, or the 'stuff' that surrounds us, whether natural or man-made – "the objects of human production and exchange with and through which people live their

⁷ I am aware that there are semantic and theoretical differences between action, activity, and practice, and between situation, context, and setting, although they are often used interchangeably. I think of each as a slightly larger unit of the former, e.g. picking up a book is an action, reading an activity, reading in the evenings before bed a practice. Regardless, I use 'practice' to refer to the routinized and (largely) shared ways of doing things, and 'setting' to the particular place or environment from which particular activities unfold.

everyday existence” [7:11]. Just like people, stuff enables and shapes our everyday thoughts, feelings, and actions, the development of the self and social relationships, as well as human evolution as a whole. Here, I will briefly outline the main strands of the idea that “the best way to understand, convey and appreciate our humanity is through attention to our fundamental materiality” [135:4].

Practice is always social *and* material and so “understanding specific practices always involves apprehending material configurations” [173:12]. This is because any action and interaction involves not just artefacts, but takes places in a particular ‘locale’ or ‘setting’, providing the ‘frame’ for interaction [62, 61]. While we may experience artefacts and spaces as the mere background to social interaction, it is the ‘humility of things’, i.e. their invisibility and taken-for-grantedness, that makes them such powerful framing devices, shaping our every thought and behaviour without our awareness of them doing so [134]. For instance, we may not pay much attention to the clothes we put on in the morning, but few of us would come into work without any or in our pyjamas. Clothes, then, are taken-for-granted, yet powerful framing devices that not only keep us warm and dry, but also enable us to shape the ways in which we want to be seen and treated by others. In the same way that our material environment cues our thoughts and actions, it is also the primary means by which we are socialized as social beings, or develop a habitus [20]. In interacting with things, we may even apply the same interactional devices we have developed in interacting with people in that we aim to make our actions accountable to the artefact, and in turn, attribute it a degree of intelligence depending on its capability of making its actions accountable to us, currently resulting in asymmetrical human-technology relationships [185].

Speaking of materiality makes it easy to forget that the majority of the material world we interact with today is man-made. Artefacts are conceived of, designed, produced, distributed, used, and discarded. They start out as material and end up as material, merely changing form in the process. Artefacts (and spaces) provide certain ‘affordances’, which suggest and constrain certain courses of interaction. In contrast to common conception, however, affordances are not inherent to the artefact and do not determine action, but merely frame interactions by evoking certain meanings an individual or group has developed in relation to similar artefacts through experience, observation, instruction, etc. As a result, affordances (or the more recent version called ‘user experience’) cannot simply be designed into an artefact, but remain suggestive as affordances (and the user experience) emerge from the relationship between the artefact and the person making active sense of it. However, there may well be an overlap in the particular meanings the designer and user associate with an artefact, making it more ‘intuitive’ to use. As artefacts move from production to consumption a set of practices will form around the artefact and create a place for itself in our lives. Rather than simply enacting ‘design scripts’, however, artefacts are creatively appropriated or ‘domesticated’ by their users, a process of ‘transformation, negotiation and inscription of meaning’ on to an initially alien artefact or technology (I see technologies as a particular type of artefact) which may result in its provisional ‘acceptance, rejection, and use’ [12]. Finally, artefacts may be passed on to others, giving them a life or biography that transcends the lives of individual users. As artefacts hold no inherent meaning “apart from those that human transactions, attributions, and motivations endow them with”, as researchers we should exercise ‘methodological fetishism’ and “follow the things themselves, for their meanings are inscribed in

their forms, their uses, their trajectories”. In other words, even though from a theoretical point of view human actors encode things with significance, from a methodological point of view it is “the things-in-motion that illuminate their human and social context” [5:5].

Materiality also plays a key role in helping people cultivate their selves by supporting dialectic processes of integration and differentiation. The same processes drive value creation at various levels (family, community, society, etc.), creating standardized values, which objects re-enforce [38]. For instance, we might cherish things for the way they embody and evoke relationships (integration) by supporting contemplation and reflection, or for the way they reflect accomplishments and abstract goals (differentiation) through supporting action. Over the course of our lives our orientation towards things tends to shift from cherishing objects of action (e.g. bikes, stereos) during childhood to objects of contemplation (e.g. photographs, diaries) late in life, along with a shift from more egocentric goals to those relating to a network of lasting relationships, and a shift in perspective from the present to the past. While people might lean either towards the cultivation of their individuality or their relatedness to others, striking a balance between these two opposite tendencies seems to be most satisfying, resulting in a ‘complex self’. What makes life meaningful is a self that is integrated at multiple levels (familiar, social, cosmic): people “need to know that their actions matter, that their existence forms a pattern with that of others, that they are remembered and loved, and that their individual self is part of some greater design beyond the fleeting span of mortal years.” [38:145]. In terms of materiality, the best relationship we can have with our possessions is also one of balance: the optimal attitude seems to be one in which “a person can use things to express, objectify, and strengthen meanings and relationships without becoming entirely dependent on the objects themselves.” [38:164]. In this sense, our relationship to things is indicative of our relationship to people and vice versa. If the relationship is fulfilling and effective in one domain, it is likely to be in the other [136].

It is becoming increasingly clear that artefacts are not merely an epiphenomenon of the social and that meaning is not found in either subjects or objects, but in the relationship between the two. Consequently, we may abandon common sense notions of the social as purely human relationships and acknowledge the role of non-human actors. Actor-Network-Theory (ANT) [107] is not so much a methodological toolkit or theory of the social (neither of which it ever intended to be), but a conceptual framework that is “better considered as a sensibility to materiality, relationality and process” [108:157]. More specifically, ANT emphasizes the relational aspects between actors (whether their particular ‘figuration’ is human or non-human) characterising their relationships as non-hierarchical and multi-directional (every actor is acting on, and acted upon by a multitude of other actors). Further, ANT (like ethnomethodology) is performative, in that the social has to be actively produced or ‘reassembled’ by the actors through the creation of links or ‘associations’, which are dynamic rather than stable, i.e. if actors remain idle, the social disassembles. Leaving debates over the possibility of non-human agency aside⁸, I take ANT as a set of sensitizing concepts

⁸ Critics reject the idea of non-human agency based on the premise that agency requires intentionality, which in turn, requires consciousness, neither of which non-humans (can) have. Although I feel the objection is valid, it is also negligible, because ANT is not a theory.

aiming to encourage social researchers to *disassemble* any preconceptions they might have of the social as a set of *a priori* categories (e.g. class) or causes (e.g. power), so they can *reassemble* the social from the bottom up through first hand observation. As “action [] is distributed, variegated, multiple, dislocated and remains a puzzle for the analysts as well as for the actors.” [107:60] the researcher’s goal should be to provide a detailed explication of the particular forces or ‘intermediaries’ at work in producing the social by tracing their associations.

Finally, considering the role of materiality in human history, Miller suggested, following Hegel, that “there can be no fundamental separation between humanity and materiality – that everything that we are and do arises out of the reflection upon ourselves given by the mirror image of the process by which we create form and are created by this same process” [132:8]. In other words, things make us as part of the very same process by which we make them, the material world created by the people who came before us, in a dialectical process of objectification. As we make laws, we understand ourselves as people with rights and limitations. The interdependence of the development of materiality and humanity inevitably evokes questions about progress. Crudely put, it is the question of whether our making of the material world is making the right us. This involves establishing what constitutes ‘right’. Values themselves are malleable, however, made in interaction with an ever-evolving material world, and often multi-dimensional (consider concepts like sustainability, equality, etc.). Rejecting technological determinism as a driver of this process, I side with Kranzberg’s position that technology, like culture, is inherently contradictory, that “technology is neither good nor bad; nor is it neutral”. Still, it has been suggested that the ‘technium’ may run its own evolutionary course and that over the long run we may gain more than we lose [93].

Experience through Spatio-Temporality

Spatio-temporality underlies all aspects of human experience discussed above: self, practice, and materiality. We exist in the here and now as does the non-human world around us. While time and space are in themselves abstract concepts, and thus invisible and difficult to grasp, here I’m interested in time and space as concrete aspects of everyday experience as they become manifest in and shaped by our interactions with our social and material environment. The fact that our embodied selves are subject to ‘time-space fixity’ [58] - we can only be in one place at a time - creates an obvious connection between time and place. Indeed, time and space are inextricably linked, both in terms of the ways in which we think about and act in time through space. To emphasize their interdependency we may speak of our experience being bound up in TimeSpace [128].

We experience time as continuous and unidirectional: “from experience we know that each moment in time only happens once, that we can only be in one place at a time, that we can never go back, and that many aspects of our experience are not permanent” (i.e. they have a beginning and ending) [19:3]. Arguably, it is our uniquely human awareness of time moving in one direction (or us moving through time) towards death that makes our actions consequential and our lives meaningful [74, 95]. We further draw on bodily experiences to render concrete the more abstract concept of time [104,19]. Specifically, we use one-dimensional, directional spatial metaphors to think and talk about time (“I have a meeting ahead of me.”), although the reverse also seems to be true (“She lives three hours

away.”). Our existence may be confined to the present, but our minds can travel by remembering the past and projecting into the future (called ‘temporal extension’), all of which fold into each other to create our moment-by-moment experience. Apart from occasional moments of reflection, however, most of us, most of the time, are present-oriented⁹. In the present, we typically experience time as a tension between continuity and change. While change allows us to keep track of time, continuity can give us the impression of time standing still. Thus we can only understand time indirectly through the presence or absence of change, which we experience through our senses, conversations, and practice, for instance by watching the clouds, reading the news, or sanding a piece of wood.

While the fundamental experience of time seems to be universal, it varies to the degree that time is not a purely mental phenomenon, but emerges from the interactions with our social and material environment, which inevitably varies within and between cultures ([1], [111]). So on the one hand, time and space frame our experience, and on the other, they are made and re-made through: the sensation of various time-space relations or natural rhythms (e.g. diurnal cycles, seasons, bodily rhythms, etc.); coordinating with and re-calibrating our practices and sense of time in relation to the people around us, not just locally, but globally; keeping track of and transcending time through our material environment. The recurrent demands of natural rhythms and the degree of social coordination required to meet them, means that our activities take on a regular, often daily, pattern we refer to as the everyday. As this work aims to understand what books and e-books do for people through the lens of everyday practice, it is worth asking what we mean by the everyday.

The Everyday

The everyday is a useful shorthand for highlighting the recursiveness and orderliness of much of what we do. Yet it would be wrong to assume that there is a universal everyday we all share. In fact, the everyday is always multiple and heterogeneous, both in terms of what constitutes our everyday, as well as in terms of the degree of everydayness we experience. The everyday in London looks different than it does in Kabul, for instance, different for a homeless person and a company executive, or for a male and female executive working in the same company. The everyday should therefore be best understood as a problematic to be explored and understood rather than taken as a given [77]. Related to the everyday is the notion of the dialectic of the ordinary and extra-ordinary. The ordinary becomes manifest in and is actively created out of a loose set of recursive activities we are able to perform tacitly, i.e. habits or routines. Thus, the notion of the everyday has been discussed as phenomena or activities moving from the foreground into the background as novelty becomes familiar or routine through repetition. While routines are often tied to clock time they go beyond that, for instance, in having a rhythm of their own, once being initiated, that is independent of the timing purported by the clock. Apart from concerting our actions with those around us, the routinization of everyday life allows us to manage our limited cognitive resources, but even more so, it is comforting in that it gives us a sense of predictability and control over our lives. The experience of becoming a parent or

⁹ This is true for healthy minds. Trauma and mental illness can get us to lose track of time, e.g. to endlessly ruminate the past, or fail to integrate our current experience with past ones [205].

unemployed may give an indication of the fragility and importance of the everyday as we struggle to re-establish both new routines and our 'sanity'. At the same time, the everyday can certainly be oppressing in its sameness, quickly resulting in boredom, and so a life without the new and distinct is equally hard to bear for most of us. Rather than being distinct times in our lives, each moment or period of our everyday lives is interspersed with elements of extra-ordinariness, and vice versa. We are lifted out of our routine as we become aware of the particular situation or activity we find ourselves in. This could be anything from a major life event to a small disruption to our routine (e.g. burning toast). The distinctness of a situation is what captures our attention in the present, but it is our emotions that mark an event as special in our memories (the stronger or more valent the emotion(s), the more vivid the memory). Conversely, we actively draw on this capacity to mark certain events as special, such as rites of passage [198]. This is where the malleability of time has its biological origin. While in the present novelty seems to accelerate and boredom to decelerate time, retrospectively, novel experiences expand in our memories in their specificity, while the everyday contracts into a set of schematic experiences. In other words, it is the very existence of the everyday that makes extra-ordinary experience possible, and vice versa, background and foreground are mutually constitutive, held together by a dialectic relationship.

Leisure

In addition to the everyday, another spatio-temporal concept used in this thesis is to distinguish leisure from work activities (the focus is on leisure reading as opposed to work-related reading). Work and leisure form a spatio-temporal concept in so far as we engage in one or the other, but not at the same time or in the same place, and that one could not exist without the other. A textbook definition of leisure reads: "discretionary time is the time remaining after working, commuting, sleeping and doing necessary household and personal chores which can be used in any chosen way" [195:2]. Similarly, the home is often discussed as the antithesis of the workplace, in which the home acts as a private refuge from the public world of work. Much recent work has put into question a sharp spatio-temporal as well as conceptual distinction between the two. While the leisure/work distinction may resonate with anyone who leaves home for work during the day, many go or stay at home to work, as is the case for domestic workers and stay-at-home parents, or those who are non-working. More recently, networked digital technologies have contributed to a blurring of the boundaries between leisure and work. On the one hand, it has become feasible - at least for knowledge workers - to do their work anytime, anywhere, including at home or when travelling, and on the other, to take our leisure activities to work, such as checking Facebook throughout a workday. Hardly has the boundary simply broken down, however, but is being re-worked through a range of everyday spatio-temporal practices, such as keeping a dedicated work space in the home, or substituting the boundary marking function of commuting with an hour of gardening before and after work. It is these practices that emphasize the importance of the distinction to the organization of our social lives. Nevertheless, leisure activities remain most commonly situated in the home, but can be associated with a wide range of places, such as catering and retail spaces, recreation areas, arts and entertainment venues, or the outdoors.

Other than the freedom from work, leisure has often been equated with freedom itself, as the time in our lives and days in which we are free to make our own, voluntary choices ‘in line with our private conscience’ [170]. Leisure as the realm of freedom, choice, and self-determination is an ideology more than an actuality, as even in our free time we think, feel, and act in relation to physical, social, economic, and cultural constraints and opportunities. So, while our leisure behaviour is intentional, it is not free. If leisure is what we do when we believe ourselves to be free, we may ask what leisure is for. It has been suggested that in our spare time we may pursue activities that are intrinsically rewarding by way of allowing us to reach a state of flow, or “the existential experience of total involvement in leisure activities, freely chosen, which are self-rewarding and contain an uncertain outcome that allows for individual creativity, removed from everyday experience” [14:12]. Enjoyable activities are thus differentiated from merely pleasurable activities. Whereas pleasure is the satisfaction of a physiological need, enjoyment involves the use of skills in response to increasingly complex challenges” [39:219] and leads to change and growth. Related to this is a differentiation between leisure as ‘serious’ vs. ‘casual’. Whereas serious leisure is creative and productive, and based on values of craftsmanship [179], casual leisure is consumptive and non-productive [14]. There’s a moral judgment underlying these classifications in which serious/enjoyment is good, whereas casual/pleasure is less so. Books and leisure reading are often subject to this dichotomy, such as when classifying leisure reading into literature vs. entertainment. In our everyday lives, we are unlikely to make these distinctions or allow our experience to be determined by them. All human activity, including leisure activities, is consumptive to a degree, but also requires our active engagement with the world, and the world leaves us changed in return. It is the form of our engagement that determines whether we derive pleasure in the process, rather than the particular type of activity we are engaged in.

3.2.4 Understanding Future Experience

Now that we have laid the ground for how we may approach understanding the here and now of experience, we may consider how we might go about understanding potential future experience. As our current experience is reflected in and made in interaction with our social and material environment, so does changing this environment change our experience through this new environment. Design - as a process, practice, and product – allows us to envision and understand future situations by creating new environments or altering existing ones, which in turn, afford new practices and experiences.

Interaction Design as Practice, Process, and Product

In the Oxford English Dictionary, a designer is quite broadly defined as anyone who “plans the look or workings of something prior to it being made, by preparing drawings or plans”. In this sense, craftsmen, engineers, software developers, etc. are all designers. HCI commonly refers to design in this way. Some may even want to extend this notion and include anyone who engages in everyday problem solving. Here, being able to find the quickest route from home to work makes you a designer¹⁰. All of these definitions highlight a core aspect of design, which is

¹⁰ Bill Buxton offers an explanation why the notion of ‘everyday designer’ is flawed: “Yes, we all choose colours for our walls, or the layout of furniture in our living rooms. But this no more makes us all designers than our ability to count our change at the grocery store makes us all mathematicians.” [26: 95]

arriving at a novel solution through problem solving, but really only capture one of the cognitive processes involved in design, thereby failing to understand design as a social and material practice, process, and product. In this thesis, I use 'design' in a much narrower sense in line with how the professional design community would generally understand design, including, but not limited to, interaction design, product design, graphic design, interior design and architecture. In the following, I briefly outline what characterizes design practices, processes, and products, and how together they reassemble into something we call design.

Practice

So what makes a designer? Like any other profession, being (and continuing to be) a designer requires a certain set of knowledge, skills and experience, which are inevitably materially and socially situated in design practice. In interaction with the material (the drawing, the model, the site, the technology) and social environment (colleagues, clients, users, stakeholders) designers are able to frame and solve design problems. Initially, design school equips aspiring designers with the necessary set of knowledge, skills, methods, and tools, but also with a particular design culture that frames their design activities in terms of shared goals and values (e.g. design needs a social agenda, design needs to sell, etc.). This culture is made and re-made with the arrival and departure of individual staff and students at the school, as well as in interaction with broader technological and social developments (e.g. emerging tools, materials, and practices) outside the school. As designers leave academia and enter a professional environment, they inevitably encounter cultures that challenge their own, design or otherwise, and continue to expand and revise their design vocabulary of problems and solutions. Design is rarely done in isolation, but very much a collaborative effort, involving other designers, and is ideally tightly integrated with the work of social scientists, engineers, and economists: "For designers, imagination is methodic work rather than a mental activity. They do not produce those futures by themselves, but as a part of a larger community of practitioners ranging from engineers to many types of professionals and other actors" [99:24].

Process

Design problems are characteristically ill-defined [109]. It is typically impossible to know all the requirements a design should meet at the outset. Rather than simply finding a solution to a pre-defined problem, designers engage as much in framing the problem as in framing the solution. They come to understand the problem through the critical evaluation of a series of concrete solutions. As they go along, they expand the design space through ideas (the more the better) before shrinking it down again through a number of constraints. In the process, designers generate new goals and redefine solutions. Design is thus a negotiation between problem and solution through three main (situated) activities: analysis, synthesis and evaluation. Designers cycle through them until a satisfactory solution is achieved (or until they run out of resources). Analysis is done through synthesis and part of all phases of design. Throughout the process, designers make decisions that reduce many alternative solutions down to a few. These decisions are not made arbitrarily, but require the prioritization and reprioritization of goals, which in turn, is done through value judgments or *e-val-u-ation*, which is the application of values towards some goal. While each designer will have a set of core values in her practice, they are largely a matter of negotiation between stakeholder

concerns (e.g. clients, users, collaborators). Despite what many flow charts of design processes may suggest, this process is far from linear and the activities far from discrete. Design, like any creative activity, is messy. The three activities are constitutive of each other and very much intermingled. For instance, a designer may start at any level of the problem or solution (e.g. with an observation, a technology, a detail, or outline) and then move back and forth between macro and micro considerations as the problem and solution begin to take shape.

Product

Design should not be considered a particular category of object (such as 'designer furniture', a marketing invention); all man made things have at some point been designed. The process of design provides a material solution to a problem with multiple interdependent dimensions and often conflicting requirements. For instance, if we increase the screen size of a smartphone, we are able to show more content, but also decrease its portability. Therefore, an optimal solution can only ever be approached, but remains unattainable. So while we aim to arrive at a holistic, integrated solution, there are typically trade-offs involved. There are no right or wrong solutions in design, but we may say that some designs are better than others. Whether a design 'works' in situ is its ultimate criterion of success. Good designs are sensitive to their context of use. I think of 'use' here quite broadly as instrumental and experiential uses¹¹, as well as its entire lifecycle of use (from production, to consumption and divestment). One and the same design may work well in one context, but fail in another. An IKEA bed, for instance, works well in the home, but less so in a hospital. Further, a device that encourages sustainable behaviour, but is made of finite natural resources and produces toxic waste on disposal can't be said to work across its lifecycle. As a consequence, a design succeeds or fails long after it has left the designer's hands and taken on a life of its own. A designer can only ever design *for* a product's life, but hardly the life *itself*. Once a design is out in the world it interacts with it in complex ways, some of which are intended, some unforeseen, some desirable, others less so. Design does not merely reflect culture, but plays an active role in its making, only part of which is in the designer's hands.

At the same time, good design doesn't require a designer and designers don't always produce good designs. 'Good' and 'bad' are dynamic constructs emerging from the 'design world', the world of professionals involved in the making, exhibition, and production of design. Yet, even within the design world, there is no clear agreement on what constitutes 'good' or 'bad' and so there are a number of design 'schools', 'philosophies' or 'cultures', which propagate particular values or ideologies or -isms, which I will briefly turn to now.

Design Cultures

¹¹ Instrumental and experiential uses are not so much distinct categories, but two points on a continuum. A bike may be used to commute between home and work, for exercise on weekends, or to be displayed on the living room wall. While the first use is mainly instrumental, the third is purely experiential, and the second a bit of both.

In focusing on what designers have in common, I may have given the impression that the design community is a homogenous group and all design projects follow similar goals and processes. This is not the case. Moving to the UK from Germany has introduced me to new design cultures, but design cultures differ across the country, between schools/businesses, or even within schools/businesses of the same culture. The name these different cultures go by is long, but for the purpose of giving an overview, I will broadly categorize them into three groups based on the ways in which designers understand and address user/audience values.

Supporting Values

These approaches aim to cater to users' existing practices and values. In HCI, approaches include human (or user)-centred design, participatory design, and value-sensitive design. This is not to say that the design always leaves user/audience orientations unaltered. Remember that we can only design *for* interaction, but not the interaction itself. Instead, what these approaches or philosophies have in common is the *intention* of the designer to support existing user values and goals.

Changing Values

Unlike the supporting values group, this group of approaches aims to change the users'/audience's existing values in a particular direction. Sustainable design is the most prominent candidate in this group. Designers hardly ever aim to change all the users' values and behaviours, but focus on one key value or behaviour. This approach is possibly the most challenging and has had variable success, as our behaviours are socially situated and routinized and willpower is a sparse.

Challenging Values

This is the most recent set of approaches, imported from the fine arts via architecture. The aim here is to get users/audiences to question and rethink their existing values and behaviours, often pertaining to their use of a technology, or some social behaviour more generally. Example of this approach are critical and speculative design.

3.3 Doing: Methods

What I hope to have conveyed in the previous section is the interconnectedness of our self and experience with our environment. I have presented this interconnectedness as a series of dialectic relationships in which we make the environment through the same means by which our environment makes us. I have argued that these dialectic processes operate at various levels, from our immediate social and material environment to larger scales of 'society', 'nature', or 'the world'. Experience is what enters consciousness, but emerges from unconscious and tacit brain processes. We actively create our experience in the sense that we actively interpret our interactions through our sense of self – our current goals, values, and moods. The self, in turn, emerges from our interactions with the environment. This environment both provides the frame for our actions and is in turn produced by them. In other words, our actions are situated, produced moment-by-moment, in interaction with the particular social and material resources as we experience them from one situation to the next. The methodicalness guiding many of our activities has turned them into practices and

their repetitiveness into routines. Routines, in turn, help structure our days and give us a sense of order and security, freeing up valuable mental resources, for non-routine interactions. Situations are social both by means of and as an emergent property of our human and non-human interactions. I have also argued that design as a practice, process and product acts as a culture-making device by reframing current situations and offering a preferred situation in the form of a new product or service. Design is holistic in that these products and services are aimed to be sensitive to the particular situation, (in) which they are meant to operate.

The aim in this thesis was to seek a holistic understanding of people's practices and experiences around a set of artefacts (books and e-books) as they are used in their everyday settings and to offer an alternative understanding of this situation through the design of an artefact that can reframe the situation. The approaches required for achieving a holistic understanding of current and future situations need to be sensitive to capturing experience. We cannot directly observe experience, however, but need to re-assemble it from our observation of all the human and non-human actors who give rise to a particular experience through practice. What we do and say is what others can perceive, and in drawing on their own experience, is how they understand ours. Researchers employ the same means by which humans understand each other generally, through watching and listening. To make sense of our interactions with the world, rather than be overwhelmed by them, we have to have a focus, however. In this dissertation I took a material focus, aiming to understand experience *through* our situated practices surrounding books and e-books. This means that I understand people's engagements *with* books as a means to a particular experience rather than an end, and my focus is not strictly limited to our engagements with *books and e-books*, but I understand books and e-books as forming part of a wider ecosystem of everyday artefacts that impinge on the ways in which we use and understand books. Further, I take a particular focus on material practice that aims to trace the social life of the artefact from the moment it enters the life of its owner/user to the moment it leaves. With this material focus at hand, I'd like to introduce the particular approaches employed in this dissertation - design ethnography and research through design – and how they are suited to addressing the research questions raised in this dissertation.

3.3.1 Approach

Design ethnography

Ethnography makes practices and values visible. It brings the ordinariness of much of what we do from the background to the foreground, makes the unremarkable remarkable. Design can use those insights to support or breach those practices and values. Unlike ethnography as practiced in anthropology and sociology, however, "ethnography in design is a very different enterprise from ethnography in the social sciences: the accountabilities are different, the needs are different, the results and their uses are different" [37:3]. It is for these reasons that a new branch of ethnography emerged, called design ethnography, which "makes visible and available to design reason the distinctive activities that populate particular settings, the work involved in doing them, and the work practices that members use to concert their actions with those of other parties implicated in the conduct of a setting's work" [37:2]. Design ethnography is not necessary for a design to be successful, but with technology supporting an ever more varied range

of mediated interactions, it can greatly increase the chances for a design to do its work successfully in a particular setting. In interaction design, design ethnography augments other sources of inspiration designers draw on: “work may start from theories, methods, and fieldwork findings, and just as often it begins with playing with materials, technology and design precedents” [99:25]. Design ethnography can be used generatively and evaluatively. Traditionally, the aim was to facilitate requirements gathering and evaluation for systems design. While it retains these roles in interaction design, I believe its generative potential goes beyond them. Design ethnography as defined above takes an ethnomethodological orientation to ethnography. I slightly depart from this orientation to design ethnography and seek not only to illuminate the commonalities we share in our everyday practices, but also their idiosyncrasies. A lot of what we do on an everyday basis, we do in very similar ways. After all, it is these shared and accountable ways of doing things that allow us to function as social beings. Still, as our goals, values, and experiences differ, we all develop our small idiosyncratic practices that make us who we are as individuals. It is often these ‘singular’ or marginal practices that can serve as inspiration during the early stages of design as they are glimpses into alternative ways of doing things, while the more generally shared practices tend to play a more important role during later stages when they help us perform ‘reality checks’ on our designs, i.e. determine in what ways our design may support or disrupt common everyday activities and practices. Design ethnography can thus also help anchor the novelty and future-oriented (or obsessed) design disciplines in the ‘limiting conditions of the past’ [67]. Design ethnography differs further from traditional ethnography in that it is typically carried out in collaboration with members from other disciplines, such as design, computer sciences, business, etc. In this dissertation, I took the role of researcher-designer who carried out both fieldwork and design. Nevertheless, being located in a multidisciplinary research lab allowed me to draw on members of the lab for discussion and reflection on the findings and design proposals, in addition to the various members of the public who volunteered as participants. Finally, design ethnographers usually don’t immerse themselves as participant observers in a setting for months or years, but will only spend a few weeks in a range of (often culturally familiar) settings and focus their inquiry on aspects that are relevant to design.

Research Through Design

Design practice is contingent on both technological and social developments. With the emergence of networked digital technologies the field of design grew another branch called interaction design. Products are no longer passive, but able to change their behaviour in response to their environment and communicate with other products and services. Interaction with everyday products drastically increases in complexity as a consequences and requires new forms of thinking and doing design. Interaction design research is one of the ways in which designers explore responses to societal issues that can pose an alternative to an interaction design that tends to be driven by the market economy. One particular approach within interaction design research is research through design [181].

As a design-oriented field, HCI studies people with a view to design technologies that are meaningful to people’s lives. It draws on insights from these studies to guide design decisions, and design, in turn, is the means to solve problems identified in the field. In addition to addressing a problem, however, design can also be a means to better understand possible futures. At its core design is about values and values are made and manifest in practice. Current practices and

orientations that have developed through an existing artefact or technology inevitably change when the artefact or technology changes. Encountering this new material (i.e. designed) artefact or environment allows us to evoke and articulate new goals, needs, and desires. The future-oriented, generative, and interventionist nature of design [67] then allows us to understand some of the ways in which human experience might change if the material situation changed, as manifest in the design, and vice versa. In this sense, design can be thought of as both making and embodying culture. Research through design makes use of the interconnectedness of culture and design, by constructing new knowledge through the construction of new products and services. It “explores the kinds of behaviour, attitudes and experiences that a new product, system, or technology might engender for people as individuals or communities (using prototypes to provoke conversation with the ultimate goal of making a positive difference to the world we live in)” [99:x]. Research through design uses an interaction design methodology, but differs in its goals. In contrast to interaction design in industry, interaction design research not only aims to produce viable solutions to design problems, but to theorize its practices, processes, and products. As a particular method within interaction design research, research through design tends to be less concerned with analysing its practices and processes than its products. Research through design contributions can take three fundamental forms. One is the artefact itself. If the artefact proposes a novel framing and solution to a design problem, it can act as a design exemplar in both interaction design practice and research. Here it is important that the design rationale is documented in sufficient detail to allow other designers to make judgments about the appropriateness of the design solution to a particular situation and about the applicability of the rationale in other situations. Another way in which we can derive knowledge from an artefact is in analysing it in a real world situation. Revealing the rationale of potential users or audiences for acting on and thinking about a research prototype in a particular way helps designers understand both the place a design might take in a real world setting, such as an everyday or exhibition space, and conversely, helps build future, if temporary, settings that can evoke and illuminate some of the emerging practices and values that characterize it. Koskinen et al [99] suggest four guidelines for analysing prototypes in the field: (1) an ordinary social setting (social interaction in real context), (2), a naturalistic research design and methods (empirical), (3) openness (observe and interpret how people use and explore the technology), and (4) sufficient time span (prototype need to be followed for at least a few weeks). Finally, the accumulation of relevant design exemplars and/or ‘in situ analyses’ can form the basis of design guidelines and frameworks that aim to make design insights generalizable, e.g. through sensitizing concepts.

3.3.2 Methods

Design ethnography and research through design are approaches rather than methods per se as each employs a collection of methods. As both approaches aim to be holistic, the combination of several methods helps illuminate a particular situation from different angles. The methods employed in this dissertation fall into three main groups - observation, conversation, and demonstration – which in their direct and mediated forms also encompass our entire spectrum of social interaction. While the former two were more prevalent in design ethnography and the latter in research through design, the particular set of methods used transcended the two approaches. A core method of ethnography has traditionally been participant observation. While design ethnography retains an emphasis on

first hand observation, it is more flexible in the methods it uses. In recent years, home tours and diaries have become common ways of collecting observational data, obviating the need for researchers to immerse themselves in a single setting over long periods of time. Interviews remain possibly the most essential and commonly used method in design ethnography, but also played an important role during in situ analysis (or 'evaluation'). In contrast to design ethnography, interaction design methods are synthetical rather than analytical. Here various forms of sketching (e.g. drawings, mock-ups, scenarios) are used for ideation, reflection, and communication. However, sketching was also used as an analytical tool in design ethnography (e.g. for drawing spatial layouts of the settings), and writing played the role sketching had in research through design (ideation, reflection, communication). Finally, I briefly discuss the tools I used for planning, data collection, and analysis.

Home Tours

In order to understand the entire consumption lifecycle of books as they moved into, through, and out of the home, I conducted a series of home tours. Participants were asked to take me on a 'tour' through their homes, showing me where books were used and kept. This was to observe placements of individual books and collections throughout the home, to get a sense of the volume of books kept in the household, the rooms and spaces they were kept in, the way they were placed in relation to other artefacts in the room (including furniture), and in relation to each other. The tours enabled me to conduct 'contextual interviews', i.e. ask questions relevant to the particular setting that was being studied. The tours thereby gave a natural structure to the way in which the interview unfolded, and allowed the participants and myself to use their home environment as a prompt. Rather than having to recall information from memory, participants were able to explicate and reason about the situation at hand. While I cannot be sure spaces weren't curated before my visit (the ways in which this might have been done are itself significant), being able to observe actual rather than remembered situations minimized the chance of participants giving an inaccurate or incomplete account of the situation. This not only made the information provided more valid, but also greatly lowered the cognitive demands on the participants. To support my own memory during analysis and to communicate the findings to others I took photographs of any observed 'scenes' that were discussed during the interview (e.g. books lying on the floor next to the bed). Home tours are now commonly used in HCI (e.g. [189], [30], [159]) in conjunction with semi-or unstructured interviews as a way of uncovering material practices in the home. Asking participants to take me on a tour through their home made visible to me the taken for granted nature of the environment and the material practices that govern it. It allowed me to observe those practices in detail and in doing so to move them from the background to the foreground where they become available for interrogation and reflection to participants. Discussing with me the practical reasoning behind their material practices makes available to me the distinctive social practices that are expressed in and enabled by them.

Diaries

Another form of observation method applied in this dissertation is the diary. I used participant diaries to understand how e-books are used across the ecology of e-reading devices (e-reader, smartphone, tablet, pc) and in relation to books. While the majority of books used for leisure reading tend to be kept at home, books and

e-books are commonly read in a range of places inside and outside the home. In order to understand how books and e-books were used across these sites, it was necessary to move from the observation of a single setting (in my case the home) to that of an individual moving among sites of book and e-book use. To do so, I asked participants to document particular instances of book and e-book related use, such as reading, buying, organizing, etc. The aim here, again, was to understand the entire lifecycle of use from acquisition to disposal. Participants did so by taking photographs of particular 'scenes' of use, including people, artefacts and spaces featuring in a particular episode of use. Participants were also encouraged to keep a written record in addition to the photo diary if they wished to do so. While there is no guarantee participants document all instances of use, asking them to document their own use nevertheless increases the chance of observing the broadest possible instances of use in situations that may not have been easily accessible to an external observer (e.g. reading in bed). Giving participants curatorial control over what episodes to document, and which photographs to share with the researcher, further allows them to be less self-conscious about their activities. In addition, with participants typically being the person behind the camera, diary photos tend to give us a participant perspective on the activity that would have been unavailable to a researcher taking the photos. Finally, the participants themselves are removed from the picture, further enabling them to protect their privacy and anonymity. On the other hand, there is a paradox at play in here in asking participants to take the role of being their own observers. Metaphysically, it is impossible to be in the world while *at the same time* observing our being in the world. In other words, asking participants to attend to their naturally tacit and routinized ways of being through doing, we render their doings explicit and unnatural. This is not to say that we don't have moments of self reflection, but that if we do, they are reflections on the past rather than in the moment reflections. The photographs then served as memory prompts during follow up interviews and during analysis, as well as to communicate aspects of the findings to others. Again, documenting the everyday, tacit, taken for granted aspects of their behaviours enabled both the participant and myself to describe those behaviours in detail and to interrogate them and unpack the practical reasoning that guides them. In HCI, participant diaries have become a common form of 'quick ethnography' (e.g. [147], [158]). They allow researchers to collect a wealth of in situ data in a relatively short amount of time. By passing over the task of observation to the participants, researchers are able to simultaneously follow a number of actors rather than being limited to observing one actor at a time. The data has sufficient breadth to give researchers a good overview of the type of activities and sites involved in the use of a particular artefact. At the same time, diaries offer sufficient depth in that participants are able to report on recent instances of use more accurately and in considerable detail. The combination of breadth and depth make diaries particularly suited to exploratory research into an area that has seen little prior work, and can act as a basis for more focused follow up investigations of emerging topics and issues, making them highly appropriate to the aim of understanding book and e-book use across lifecycles, settings, and situations of use.

Sketching

I used sketching throughout the interaction design process for reflection, communication, and discussion. I use the term sketch here broadly in the sense proposed by Buxton [26] to include 2D digital and paper sketches and 3D mock-

ups. Sketches enable designers to be in conversation with their ideas and with others. Sketches are an aid to thought in allowing designers to externalise alternative design ideas, thereby opening up mental space and providing inspiration for new ideas. At the same time, they allow designers to critically reflect on and evaluate ideas, to compare and combine them into new ideas, or to simply discard them. Since design is almost always a collaborative effort sketches also help designers communicate ideas and concepts to colleagues and users. In doing so, the visual language of the sketch takes on great importance in communicating to others that the presented ideas and designs are yet unfinished, and thus open to change and critique. Sketches are characterised by being quick, cheap, disposable, plentiful, and show no more detail than is necessary to effectively communicate the idea, and are suggestive rather than definitive. Sketches play a key role in facilitating design as a reflective practice [177] and are used throughout the design process, as a design progresses from an initially large set of vague ideas into a single refined designed artefact. Retrospectively, they can serve as a record of the design rationale and decisions made throughout the process.

In this thesis, digital and paper sketches were used particularly during the early stages of ideation. I used paper and pencil, as well as digital sketching apps on the iPad as a quick way to externalize design ideas, first in a series of brainstorming sessions, and later to elaborate on and refine ideas (Figure 3.1, left). The sketches depicted artefacts, some of which were annotated, and some were extended into short comic book style scenarios. While pencil and paper, to me, works best during early sketching, digital sketching apps are more useful for scenario creation as they allow me to copy and paste any repetitive elements. Paper sketches were then followed by the creation of paper mock-ups of the devices. While mock-ups are still representations or models of 'the real thing', they take on a physical presence in the world, and much more so than sketches, not only represent a thing, but are a thing in themselves. At the same time, being made of card they are relatively quick to produce and thus remain open to change. The mock-ups were variously augmented with off the shelf displays, such as an iPhone or iPad to simulate on-screen interactions. The digital interface itself was mocked-up, being composed of a series of sketches that were combined into a PDF file to demonstrate the flow of interaction. These, too, could be relatively quickly altered to explore alternative interfaces. Mock-ups can be used to test and demonstrate the workings of a design, both in terms of the functionality of a design, and more importantly, its relation to the world. How does the design visually and physically integrate with its material environment? How does it interface with it? Who would be able to use it, and how? etc. The mock-ups were then used as the basis for photo scenarios. In the absence of a fully working prototype, mock-ups can be used as a basis for a series of photo scenarios, which outline the particular interactions involved in working a design (Figure 3.1, right).

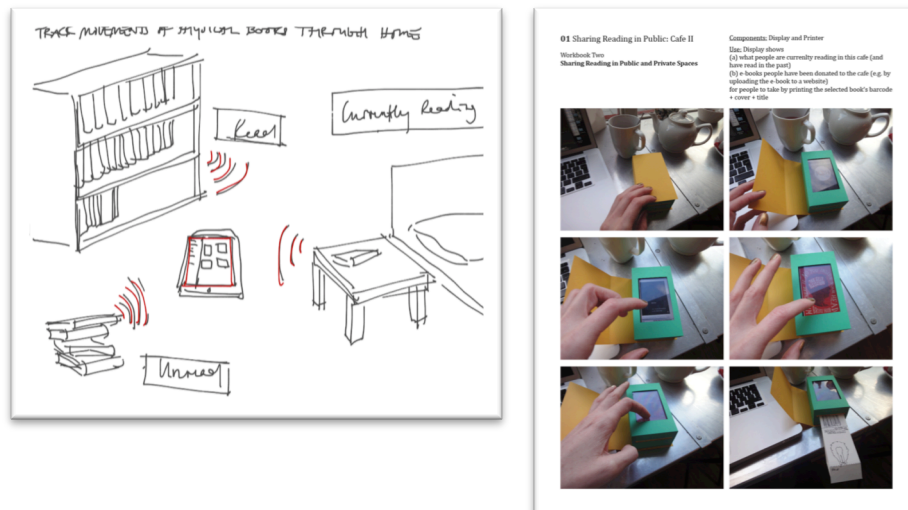


Figure 3.1: From annotated sketches, via paper and hybrid mock-ups, to photo scenarios.

The scenarios together with the mock-up aimed to tangibly illustrate alternative ways of using books and e-books so as to support their role as a social technology. In doing so, the mock-up and scenario acted as a prompt for participants to discuss in what ways they could see themselves using the design, for what purposes, when, where, and with whom, etc. Allowing participants to experience a design for themselves enables them to articulate responses in interaction with the design. Certainly, the insight that can be gleaned from short-term exposures to a design is limited. As any new technology undergoes a process of ‘domestication’ during which its owners explore it in terms of its uses and value and integrate it into their existing practices and routines, short-term exposure (in addition to the presence of a designer-researcher) requires people to short-cut this process by speculating about the likely outcome of this process. Nevertheless, it gives an early insight into a broad range of issues a design might raise, as well as reveal new opportunities. Again, there is a trade-off involved between the resources required in developing a prototype that can be fully and independently operated by the participants over several weeks or months and the insight that can be gleaned from the deployment. Long term deployment raises other issues, such as the question of the extent of disruption to people’s lives when taking away the prototype at the end of a deployment, after people have integrated it into their lives and (ideally) developed a sense of ownership over it.

Interviews

Interviews complemented the home tours and diaries as observational methods and the design analysis.

The home tours were accompanied by a series of contextual interviews. These were semi-structured interviews around a number of topics outlined in an interview guide. The interviews were contextual in that they were carried out in the setting, which they aimed to understand, i.e. the home. The tours provided the skeleton for the interview. As my participants guided me through their homes, I asked them to elaborate on what books they kept where and why, who owned them, how they were used, how they got to their place, where they were going next, etc. Doing so, allowed me to get detailed information about the participant’s

current and evident situated practices that surround books in their home and the practical reasoning underlying them.

Interviews were also conducted twice during the diary study, in the form of an initial interview before and a follow up interview after the diary period. The initial interviews were to gather background information, such as participant demographics, household type, e-reading history and routines, e-reading device experience, etc. The final or follow-up interviews were to discuss a participant's diary in detail to understand the particular situation that gave rise to a particular use of the e-reading technology and how it affected the situation in turn. This involved asking participants to tell 'a story' about each of the recorded episodes, asking them to elaborate on what they were doing, why, how, when, where, who was present, what happened immediately before and after the episode, etc., and prompting them where necessary. Using narrative as a structure is helpful as it is how we commonly share information about our past [142]. Again, the diary provided the skeleton for discussion. The interviews together with the diaries gave rich insight into the situatedness of e-reading for leisure in terms of the activities, practices, materials, spaces, and people involved and people's practical reasoning behind their choices.

Finally, I used contextual interviews during the analysis of the *Book-e* design. Here, interviews were based around a mock-up of Book-e and a series of photo scenarios outlining the design's functionality and the interactions involved in each.

Interviews, again, were semi-structured and covered a range of topics outlined in an interview guide, including the creation, organization, and sharing of a digital and physical library of books and e-books. The interest here was less to evaluate low-level design decisions, but to get an understanding of how the particular affordances of the design were to be drawn upon and how they might affect people's values around books and e-books, such as the ability to collaboratively build hybrid book collections or to share collections and one's reading activities inside and outside the home. As the design aimed to support the entire lifecycle of book and e-book use, it was important to understand which roles or functions participants deemed most and least valuable. By elaborating on those, while refining or dismissing less valued aspects, designers are able to refine their design in a way that makes it more meaningful to users.

Again, in asking participants to observe and explicate their everyday, taken for granted material practices, we bring those practices to the foreground and make them available for reflection and interrogation. In doing so we are able to gain insight into people's practical reasoning and orientations guiding and being reflected in these practices. These explications are often shared in the form of a narrative or story. In telling stories about their everyday life participants engage in in-the-moment reflection and share not only what they do, but also what they think and feel about what they do, thereby also giving us a glimpse into their everyday experiences surrounding books and e-books. Certainly, like all retrospection and prospection, these stories are an in the moment re-construction and construction of the past and future rather than a representation of them. This is not a problem as such, but merely a reflection of the inter-subjective nature of experience.

However, interviews done as part of indirect observational methods, such as home tours and diaries, rather than participant observation, for instance, have a number

of limitations with respect to what can be learned from them about actual everyday experience. Interviews in this context are ‘unnatural’ conversations, that is, they are not conversations that happen in situ as part of a particular situation or setting being studied. As such they are subject to cognitive and social contingencies. As practice is largely routinely accomplished, it is rarely given explicit attention, and so in offering a verbal account of the practice participants may gloss over details, merge similar situations into a ‘proto situation’, or add features that weren’t there, etc. Similarly, relating a past event also involves creating an ad hoc account of a past self and so participants may attempt to present themselves in a more favourable light, consciously or unconsciously, to a strange researcher. In other words, what people do or did is not always what they say they do or did. To a degree all non-naturally occurring talk is subject to these limitations. Related to this, indirect observation methods like diaries and home tours suffer from similar strengths and limitations. People’s situated actions, if not observed first hand, are induced through the observation of the material traces people’s actions leave whether they be documented by the participant (diaries) or researcher (home tours). The exact ways in which artefacts and spaces are handled by individuals or groups over time escapes indirect observation methods. It is an aspect that has to be weighed off against advantages like being able to capture highly episodic events that take place over longer time scales (like reading) and non-observable motivations and reflections on experiences (related to reading).

Writing

Writing plays a similar role to sketching in terms of ideation, reflection, and communication, except that it leverages our verbal rather than visual abilities. I won’t go into the details of how writing supports each of these processes, but nevertheless wanted to acknowledge its importance as a method that is not exclusive, but essential, to doing research, and field research in particular (including in situ analysis). Anthropology has a long tradition of framing and reflecting on ethnography as written text (see [122], [33]) and education has written much about writing as a reflective process (e.g. [200]).

Sampling

Participants were recruited opportunistically through mailing lists and snowball sampling according to a small set of criteria. For the e-book study, all participants had to have some experience reading e-books, while for the book study participants should read books either in addition or in place of e-books, and for the design analysis all members of the household should read books, and at least one member both books and e-books. Participants were chosen for diversity in e-reading device ownership and experience (e-book study, design study), household types (book study), gender, and age rather than to be representative of a larger population of users. Mailing lists and snowball sampling could be said to counteract sample diversity. However, research institutions employ people with a range of backgrounds, occupations, ages and genders. Still, the majority of people working at research institutions will be educated and in the socio-economic mid-range. Given that book and e-book readers are statistically more likely to be female, middle aged, educated and affluent, however, there is some significant overlap between the population that can be reached through mailing lists and the UK population of book and e-book readers. Finally, snowballing contributed to diversity by including people outside of research institutions. To further aid

recruitment, participants were offered incentives between £10 and £50 of book vouchers. Sampling was an iterative process, in that recruitment ran in parallel with data collection and analysis so as to be able to seek out participants who might be able to add a different perspective.

Analysis

Interviews were audio recorded, transcribed and analysed in nVivo, a qualitative data analysis software tool, for emerging themes or 'codes'. In the case of the books at home study themes centred around the consumption lifecycle of the book (e.g. acquisition, ownership, organization, use, etc.), which clustered into higher level 'lenses' of temporal, spatial, material, and social practices. Themes emerging from the e-book study followed a similar high level pattern, highlighting temporal processes of adopting and reading e-books, the spatial sites of reading inside and outside the home, and social practices of sharing. Finally, themes in relation to the design analysis included those pertaining to each of the different aspects of the design outlined above. For each of these themes I was interested in identifying both practices that were commonly shared among the participants, as well as those that were more idiosyncratic. Data analysis was an on-going and iterative process. Interviews were transcribed as and when they became available and underwent a preliminary analysis for high-level themes, which were revised as more data became available, adding, changing, and dismissing themes.

3.4 Conclusion

In this chapter I have outlined my approach to the study of the situated uses of books and e-books in everyday life and of an alternative understanding of this situation through the design of an artefact that can reframe it. Specifically, I took a material focus across lifecycles use, aiming to understand experience *through* our interactions surrounding books and e-books over time. To do so I combined design ethnography with research through design in order to understand current and future practices and orientations around books and e-books. The approach included observational methods, such as home tours and diaries, discursive methods, such as contextual interviews, and interaction design methods, such as sketching. Design ethnography gives us a holistic understanding of people's everyday experiences around books and e-books. I have argued that this experience emerges from largely tacit practice and is actively created in the sense that we actively interpret our interactions with the world through our sense of self – our current goals, values, and moods. By observing and discussing people's uses of books and e-books in situ we are thus able to draw attention to people's particular taken for granted material practices and make them available for reflection and interrogation. It is in doing so that we are able to describe these practices in detail, the ways in which they are embedded in the social ecosystem of the particular setting, and the values guiding and reflecting them. I have further argued that interaction design as a practice, process, and product acts as a culture-making device by reframing current material situations. Taking those new situations into current situations, i.e. by analysing the design in situ in participation with possible users, enabled me to prompt discussion and learn about how people's possible future practices and orientations around books and e-books.

4 e-Books in Everyday Life

4.1 Introduction

The aim of this chapter is to explore the mundane ways in which e-books are finding a place in everyday life. In particular I am concerned with the social and material circumstances that come to shape e-book practices. Rather than simply focusing on reading itself, I am concerned with the broader life cycle of e-book acquisition, ownership and sharing. More specifically, I wish to ask: how is it that people make choices about what they read and how they read in the course of daily life?

In seeking to document the diversity and richness of the everyday use of e-readers, we shall see that these practices contrast with the presumptions of use embedded into many of the commercial ecosystems surrounding e-readers, which tend to focus on supporting the consumption of content by individuals. I will argue that existing commercial infrastructures and software do not reflect the diversity of ways in which people actually acquire, manage and dispose of books. Finally, and most critically, I will also underscore that little recognition is currently given to the inherently social nature of leisure reading. Addressing these current disconnects opens up a design space for future developments that might drive such technologies forward.

In order to capture such detail over an extended period of time and in the context of everyday life, I used a diary study coupled with interviews aimed at unpacking the detail surrounding real instances of e-book use. In terms of the approach of the study, I chose to focus on the reading of e-books (the digital content) for leisure, regardless of the platform on which they are read. Given my interest in everyday practices I do not rule out exploring instances where e-book devices might be used for purposes other than leisure-based reading (although this is not the focus of the study), or where e-reading is done alongside or in conjunction with paper-based reading. The chapter is based on a previous publication of this work in the proceedings of Interact 2013 [86].

4.2 Method

I chose to use a diary study coupled with interviews as a way of collecting rich and situated data about people's on-going practices in real world settings. Similar to a raft of previous studies [e.g.1], we used digital cameras to provide memory prompts to provoke discussion around specific episodes of e-reading. This allowed participants to give detailed accounts of everyday episodes that might have otherwise remained unnoticed or be considered too mundane to mention. The approach, then, was deliberately chosen to provide grounded detail about a range of specific instances of e-book use rather than to make general claims about what most people do, or how frequently they do it. The data are therefore not quantitative in nature, nor are they aimed at supporting or refuting any particular hypotheses.

4.2.1 Participants

Sixteen participants (9 male, 7 female) were recruited using a combination of mailing lists and snowball sampling to achieve a mix in age, gender, and device use (see Figure 4.1). Here, due to the exploratory nature of the study, we were seeking diversity of the sample, rather than any particular balance or contrast within it. The only criterion was that they needed to have read e-books on one or more mobile devices. Participants had on average 1.8 years (or 22 months) of experience reading e-books, with a minimum of 6 months and a maximum of 7 years. All but 3 owned a specialized e-reader (Kindle).

| Participant | Gender | Age | e-Reading Device | | | |
|-------------|--------|-------|------------------|------------|--------|--------|
| 1 | m | 50+ | e-Reader | smartphone | tablet | |
| 2 | f | 50+ | e-Reader | | | |
| 3 | m | 18-29 | e-Reader | | tablet | |
| 4 | m | 30-39 | e-Reader | | | |
| 5 | m | 18-29 | | | tablet | |
| 6 | f | 40-49 | e-Reader | | | |
| 7 | f | 30-39 | e-Reader | | | |
| 8 | m | 50+ | e-Reader | | | laptop |
| 9 | f | 50+ | e-Reader | | | |
| 10 | m | 30-39 | e-Reader | | | |
| 11 | f | 30-39 | e-Reader | smartphone | | |
| 12 | f | 18-29 | e-Reader | | | |
| 13 | f | 30-39 | e-Reader | smartphone | | laptop |
| 14 | m | 18-29 | e-Reader | smartphone | | |
| 15 | m | 18-29 | | smartphone | | laptop |
| 16 | m | 18-29 | | smartphone | tablet | |

Figure 4.1: Participant: age, gender, and device type (e-Reader (e.g., Smartphone, Tablet, Laptop).

4.2.2 Procedure

The study proceeded in three parts:

1. Initial interview: to position participants in terms of current and past patterns of e-book and reading device(s) use. These typically lasted between 25 and 90 minutes.
2. Diary period: to capture particular instances of use over a set period of time.
3. Follow-up interview: to gather additional information on each captured episode of use.

During the initial interview, participants provided background information on their device usage, type of content consumption and acquisition, reading history and patterns, and use of physical and digital media. Whenever possible, interviews took place in participants' homes, or else at their workplace. Where a face-to-face meeting was not possible, interviews were conducted over the phone.

The diary period lasted between 7 to 15 days depending on frequency of use, with an average of 10 days. Participants were asked to document all instances of book and e-book reading, as well as any behaviours relating to book and e-book use, such as acquisition, annotation, organization, sharing, etc. Participants were also asked to record any other types of reading on devices they also used for e-book reading, such as reading news, magazines, work documents, etc. While our focus was on e-book reading, capturing other types of content helped us contextualize their reading within the wider digital media ecosystem. Participants were asked to use a digital camera to capture reading episodes. Three participants created written diaries, two of them in addition to the photo diary and one in place of it.

The photographs were then used as memory prompts during the final interviews to elicit detailed accounts of the particular social and material circumstances and behaviours pertaining to book, e-book, and device use. Participants were encouraged to tell a story about each captured episode, telling us about where and when the episode took place, how long it lasted, what terminated it, whether it was interrupted, why they were doing what they were doing, who else was present and what were they doing. All final interviews were conducted face-to-face, either at the participant's home, workplace, or in coffee shops. Final interviews lasted between 20 and 65 minutes. On completion of the study, participants received a £50 Amazon voucher as a thank you.

The combination of participant diaries and in-depth interviews resulted in a rich data set encompassing roughly 20 hours of audio recordings, 147 photographs, and three written diaries. This amounts to an average of about 38 minutes of interview recordings and about 10 photographs per participant among those keeping photo diaries. Audio recordings were partially transcribed and analysed for emergent themes. Where relevant, photographs were used to complement the analysis of the interview data.

4.3 Findings

The study covers a broad set of practices relating to e-reading and the social, material, and contextual concerns underpinning them. We begin with a look at the

initial motivations and expectations surrounding e-reader ownership and how these relate to subsequent practices. Following this, we consider the broader ecosystem of content acquisition, ownership and storage before considering reading practices with the devices in the home, and out and about. Finally, we discuss sharing practices around e-books.

4.3.1 Finding a Place for E-Reading in Daily Life

For most participants, purchasing an e-reading device was driven by some primary anticipated benefits. For participants who were new to digital leisure-based reading, motivations were in line with what one might expect: to save on storage space for books (p3), to avoid carrying around weighty books while travelling (p2), or for ecological reasons, such as reducing their use of paper (p1). Other reasons were economic, with the expectation that the cost of e-books would be cheaper than print books (p10). These are reasons that marketers of e-book appliances have long understood.

Some participants, however, came by their devices more reluctantly, sometimes being given them as presents or being given older devices that had been replaced by newer models. As p9, said: *I didn't ask for it, my husband got it for me as a present. I was resistant to it because I like books, the feel of them, the variety of them, and that hasn't stopped through having an e-book, it has just supplemented it.* In this instance, we can see some concern that something might be lost through the transition from physical to e-books. To p12, on the other hand, receiving a device was a revelation: *because I've not really read much for a long time because of the slight dyslexia []. I thought I can't imagine it's going to make that much of a difference but it really has; [] I'd say that I definitely be reading more, it just makes things more accessible for me really and I enjoy it.*



Figure 4.2: Integrating the e-book into an established morning routine of studying the bible in English (left) and Greek (centre) with the help of a Greek dictionary (right).

As users explored the device and e-book ecosystem they came to understand its particular affordances for their everyday reading practices. This phase of use was often marked by a period of ‘playing around’ during which assumptions were tested, unexpected uses discovered and users came to an understanding of which kinds of reading the devices supported very well, and which kinds they did not. For example, p1, p4, p8 and p14 had been hoping to be able to perform non-linear reading tasks that involved flicking back and forth through pages on their e-

readers, but soon abandoned these attempts. In p8's case, he had expectations of using his Kindle for bible reading in church, but found the navigation mechanisms for moving between passages too cumbersome: *I've tried and people do use the Kindle in church for bibles but to go jumping around it's really painful.* The fact that looking at more than one page or document simultaneously was not supported was also problematic. P1 struggled with integrating his e-reader into an established routine of reading the bible in Greek and English every morning alongside an English-Greek dictionary and came up with his own way of doing so (see Figure 4.2). P1 and p15 also bemoaned the fact that visual information was lost on the black and white display, particularly if colour was an important aspect of the content or character of the book.

The issue here is not so much to point to problems with e-reading devices as it is to show how, through exploration, people begin to make particular choices for particular reading contexts. These choices in turn begin to carve out new ways in which these practices fit with other aspects of their everyday lives.

4.3.2 Managing the E-Reading Process

In this section I consider how people managed the process of acquiring, using, organizing, deleting and keeping digital content for e-reading, sometimes in contrast to these same, more ingrained practices with print books.

Finding e-Books

Participants discussed how the move to e-books changed the way they became aware of and found new books to read. Some reported on the difficulty of browsing for leisure reading as it was hard to get a sense of the content of a book from the image and blurb alone. As a result, participants relied on bestseller lists, special deals, and recommendations based on their purchase history. Downloading e-book samples was also a common practice to help decide whether to buy a book or not. P7's comment makes this apparent: *I think it's because I just read a trilogy and wasn't too impressed with the third one and then this is a similar story because it was a recommendation on the Kindle so even though the sample was good I didn't want to get into another book that was very similar to what I've just read.*

Participants also relied heavily on recommendations from friends and colleagues, but this too appeared to be shifting online. P6 and p11 said that, whereas previously they would regularly meet a friend at the pub to discuss and exchange books, now they exchanged emails to recommend books to buy.

Acquiring e-Books

Price was often mentioned as an important factor in guiding participants' purchase decisions. Most (9 out of 16) would buy low-priced e-books (under three pounds) without much deliberation. For more expensive e-books, participants would often obtain a sample before making the decision to buy. Alternatively, participants would opt for the print version if the price of the e-book was comparable, as articulated by p10: *Mostly prices are very similar to normal books, maybe a few pounds cheaper for the newest stuff and I wouldn't bother buying that. Most of the newer books I get from the library in paper copy, because I only read them once and never again, so I don't really want to keep them.* The flipside of this was that very low cost e-books were cited by five of the participants (p2, p6, p7, p8, p11) as changing their reading habits, leading them to buy books they wouldn't normally have considered. P7 in particular celebrated this fact, saying that whereas

previously she would have chosen from a limited selection of cheap or free library and charity shop books, she now had access to a greater variety of content online.

Nevertheless, the fact that not all books were available in e-book format meant that most participants would fall back on buying print instead. P1, on the other hand, said he would deliberately choose to buy print when he wanted to read the books again, share them, give them as gifts, or read them in the bath. These considerations were also linked to concerns participants had about their e-book collection being tied to a particular platform, and thus being vulnerable to potential incompatibility issues should the technology change in the future. Needless to say, some of the restrictions associated with e-books, such as the inability to share content, were circumvented by illegally obtaining content. For one of our participants, owning both a legal and illegal copy helped him achieve two ends: to pay content providers, such as authors and publishers for work he liked, and to have the freedom to read e-books on a range of platforms.

The ability to instantly download content online seemed to enable participants to more fluidly move from one book to the next. Typically, new e-books were bought shortly before finishing a book. P7 and p16 also spoke of looking for their next e-book when they got bored with their current reading. Content might also be almost instantly acquired in the context of learning about a book, such as reading a review in a newspaper (p7), hearing about a book at a conference (p6), or on a TV or radio program (p15, p2). P1 was able to download a copy of the Lord of the Rings during his vacation on a campsite, the book his daughter was reading and had asked him questions about. Acquiring a copy there and then let him read the book in parallel and discuss it with her. Conversely, the reliance on being able to buy books anytime anywhere caused problems to one couple who assumed they'd be able to buy new books during a vacation but found they didn't have internet access for the duration of their stay (p2).

Many of the participants felt that the instantaneity with which content could be obtained caused them to read more. At the same time, the ease with which content could be obtained required participants to carefully manage their consumption. As p6 said: *It's dangerous, I often, if I'm into it, I just keep buying books, most of the books that I've been buying have been 2.99, 3.99 because they've been quite old books, but obviously these have been new and out [] and they're £10 and things and it's lethal because you're not having to literally go and find £10 in your purse, you just press the button, and I have to check myself sometimes, because I think, blimey, I spent thirty pounds or forty pounds on books whereas I wouldn't do that in a shop, it's very easy to do on the Kindle, so I have to check myself sometimes.*

Organizing and Archiving

According to participants, the primary purpose of organizing books was to help them manage the reading process by classifying their books as 'unread', 'to read on vacation', 'currently reading' or 'read'. Most participants let their e-books accumulate on their device before they felt a need or pressure to manage them so as to make books they wanted to read easier to find. Some had an established practice of moving read books into collections or archiving them for that reason, i.e. removing them from the device, but not their account. A common frustration here was that moving e-books into collections did nothing to reduce the length of the books list due to the lack of a folder structure with the result that list navigation remained cumbersome. For some participants, the process of

organization spanned both physical and digital books. In order to keep track of both his unread books and e-books p1 kept his Kindle with his books on the shelf as a visible reminder. None of the participants saw a particular need to delete books until they ran out of storage space, but considered deleting samples, free content, or books they didn't enjoy or want to re-read.

The visibility of a book collection also seemed to be an important factor in how participants related to their books and e-books. Reading both print and e-books, p1 faced a dilemma after buying an e-book that was part of a collection of physical books the rest of which he already owned. Finishing the e-book left him with a desire to put it on the shelf and to wish he had bought the physical copy instead. P9 regarded her e-book collection to be short term, to be something she was not emotionally invested in: *I like having physical books and seeing them and think I must read that, I haven't thought about it; an e-reader collection is very different for me because it tends to be things that I'll read and then discard although I haven't got round to it yet and it's still a bit of a pain but it's not a library of things I am treasuring in the way I do with books; and I know some people are really keen on creating collections and putting them under different groupings, but with me it's slightly different; it feels like it's something more short term and more functional than, I certainly don't have any emotional attachment to my e-reader collection, whereas I do have a very strong emotional attachment to some of my books; books I've read when I was seven; I can't imagine having my e-reader collection when I was seven and keeping them until I was 55, it's just not the same.*

4.3.3 Everyday E-Reading Practices

After an initial 'settling in' phase, e-book reading found its place both within the home as well as on the move outside of the home. In this section I show how the particular affordances of e-book reading supported both routine and opportunistic reading alongside, and sometimes in combination with, more traditional reading, and discuss how and why participants made choices about e-reading versus paper based reading.

E-Reading in the Home

Within the home, e-reading took place in a variety of locations through the house: in the kitchen, dining area, lounge, bedroom, toilet, and garden (Figure 4.3). People were as inclined to curl up with an e-reader as they would have been with a traditional paper book. Much of the leisure reading done by participants in their home had a routine character, often being bound up in the routines and practices of other household members, such as choosing to read on a smartphone rather than tablet or e-reader at night to avoid disturbing their partners' sleep. Of interest then is how e-reading practices pertained to these shared routines within the household and how they enabled reading to be fitted in.

Routines emerged both as a consequence of the social situation of the household and the enabling properties of a particular device. In one example, p2 had begun to read regularly on her Kindle at the kitchen table during breakfast with her husband: *I read at the breakfast table while he is doing the crossword and when he's done, he'll ask me to finish ones he didn't get. I'll read because otherwise I'll talk to him and annoy him.*

She found reading on the Kindle particularly conducive to these circumstances in part because she could leave the device resting on the table without having to hold

it open, thereby keeping her hands free for drinking and eating her breakfast. Indeed, this particular affordance of the device led to other circumstances of adopted use in the home. P7 found that the Kindle enabled her to enjoy reading outside in the garden chair: *It's so much easier; when I read outside before I had the pages rafting and it's just that you can sit outside and have a drink in one hand and all it is, is pressing it to get to the next page, there is no sun reflected off it all either.* Here then we see how the e-reader, with its one-handed use and rigidity, was able to find its place within the social and material context of the home.

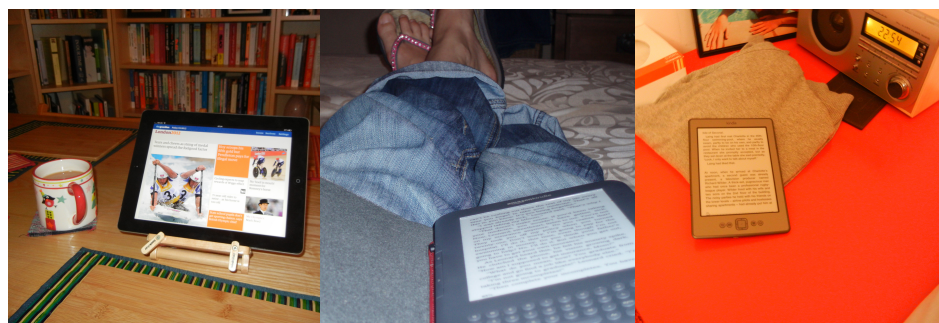


Figure 4.3: Routine e-reading at home: (1) during breakfast, (2) after work, (3) before bed.

But there were other circumstances where the e-book was not conducive. Notable here was reading in the bath where concerns about damage bring to the fore the expense of the device. As p1 articulated, in such circumstances, he would shift to reading a traditional paperback: *I'd only switch back to the paperback if I was reading in the bath, so if I had a paperback I'd read the paperback in the bath, just because I don't want to risk damaging the Kindle.*

Routine reading also involved making judgments about the text to be read and how to fit coherent chunks or sections of content into a reader's routine. Current e-readers did not readily support these judgments. With the Kindle for example, one of the problems is assessing the length of particular content and how long it might take to read. While there are certain visual indicators of structure, participants found these difficult to interpret in determining their decisions to read certain contents in particular circumstances: *Because it's on the Kindle you don't know what size it is and you only know what percentage through the book you are, and yes it does tell you how many pages, [] but you don't really see that and think yeah I'll give that a go because it's there and you don't know how much you'll be reading.* (p12).

If one of the key benefits of e-book readers is access to collections of e-books, another is the 'at-hand' nature of these portable devices. Together, these affordances make for more opportunistic reading in the domestic space. A good example of this is the case of p11 whose days were largely driven by the needs of her newborn daughter and four year old son. For her, reading was something that had to be fitted in, such as when waiting for her daughter to go to sleep or while her son was watching television while having his breakfast or playing in the garden: *I don't really have time to get ready for bed, I don't really have a night time ritual anymore, because I follow [daughter]'s ritual, so basically I put her to bed and then I sit there for awhile waiting for her to fall asleep, and read.*

As another example, p16 started reading e-books on his iPhone when his daughter was born: *I only really started reading a couple of years ago on my iPhone and the*

reason for that predominantly is my daughter being born; having the books right there available on my iPhone means it's incredibly convenient so when I do have a moment to quickly read I can do so; it's not like having to make sure that you've got a paperback book with you all the time. Plus it means that with the Kindle application I've got multiple books with me, and depending on what my mood is at a given point. If I wasn't reading an e-reader I wouldn't be reading anywhere near as much as I used to. This shows that not only do e-books allow in the moment access to whole collections of books, they also allow for choice, allowing readers to choose the kind of content that will best suit their situation.

E-Reading Out and About

Again, as with traditional books, e-reading found its way into all sorts of locations outside the home including the workplace, pubs, cafes, parks and various forms of transport such as cars, buses, trains, and planes. Of course, as a high level concern, this is all relatively unsurprising, but what is significant are the particular ways that e-reading finds its place in these spaces. Again, particular features of the devices enabled both routine and opportunistic practices of reading to emerge.

Perhaps the most significant factor in the organization of these practices concerns the weight and form factor of the devices. With the Kindle, for example, its compactness and weight meant that it was easily carried in circumstances where traditional paperbacks would be left behind (p11). This in turn meant that people developed new routine opportunities for reading. Most notable here was during the daily work routine, where some participants were able to incorporate the reading of books into their commuting practices in ways that they had previously not done, often displacing other activities or media such as books, newspapers and magazines. Other participants, as a consequence of being able to carry the device, were able to have access to their books at work. E-reading, for some, was something that they would do during their lunch breaks (p2, p5, p7, p8, p13, p14). Again, the issue here was not simply one of enabling reading where it might not otherwise have been performed. Rather it was also about how these devices allowed fiction reading in more kinds of different locations.

As well as the routine practices that participants had constructed around particular devices, as in the home, we saw that e-reading played a significant role in more opportunistic reading when away from the home. Again, what was key here were the unconscious ways in which some of these devices were carried. This was particularly salient in the case of reading from smartphones, which were carried by some participants at all times. This is illustrated by the practices of p14 who found himself in a pub waiting for his cousin to arrive. Waiting in public places can be socially awkward and so he was able to busy himself and pass the time reading a novel on his smartphone. In another example, we saw how p14 used his phone to take advantage of an unanticipated period of sunshine on the way home from shopping. Noticing it was sunny, he stopped off to read and relax in the sun – again not something that he could have planned for with a traditional paperback.



Figure 4.4: Opportunistic e-reading at home (top) and out and about (bottom): while (1) watching the children, (2) eating alone, (3) dinner is cooking, (4) the car is being washed, (5) having lunch at work in the car, (6) the sun is out at the pub.

When reading in public places, participants oriented to a number of other concerns in the shaping of their practices with particular devices and content. For p3, there was an issue concerning the relative value and visibility of his different devices that led him to make certain decisions when reading on public transport. *It's [iPad] fantastic if you want to do a bit of work or something or get to your emails or write something but for reading on public transport it's not so good but maybe that's just a kind of self-consciousness thing, it just feels a bit uncomfortable taking an iPad out whereas it doesn't feel the same taking the Kindle; I think part of it is because it's expensive I think because it's a bit larger and more noticeable I think.* Here we can see how the iPad for this participant was somewhat conspicuous in this public setting. Not only was he self-conscious, he was also worried about its value to others around him. While such perceptions may be unfounded, they are nevertheless concerns to which he was orienting.

Related to this was the relative invisibility of reading content on these devices and what this meant for reading practices in public places. P12 for example claimed that she only started to read in public places on account of the fact that it was more difficult for others to see what one was reading on a Kindle, allowing her to keep her reading more private when in public. In one episode, when a stranger walked up to her and asked what she was reading she was able to avoid revealing it to him for reasons she explains: *I never lie to be quite honest but there was a guy and he asked me what I was reading the other week [] so I told him about a thing I had on there that I haven't even started reading yet, and I thought I just don't want to tell him because I was reading like this really interesting feminist book and I thought I just felt like this would elicit a strange reaction. [] I'm never reading anything bad or anything like that, but I like that privacy about it, that you don't have to advertise to people in public space what you're reading.*

4.3.4 Social Practices of E-Reading

While individual reading is central to understanding e-book practices, social aspects of use (some of which we have already touched upon) are also important to consider. In this section we discuss how practices of sharing were played out in the context of the e-book ecosystem. In particular, we consider the sharing of content, accounts and devices. Important to note here is that in the United Kingdom the sharing of e-books is currently prevented by digital rights management software on most devices. Amazon allows up to five Kindles to be associated with one account through which books can be shared. What is of significance are the ways that our participants found various workarounds in these constraints.

Sharing Content

If we consider talking about books to be a form of sharing, digital reading devices showed good support in enabling participants to share particular passages during conversations with friends and colleagues. In particular, p12 used bookmarks on the Kindle to quickly revisit passages she wanted to talk to her friends about. Similarly, p15 created bookmarks to discuss certain passages with his colleagues at work: *I think when you bookmark stuff you can put a note alongside the bookmark and I occasionally do that, just if it's something that I want to show to someone at the office if it's something particularly interesting.*

P6 also downloaded an e-book for her daughter to read on her device. Her daughter wasn't interested in the book and she ended up reading it herself. Similarly, both p10 and his wife had Kindles, but on separate accounts. When his wife lost interest in an e-book she was reading on her device they swapped Kindles, so he could read it instead: *I think I can gift her a book or whatever and she can lend it to me but that gets a bit complicated so if I want to read her book or she wants to read my book we just swap Kindles.* Sometimes they would also read the same e-book on the same device which caused problems when the other person revisited the book: *If we're at home and I fancy reading a book that she's reading then I just take her Kindle, but it's a bit annoying because it only lets you maintain the reading position for one book so if she's at a different point in it she gets annoyed when she switches it on and it's on a different page.*

Sharing Accounts

P2 shared her account with her husband and both of her daughters. Rather than being set up deliberately, the sharing of the account evolved out of the way she and her family shared print books before adopting e-reading. P2 was the first to own a digital reading device in her family. She then gave her daughter access to her account when she got curious to try reading e-books, first on her iPhone and later on a Kindle. She also shared the account with her other daughter who read e-books through the Kindle app on her iPad. More recently, she gave her husband a Kindle who then starting reading on the same account. P2 said she would occasionally look through the e-books her daughters bought and download the ones she was interested in onto her device. She also would send e-books she read and liked to her daughter's Kindle, followed by a text message to tell her about it.

P4 gave his father access to his account when passing on his old Kindle to him. Similarly, p7's Kindle was linked to her husband's account, who bought it for her, and before buying a book she would usually seek his consent. P14 temporarily gave his mother access to his account when he lent her his Kindle to convince her

to get her own. Before doing so, he bought her a number of books he thought she'd be interested in: *Well I'm just trying to sell my mother on the idea of e-books so I lent her for one week and she quite liked it. I lent it to my mother before. I bought a few books for her and put them in a separate folder and stuff. [She] wants to borrow it again and she tends to buy random stuff I'm not going to read so I mean I delete it off the kindle but it's still in my account, you can download it whenever you want.*

Sharing Devices

There was a general reluctance to sharing one's reading devices. Privacy was one concern, lack of access another. Unsurprisingly, unwillingness to share devices increased with how personal the content on the device was perceived to be. While none of the participants minded sharing their print books, only about half would share their Kindle or tablet, and none of them was willing to share their smartphone. Lack of access to the device (and its contents) tended to be participants' main concern when considering sharing their Kindles. As p9 summarizes: *If somebody said would you lend me a book I'd say yes not a problem, whereas the e-reader is a bit different; now why is that? I suppose a) it's more expensive than most books, b) it's a bit like giving someone access to your whole library, which is a bit personal really, because there'd also be (documents on it) as well; and also when I give away a book that I'm not reading, I'm not putting myself to any inconvenience but if I'm giving someone my e-reader then I am in an inconvenience because I won't be able to download anything new.*

P7 occasionally shared her Kindle with her two children, but since they preferred their print books, access to the device was never an issue. In p14's case, sharing a Kindle with his girlfriend for a period of six months before buying his own led to competition over access to it: *Fights, well, we'd basically take it book by book, so I'd have it for a book and then she'd have it for her book but when she wasn't using it I could just like borrow it and it kind of did get a bit, both competing for it quite a lot which did get a bit annoying that's why we decided to get another one. It was just an experiment and they came down in price as well.*

4.4 Discussion

The findings show that the experience of reading e-books is shaped not only by the affordances of e-readers, applications, and content providers, but by dint of a larger ecosystem - one that includes paper books and their attendant practices. On first encountering e-books, people explore their potential and their constraints. In turn, they find a place for e-books, in a way that alters, complements, and augments their existing reading practices. The result is that print books complement rather than replace e-books, or put differently, they fill the gap where e-books fall short - and vice versa. In making choices about what platform to read on, people make use of the affordances of current e-reading technology designs, like instantaneity and portability, while giving up some of the values associated with print books, such as visibility and share-ability. What we see in people's practices and orientations surrounding e-books is a shift in emphasis from the book as artefact to a set of activities associated with reading. In the following, we discuss these tensions in detail and propose key themes for guiding potential future avenues for the design of reading technologies.

4.4.1 From Commodity to Service

One of the themes that echoed through the data was that, for books that matter, people choose printed books. Digital books were seen as more transitory; they were less about keeping and more about using. The findings point to a number of reasons for this. One had to do with long-term access. As an ecosystem of reading devices, applications, content, and service providers, e-reading relies on the availability of each of these components, and more importantly, their mutual compatibility, both now and in the future. Concerns about potential incompatibilities between current and future reading technologies were raised, and may be one reason that people see e-books as not something to invest in for the long term. There were also issues of what it means to 'own' a book. Physical artefacts can be displayed and collected. Participants spoke of emotional attachment to print books, not apparent with e-books. Finally, the ability to share might be another reason printed books are more valued. After finishing an e-book, the inability to pass it on to others leaves it as 'dead' content in people's accounts. Taken together these concerns might explain why our participants generally valued e-books less than printed books. This in turn was reflected in their reluctance to pay full 'book' prices for e-books. It is clear that people think of the value of e-books differently, and more in terms of the activities that e-books allow them to perform rather than the artefact itself. This suggests that designers might also think differently about their value, moving away from conceiving of e-books as commodities toward thinking about services that enable experiences around reading. This could be manifest in different pricing models, such as allowing people to pay for a subscription service for e-books on a per use basis, or small fees for sharing, or by providing e-books that come with discounts for buying the print version, recognizing that people might want to own the books they want to treasure.

4.4.2 Discovering E-books

E-books are currently delivered through a small set of providers, like Apple and Amazon. This 'walled garden' model, however, does not recognize the many ways in which people find and acquire books. Discovering books to read is a diverse and open set of activities drawing upon a variety of sources, from chatting with friends and acquaintances to idly searching bookstores and libraries. The experience online is much more restrictive as people have to rely on information presented to them by the main content providers. I suggest there is a potential for offering more serendipitous and social mechanisms for finding books online, such as allowing people to share recommendations device to device, or posting recommendations in more flexible, ad hoc ways. For example, people might post recommendations linked to a location that reminds them of a good book, or where they spent time reading. Later, others can 'come across' these tags and instantly download the books they refer to. The point is that new digital mechanisms for discovery and awareness of books could be much broader and more flexible than it is currently.

4.4.3 Keeping the Reading in Order

Digital reading devices are able to carry large amounts of content, and much of their allure lies in the fact that people have an entire library available at their fingertips, anytime, anywhere. As we have seen, however, large numbers of e-books impose the need to manage the information. Offering some of the information management features that are now available on phone and PC operating systems, such as folders - or in our case 'shelves' - would help to

alleviate the problem. We have also seen how the divide between digital and physical book collections creates problems in terms of managing people's reading process, and more broadly, the ability to relate to their books as a single collection. I encourage designers to explore ways of bridging this divide by providing cross-platform visibility and management support. For instance, social media or book sharing sites, such as goodreads.com, could be linked with a user's online purchase history, wish list, etc. to help them keep track of their reading and book collection. Alternatively, users could be enabled to print a physical prop for each purchased e-book to join their physical book collection.

4.4.4 Moving beyond Fiction

E-reading devices today are optimized for linear reading, which is the reading of a text from beginning to end. Either as a consequence or cause of this, the majority of reading done on e-readers is fiction reading. As we have seen, other types of non-linear or richly visual leisure-based reading, such as the use of cookery books or travel guides, are not well supported by current e-readers yet people (in our study at least) expressed a desire to use e-readers for these kinds of books too. I suggest exploring the design space of e-books and e-readers to support a wider range of reading activities, including ways to support parallel reading (two or more texts next to each other) and more flexible navigation and place-holding mechanisms for active, non-linear reading. This would see e-reading start to reach new markets, and enable new kinds of reading experiences for consumers.

4.4.5 Exploiting the At-Hand Nature of E-Books

The findings confirm that one of the real strengths of e-books is the way that they can support both ad hoc and routine reading practices in new ways. In particular, the lightweight form factor of e-readers, always present nature of smartphones, and ability to pick and choose from either a library of content, or to download new content means that e-reading can be tailored to suit many new situations. Recognizing that this is the case could be exploited more fully in the design of e-reader software and by content providers. For example, rather than classifying by genre, age group and so on, content could also be suggested for 'a quick read', or for longer, more engrossing sessions, or based on location, and so on. In other words the system could be geared toward recommendations, which take into account not just a reader's taste, but also their context. The interface could give better support for this too, such as giving more rich visual cues as to the length of an e-book, or allowing more flexible browsing of an e-book when time is short.

4.4.6 Sharing

Current business models are dominated by a consideration of the individual as the point of consumption and marketing. The sharing of e-books between users, applications, and devices is constrained by corporate digital rights management (DRM) software. We are aware that some of these constraints are specific to the UK market, but the workarounds people have developed to manage these constraints are indicative of the underlying values that drive people's behaviours and choices regarding e-book use and consumption. Whilst these constraints are in place, people are forced into sharing their devices and accounts with family, partners, and friends or bypassing DRM altogether. To address this issue, I suggest thinking of ways to facilitate the sharing of e-books. For instance, we can think of reading applications that allow people to share their library with friends and family without giving them access to their account details. Alternatively, I

encourage designers to enable device sharing that is sensitive to the reader's privacy and personal use preferences, such as place in a book, bookmarks, annotations, font size, categorization, etc.

4.5 Conclusion

In this chapter, I contributed to a rich space of research on reading by exploring the ways in which e-reading technologies have found their place in everyday life. Rather than replacing print books, we found that e-books occupy a niche among people's paper based leisure reading practices. In making choices about what technology (including print books) to read on, people create a particular experience of reading by drawing on the affordances provided by the particular ecosystem of content, application, device and infrastructure. Based on these findings I suggest to move away from conceiving of e-books as artefacts toward the activities and experience of reading, including acquisition, organization, and sharing. While running the risk of chiming in with the voices predicting the future demise of the book, it seems to me that books are at an early stage of the transformations software, music and film underwent in going digital. If their histories can serve as an example, and the industry moves from ownership to use based models, understanding the practices of reading will be of paramount importance in helping to design that future.

5 Books in Everyday Life

5.1 Introduction

Given the central role books play in shaping and reflecting our cultures and societies, it is little surprising that the potential disappearance of the book, in light of the popularity of the e-book, might give rise to some concern. What is at issue here, however, is not the loss of vital information, but the way the information is materially manifest in the book. In other words, books are valued not as information carriers per se, but for the ways in which they make information available. The values associated with books are not set in stone, but made and re-made through practice. In order to understand how books create value, we therefore need to look at the range of everyday practices surrounding books.

I have noted that there is a wealth of theoretical, speculative, and journalistic writing underpinning the value of books in the digital age that is in stark contrast to the lack of empirical research investigating how these values might be manifest in everyday practices around books. With few exceptions, empirical studies have predominantly focused on books as they are read, saying little of the broader set of social practices in which they are implicated.

The focus of this chapter is therefore not on book reading, but on uncovering the rich life of the book beyond its role as a reading technology. I am interested in the various ways in which people engage with books in everyday life - socially, materially, and spatially. In other words, rather than asking what a book is or is becoming in this digital age, I wish to ask: what does a book do? To answer this question we conducted an exploratory field study into people's everyday uses of books. I conducted a series of in-situ interviews as I was given a tour around peoples' homes. By discussing books where they are commonly kept and used, I sought to unpack the social and material practices and relationships people have with books. Based on the findings, I argue that books are more than a reading technology, but a part of an ecology of everyday domestic artefacts that are fundamental to people's experience as agents of their own lives.

In sum, the chapter makes the following contributions:

- A detailed account of peoples' socially and materially situated practices and the values manifest in their uses
- An explication of how books are drawn upon as a resource for social and personal engagement beyond reading
- A re-framing of books as a social technology and its implications for the design of e-reading technologies

After introducing the method, I discuss the findings along four themes, including the acquisition and ownership of books, their organization and use, as well as our participants' material and social engagements with books. I conclude with a discussion of the findings, suggesting that, by focusing on the ways in which people draw on books as social, material, temporal and spatial resources, we can start to re-consider existing designs of e-reading technologies, and identify a first set of design challenges and opportunities. The chapter is based on a previous publication of this work in the proceedings of CSCW '14 Computer Supported Cooperative Work & Social Computing [84].

5.2 Method

I took an in situ approach in the form of a 'guided tour' through participants' homes, which allowed the observation of placements of books, as well as the opportunity to discuss core themes, including the acquisition, ownership, use, organization, and sharing of books inside and outside the home. We recruited eleven members (6 female, 5 male) of ten households (Eva and Sid shared the same household) ranging in age between 24 and 72 years old (see **Error! Reference source not found.**). Household types included: three married without children, three shared, two co-habiting without children, one married with children, and one single household. In addition to reading books, all participants had experience using e-readers (all Kindles), except three (May, Ole, Tia). Among those using e-readers five (Zoe, Ben, Una, Lyn, Eva, Sid) used them frequently at the time of our study. The sample was chosen for diversity to inform our exploratory study rather than to represent a particular class of use.

| Participant | Gender | Age | Household | E-reading Experience |
|-------------|--------|-------|--------------------------|----------------------|
| Gus | m | 20-29 | Household | Yes |
| Zoe | f | 40-49 | Co-habiting w/o children | Yes |
| May | f | 20-29 | Married with 2 children | No |
| Ben | m | 20-29 | Shared | Yes |
| Ole | m | 20-29 | Shared | No |
| Una | f | 30-39 | Shared | Yes |
| Tia | f | 50-59 | Married w/o children | No |
| Lyn | f | 50-59 | Married w/o children | Yes |
| Eva | f | 70-80 | Co-habiting w/o children | Yes |
| Sid | m | 70-80 | Married w/o children | Yes |
| Jay | m | 50-59 | Married w/o children | Yes |

Figure 5.1 Participant demographics

Domestic book tours were documented using photographs and audio recording. The audio data was transcribed and coded for motivations and values underlying people's practices. Photographs were used as memory prompts during analysis. My approach reflects our interest in elaborating the everyday detail of specific instances of book use and the practice surrounding them rather than seek to make broader claims of representation or support or refute particularly theoretical positions.

5.3 Findings

In the following I discuss the pathways books took into, through, and out of our participants' households and their lives. The findings are presented in terms of four themes:

- **Temporal practices** which foregrounds the lifecycle of books as they moved through the home and indexed into the past, present and future of their owners
- **Spatial practices** which highlights the ways in which people placed and organised books inside their homes
- **Material practices** which emphasizes the various ways in which people materially engaged with books for making and re-making
- **Social practices** which presents the ways in which books are embedded in social relationships

The themes are intended to aid legibility but should not be misunderstood as mutually exclusive. In fact, book-related practices are very much interlinked both with each other and with everyday domestic practices more generally. For instance, the acquisition, use, maintenance, and sharing of a cookery book is interlinked with the household's social organization of cooking as an everyday practice. Further, in the presentation of the findings I aim to let participants speak wherever possible. As a result, formal classifications of books (e.g. fiction, art, cookery, etc.) only appear to the extent that they are part of member classifications, such as 'books to read', 'books I got from my grandmother', 'books to return to my colleague', etc. Finally, while reading was not the focus of this study, it inevitably forms part of what makes the ecology of the home and is discussed as such.

5.3.1 Temporal Practices

Here we discuss how acquiring used books helped judge a book's potential social value, how owning books allowed projecting into one's future, reflecting on the present, and holding on to one's past, how books were used for aesthetic and emotional engagement, and divesting to extend the life of a book.

Acquiring

Books would be acquired from a range of sources, including bookshops (all), charity shops (May, Tia, Lyn), second hand bookstores (May, Ole, Tia, Lyn), libraries (Tia, Jay), and online (all, except Jay). Although most participants regularly bought new books, several stated a preference for second-hand books. To Ben and Tia signs of wear indicated that the book had a long reading history, and as a result, was worth reading. Tia: *A book is for not just reading once. If it's*

pristine it means only one person has read it and it'd not be particularly (good), and Ben: I actually quite like it when they are a bit worn, cause it shows it has been used as well. I think I'd rather know what loads of people think rather than wasting my time on a bad book. Buying used books also allowed Ben to disconnect his consumption from production: *It means people don't have to produce another book, which obviously is a good thing.* Ole felt used books were 'prettier and odder'. Tia bought used books because she took pity on them: *The second hand ones they're like, they can sit on a shelf for ages and no one in particular wants them. I don't know. I just, I'm making them into people now, aren't I?* Buying a used book through a website had allowed Una to get something 'more than just a book': *He wrote me an email and he said 'look after this book'. He gave me an instruction manual on how to use the book. It's not just handing over a book, it's handing over this entire world of knowledge.*

Owning

Participants owned an estimated number of 1 (Jay), 2 (May, Ben, Lyn), 3 (Una), 4 (Gus, Zoe, Ole), 6 (Tia) and 8 (Eva, Sid) bookcases of books (sized approx. 2x1 metres). Several participants relied on their books as a way of projecting into their own futures. Lyn imagined her future as a mother through books: *When we settle down, have our own house and a library or something similar, even if the living room has to be the library, that's fine, my kids are going to have books, actual books, and not just laptops and things, cause they're great.* More specifically, she had particular books in mind she wanted to read to her children: *I want to read that Peter Rabbit book to my kids when we have them. So I keep it up and yeah, I've got a kind of mental list that I remember from childhood that I definitely going to go in the children's library when we have kids.* The persistence of some books led Ole to project even further into the future and to reflect on his existence within the grander scheme of things: *It reminds me that a hundred years is not a long time. You know, these organ manuals they're a hundred and eleven years old and some of these books are older than that, and suddenly it confronts me sort of with the realization that probably nothing I do will last a hundred years, and nothing digital will last a hundred years, because it'll all, it won't even be dust.*

Similarly, books were used to maintain a certain sense of self in the present. Una had an arts background but now worked in a commercial context 'answering emails all day'. Her arts and crafts book collection allowed her to keep alive the 'maker' in herself: *I have this fantasy that I will do things like this myself. It is a fantasy because I'm far too busy but I like to have these kinds of things around me to see what other people have hacked together and just things that people have made, like craft. You see, I don't actually ever look at these books. I just have them. I'm like it's got to be me trying to hold desperately on to what I want to be.* At the same time, she maintains a collection of work-related books, such as on programming and graphic design that remind her of who she ought to be: *This is kind of my anxiety wall. Like this is I'd love to be good at that so I buy loads of books in the attempt to make me better.* Her collection of fiction, on the other hand, she dismissed as 'frivolous', possibly because reading for pleasure was at odds with the aspirations she had for herself.



Figure 5.2: Owning: new and original copy of a book owned since childhood (Ben). **Divesting:** children's books to be given to the charity shop (Zoe).

Books also enabled participants to keep alive certain aspects of their pasts. Books owned since childhood held particular significance in this respect. Gus, for instance, had a 'more sentimental' relationship to one of the first books he remembered reading on his own. Ole, too, felt 'massively emotionally connected' to his children's bible. Lyn was clearly moved by a book she had received from a family friend for her 18th birthday: *I don't know if I'd read this. I think it's the only book of poetry I actually got, but I would never get rid of it. Aww, there we go, I've had this my entire life. Aww...* Some participants, who had lost some of their childhood books, even went out to buy new copies in a 'nostalgic' move. 'The nostalgia hit' Lyn when she wanted to share with her fiancé the Winnie the Pooh books she had when she was two years old, but discovered she had given them away 'in a fit of *I don't know why. I can't even think why I would have given those away.* So she went out to buy new copies. Similarly, 'in a nostalgic turn' Ben bought another Paddington book in addition to one that had been read to him as a child (see Fig. 1). Beyond childhood, books could also be evocative of later stages in life. May's collection of plays let her to hold on to her first studies. They were: *almost like souvenirs of my old degree, because I don't do English anymore, I do Business. They have like a sentimental value.* Una had bought a book as a memento of her honeymoon trip to Paris, and 'instead of like buying an object I bring back a book whenever we go on holidays'.

Using

Obviously, books were generally kept to be read. Whereas in most cases, unread books were in the minority, in one case as much as an estimated two thirds were unread. In addition to reading books, visible signs of wear enabled participants to engage with a book's social biography. Ben: *The story behind it I think. I love how old it is. I love that it belonged to somebody else, that it visibly belonged to somebody else. I don't know why but it's interesting.* To Ole it was these traces of use that gave a book individuality: *It is an old thing which has the humanity in it and it is a human thing, it's one of a kind in a lot of ways and books are to an extent one of a kind, especially ones that have been inscripted.* Tia suggested her preference for books that are 'a bit tatty' was because it made them more like people. Ole assigned books the agency to trace out their own story. *I feel very much that books have a life of their own and quite apart from the story they obviously have inside them they also trace out another story that you only see in tiny clues on or in the books themselves*

like the inscription on that book. The connection to one's own or another person's past was also enacted through reading. Eva, for instance, associated reading Jane Eyre with the copy she had read as a teenager. Her grand-daughter, too liked 'thinking that she's reading a book that Daddy read or [her daughter] had read'. To Jay, re-reading a book was an 'emotional thing' which was 'tied into the physical article'.

Books too were cherished for their aesthetics and the sensory engagement they enabled. This engagement was sometimes independent from their use as a reading technology. Tia, for example, thought books should be used to have value 'except for the ones that look pretty'. Una kept a German book not for reading, but because it was 'a beautiful piece of work'. Keeping books as objects was also something she had seen at her grandmother's house who had *a full set of Britannica encyclopaedias behind a glass frame, it was books almost like objects, almost like an ornament would be.* The material of a book was particularly important in this respect. Ole appreciated some of his book's 'lovely tactile feel'. Tia said the 'feel' of one of her hand-printed books sometimes made her 'want to stroke it'. Ole suggested it was 'good paper' and 'good binding' that allowed books to 'age gracefully' and so over time *all the crappy ones have fallen to bits and what I've got left are the ones which age gracefully.* Apart from the choice of a particular material, several participants valued the amount of human labour and craftsmanship that had gone into the design and fabrication of a book. Tia was impressed by 'the amount of time and effort' somebody had spent typesetting one of her books. Ole thought someone having handwritten one of his books was 'gorgeous' and 'a complete labour of love'. Una valued the attention to detail a designer had given to 'the differences between colour' used in the book and the 'effort in choosing the layout': *All that is lost in the e- book, and if you go back to like book as object, as beautiful thing, that's all lost.*

Divesting

All participants on occasion divested of books, some rarely (Gus, Zoe, Ole, Una, Jay), others more regularly (May, Ben, Tia, Lyn, Eva, Sid), despite a general reluctance to do so. It was often spatial circumstances, such as running out of storage space (May, Tia), moving house (May, Lyn), de-cluttering (Tia), rearranging furniture (Zoe, Eva), or major life changes, such as children leaving home (Tia) that led participants to divest. Zoe, in particular, was 'being quite ruthless with the books at that point' which was followed by delayed regret: *God, I've been ruthless, I've given so many away. Oh gosh, I've given away a lot more than I thought, basically everything. I didn't realize, aww, I wish I hadn't now, oh no, oh well.* Several participants got rid of books on a more regular basis. May, for instance, had a constant flow of books coming in and out her house because *I buy a lot and give away a lot.*

When it was necessary to divest of books, participants agreed that they had to be passed on rather than thrown away. Una: *I'd never put them in the bin because somebody else might use them.* Before making them more widely available, however, divested books would often be offered to the personal network. Like most participants, Lyn offered her books to friends and family for 'first dibs' before giving them to the charity shop. Zoe once left a box of books outside their house on the pavement for people to take. Lyn had a habit of buying books from and returning them to a library book sale, *so it just all goes round in circles.* Tia had given books to a local farm that ran a book swapping scheme: *They may end up*

around the world or something. It just seems a nice [idea], I mean you can be on a train or something and pick a book up, and somebody's left it for you. Conversely, Ole noted their concerns about passing on certain books: Depends on how repulsive they are. The thing is if they are unpleasant enough for me to want to get rid of them, generally I cannot think of their being in the world at all is a terribly good thing. And so in extreme cases I have dug very deep holes and buried them. Selling books was unattractive and only two participants had done so. One of them, Tia, had tried selling some of the books from her mother's house clearing on eBay, but because it was 'quite time consuming' it'd have to be something where you think there's a good chance of selling and a good chance of getting a reasonable price for it. I mean we sold one or two but not many.

Books to be divested commonly included books participants had read, but weren't going to read again, books they hadn't enjoyed, or books that had remained unread. Lyn, for instance, thought books she hadn't liked were 'completely disposable'. She had also got rid of books she thought could be easily replaced if she needed to. In the process of divestment, participants inevitably had to make decisions about what to keep and why. Here, apart from books they had liked and intended to re-read, participants kept books that were considered 'beautiful' (e.g. Zoe, Lyn), owned by partners (Lyn), meant to be shared (Lyn), or part of a collection (May). Eva, for instance, 'couldn't throw away' her son's children's books and May kept a book that was part of a collection and had 'special meaning' because her 'mom had it when she was at college'. Tia had a similar attachment to her collection of local history books: *I mean you might not open it for years, you know but it's still there isn't it.* In addition, presents (Zoe, Tia) or passed on books (May) would also commonly kept. Zoe intended to keep a book she had been given by her mother in law: *I would never look at that book, I might flick through it for two minutes, but that type of book would go up on the shelf and then to the charity shop, but because [mother in law] has written in it that will stay for a lot longer than it should, really. And eventually, I might just keep a book like that forever because I wouldn't have the heart to throw it away. I feel it's like a dedication, isn't it.*

5.3.2 Spatial Practices

In this section I discuss how storing books maintained stability during times of mobility, how organizing books supported their use of them, as well as manage participants' relationships with members of the household, how placing books around the house helped settling into a new place, manage the reading process, and issue calls for action, and finally, how displaying books in the home facilitated social interaction with visitors.

Storing

While all participants kept the majority of their books on shelves, some would be stored away in lofts (Tia) or outside the home with friends or family (Ben, Ole, Una, Lyn). Tia who kept books in her loft: *We haven't looked at them for years. We'll get them down at some time and go 'oh remember this one?'* Storing books allowed participants to maintain ownership over their unused books while managing spatial constraints, such as lack of shelf space or temporary accommodation. Gus and May who had lacked space while they were students, for instance, had managed using their books by swapping read with unread books. Gus, however, had eventually been 'forced to take their stuff', and May finally 'amalgamated everything in one place'. Storing books could often involve tensions between the keepers and owners of the books (Gus, May, Ben). While Ben's mother, for

instance, was ‘trying to push them out the door’, he was ‘trying to evade taking them as long as possible’. He didn’t want to take his books until he had a house and children of his own, *because at that point they might have some function or get some use*. Una also had left books she didn’t use at her parent’s house while she was *in a state of not living in a home that’s going to be mine forever*. May was hoping to keep a former housemate’s ‘sizeable amount’ of books he had left *because he’s very generous, and then, four years later, he suddenly remembers, so I’ll have to try and find them, but I mean there pretty safe here*.

Organizing

About half of our participants said they organized their books in some way (Gus, May, Ole, Una, Lyn). Actual organization schemes included ‘bookshop style’ (May), by size (Ben), read and unread (Lyn), topic (Una), recency of use (Zoe, Tia), and ISBN number (Ole). The latter Ole agreed upon with his friend when re-ordering his books and ‘settled on something that would allow him to obsess over order and me to enjoy chaos at the same time’. For other, spatial constraints, such as lack of shelf space (Ben) or storage space (Eva), or the way books could be placed on shelves (Gus, Una) would often enforce a certain organization. Those who claimed not to organize their books, said they ‘had quite a good memory’ (Tia) and ‘knew where every book was’. Realizing ‘they might now buy a house anytime soon’, Una finally re-organized her books after not having been able to find ‘anything’ ‘drove her nuts’. Ole regularly re-ordered books to *generate new ideas. To play with ideas. To go actually this can comment on this, I need to remember this so I put it up here. These are my memory in a lot of ways*.

Organizing books, too, helped mark ownership over space and books, thereby helping participants manage relationships with other household members. While most shared households kept their books separate, it was particularly partners who had recently moved together or were planning to do so for whom tensions over the organization of books came to the fore. Una described their negotiation process: *Oh god, it was lots of fighting over it, like shouting at each other. Not only books but with the like the leatherwork stuff. I like very carefully placed them in places and look after them because they’re precious items, whereas he is like, they’re very rarely used, so put them in behind other things. I was like ‘how could you move my things?’* Lyn on the other hand had had a few years to ‘amalgamate all our stuff and for her partner ‘to get annoyed with all my hoarding’. May who was planning to move in with her boyfriend anticipated tensions over the organization of their book collections: *I don’t want to merge them, but I don’t want them to be organized separately either, cause that makes me feel strange. He has his own system as well. He has them in like height order. I hate that*.

Placing

Apart from bookshelves, books would be most commonly placed on bedside tables (all), kitchen counters (cookery books) (9 out of 11), and floors (Zoe, Ole, Una, Tia), as well as on coffee and side tables (May, Una, Tia, Lyn, Eva, Sid), pianos (Ole), mantelpieces (Eva, Sid) stairs (Zoe), and in boxes and baskets (Zoe, Tia). Placing books supported people in settling into a place after moving house. For several participants to ‘get your books out and you can put them all out again’, was the first thing they did when moving into a new home (Gus, May, Ben) *because they’re just something that makes me me. I don’t feel like I’ve moved into somewhere until my books are there* (May). Similarly, Lyn likes having her books around her because it makes me feel like it’s my house, like it’s my home, like this is my place,

this is my stuff. That's the other thing I don't like about getting rid of things, because I like kind of places to show off the personality and things like that, and books is kind of, 'So what's your hobby? – Reading', so books is pretty much the only hobby I admit to. I love them, and if they're out, I look at them and think 'oh yeah, I fancy reading that'. I like having them about. It makes me feel comfortable. Gaining a sense of comfort and security through the placement of books is also something Una had experienced. Una had 'given in to there being' an assortment of meditation guides on her bedside table in order 'to calm her mind and to bring herself away from work to sleep.'



Figure 5.3: Organization: making use of the smalls to accommodate books (Eva and Sid). Placing: book placed on the steps for any household member to take upstairs (Zoe). **Display:** series of books with two different cover styles (Gus). **Hiding:** disliked books on a shelf behind the door (May).

The placement of books also helped participants manage their reading process. Both unread and currently read books would be placed in rooms where they were intended to be read (Ben), in prominent places, such as bedside tables or coffee tables, 'to encourage me to read it' (May) because on shelves they 'tend to lose them' (Tia). In Una's case, when books remained unread, they would make 'a progression away from the bedroom', via her study, onto her shelf in the living room. Gus kept all his unread books on the shelf, but maintained 'a catalogue of it all on librarything[.com]', where he also kept track of his unread books. On the bedside table, Zoe kept a pile of books that reflected her current priorities in reading, with the Kindle on top of the pile and her book underneath, as she was 'avoiding that one'. Tia typically read several books concurrently, which she left in

her 'little nests' around the house, including her bedroom, living room and guest room, so she could 'sit and pick up a book when she wanted to'. Zoe, similarly, had some books, including her laptop and notes, around the kitchen area where she worked. Placing books in prominent places not only helped participants to start books but also to finish them. To several participants finishing a book was a 'matter of pride' (Ben) and even if they didn't like a book they 'would push themselves to the end of it' (Zoe). Jay, who had enjoyed, but recently abandoned *Moby Dick* on the Kindle, was certain he would have finished it had it been a book *[because] it'll be on here [table], it is viewable, calling to me, whereas here [Kindle] it's not. This is not a book. It's a device and somewhere inside there are books but it's less demanding, I'm not sort of seeing the book and thinking, ah God, I've only read [], and there's the rest of it.*

Books would also be placed as a call for household members to act on. May kept borrowed books separate from her own as otherwise she 'might not remember it's there'. Eva kept a pile of books 'to go back to people, if we remembered to give them back'. Tia had a book 'sticking out' of her shelf to remind her to give it to one of her grandchildren 'when they came round'. Zoe placed books to be put away: *When the house gets too messy we'll have a clean up, and [husband] would say 'oh, they're all your books here, I'll just put them there on the steps to do something with them, and then they'll end up in the bookcase in the office.*

Displaying

With the exception of two, all participants kept their books visible on shelves in the living room or worktops in the kitchen, as well as in dining rooms (Zoe, Tia, Lyn, Eva, Sid) and bedrooms (Gus, May, Eva, Sid, Jay). Displaying books helped participants engage with other members of the household and visitors as *some people come into your house and always look at your books* (Sid). Eva whose friend had a table with her latest books out thought it was 'interesting to see what she's bought, she's reading'. Lyn felt there was 'no point in having stuff if you're not going to interact with it, be around it, immersed in it' and would like visitors to 'look through the interesting things on her shelves'. Tia remembered her children's school friends being surprised by their 'library' from which they ended up borrowing books. Before her husband acquired a Kindle, they also used to have 'books on the coffee table' *and I was like, 'ooh what's he reading?', and you can perhaps read a chapter of it, and go 'ooh no, it's perhaps not my kind of thing. With the Kindle [] you can't have that summary of what somebody is reading at all.*

The display of books as collections could also be important to some participants. May 'felt stupid' that she liked keeping her collection of poetry books together 'to the point where the same covers are together'. Gus thought it was 'irritating' that halfway through a long running series of books the cover design had changed and the originals become unavailable, so that he considered 're-buying the three books that are not in that style'. He had already re-bought the complete adult edition of *Harry Potter* because he preferred the cover design to that of the children's edition.

Books that were kept less visible would occasionally be forgotten about. For example, Gus forgot to show us his cookery books as they had been 'tucked behind the door'. Una had her knitting books 'hidden in all these nuts and crooks' from her husband because 'he hates stuff out'. She was dreaming about 'an empty room with the books and an easy chair' so her husband 'could close the door and

wouldn't have to see it'. In the meantime e-books allowed her to 'hide her hoarding in the digital'. May kept her 'work stuff', such as textbooks for teaching, 'hidden behind her door where you don't have to look at it' and which she 'hadn't put much love and care into' because she found it 'quite boring'. At the same time, placing books in more hidden places could help to ensure that precious books could be kept safe from visitors. Whereas May's 'the transient stuff that just comes and goes' was kept in the living room she had 'some of her old and torn Penguins' in her bedroom to keep them safe from people 'getting a bit drunk and rummaging through them'. Similarly, Tia kept books she wanted to keep in her study and ones she'd get rid of in the living room.

5.3.3 Material Practices

I discuss how *creating* books was a way of making information worth reading and learning new skills, how *modifying*, *replicating*, and *appropriating* books helped create a new life for abandoned books, how *augmenting* changed a book's perceived value, and how *preserving* books could help defy the passing of time.

Creating

Two participants had made books themselves. Eva 'didn't like looking at photos on the computer screen' and so intended to make photo books for their holiday pictures as that way she was 'more likely to look at them', but 'hadn't got round to it. Una was inspired by a handmade book she owned to make one herself, but said it was a 'fantasy' because she was 'far too busy'. In her past, however, she had made sketchbooks and a portfolio. Tia had put together two books in her spare time which were 'not her own ideas' but she was clearly pleased with: *And that's quite nice, tidying it all up and making it available. It was interesting. I had a look at it, and it had my name on it, in [bookstore], yes I did that one, and it's got an ISBN number and everything, so it's a proper book with my name in it.*

Modifying, Replicating, and Appropriating

Three participants had engaged in the modification of books by turning old covers into prints and cards, replication through digitization and copying, or their appropriation as tools. May had modified old books by turning their covers into prints and cards: *Also sometimes I really like book covers. I like the way they look that is why I don't really like e-books. The bookshop I worked in was a [charity] bookshop. Sometimes you'd get beautiful old books in, but you couldn't sell them because they were coming apart, so I'd rescue the covers that I've framed or made into cards.* Ole had produced prints of illustrations out of a book, which he 'had to do himself because he couldn't find anywhere that would do a legal one'. Una had photographed and put together as a PDF a library copy of an out of print book which 'you pay a hundred pounds for' so she could 'go back to it if she needed to' but thought she 'never will'. She had also scanned in a set of knitting patterns she had bought to use on her phone when she was 'knitting on the move'. Jay had appropriated a book his mother had given him but not read, to support his webcam whose clip was too small to attach to his monitor. So whenever he was speaking to his son via Skype, his 'the book comes out on the font and it's just the right height'.



Figure 5.4: Appropriating book used as webcam stand (Jay). **Augmenting:** Annotated poetry book with translations of the text (Ole). **Modifying:** book covers removed from old books (May). **Preserving:** keeping an exhibition catalogue safe in a plastic bag (Una).

Augmenting

Only four of our participants augmented books with annotations or inscriptions (Zoe, May, Ben, Lyn), but all owned or used books that had been augmented. The latter were interpreted in a range of ways between increasing and diminishing the value of a book. May had been ‘really cheeky’ and annotated a copy from the library, which she then used to ‘copy notes from the book into her computer’ in the process of which the material ‘goes in a little bit more and makes some sense’. She also thought other people’s annotations in books could be ‘useful’ because it showed ‘what other people thought are the important bits’. To Ole, an annotated poetry book helped him ‘see how other people also struggled with translating things that I’ve struggled with’. At the same time, he was reluctant to annotate books himself because he ‘didn’t like writing in books’. Ben strongly objected to annotating books and *when I see it, I generally think what horrible person, why have you been doing that to this book, but I don’t know why it’s any better than writing your name in it, that’s somehow adds character to it*. He tried working with an annotated copy of a library book that was fundamental to his work, but decided that the ‘highlighting ruined the book’ and bought his own copy. He conceded it ‘might be beneficial to see what they were’, he ‘couldn’t have the thoughts of somebody else around the text’ as he ‘didn’t know who they were’. Rather than annotating a book he would put post-it notes in it ‘if you have to do it’. Tia, too, ‘didn’t like’ writing in books and felt other people shouldn’t. She found it particularly ‘annoying’ when somebody had ‘corrected a type mistake’ because to

her it was part of the book, 'with an error in it'. An annotation she discovered in a cookery book she thought 'made it more personal' on the other hand.

Books containing inscriptions were often presents. Lyn would keep these because 'it 'showed more thoughtfulness'. To May, the ability to inscribe books was key to their suitability as presents because *books are more than just the words inside them, they're also the physical thing, people can put things inside them, write things inside them and I don't really get that- how can you give something in a PDF? It's weird to me.* Apart from presents, several participants owned second-hand books that had inscriptions in them. May had a collection of plays with someone's dedication reading *'To Louise: you are the light of my life, we're going to be married', and I'm like well this book ended up in a charity shop so obviously she didn't think that much of you otherwise she would have kept this.* Ole had found 'the saddest inscriptions in poetry books' that 'made him wonder', such as 'confessions of undying love': *you get these little hints of sadness and of things lost and it's sort of reinforced by the fact that you're never going to know what would have happened, or might have happened.* Still he wouldn't want to know the actual story because 'what he constructed in his head is always going to be more important' and 'because 'things being forgotten was important': *If the story has died then it's gone and it's not my place to want to resurrect it, but it's the footprint of a story that's past, and I feel sadness that this story has ended because stories almost always are alive to me.*

A few participants had books that had been augmented with notes or prints. Una left shopping lists for her husband in his cookery book. *I write this because he's so lazy, he'd rather go and have toast, so I put the page down and I tell him that the ingredients are there. And these are the things that we make regularly.* Similarly, Zoe had found printouts in her baking book: *These are, yeah so, this is my eldest daughter, she used this book, but what she's done is used a recipe that she's downloaded off the internet I think.*

Preserving

Three participants applied several strategies to preserve cherished books from aging and decay, such as wrapping, replacing, and re-binding books. 'To protect the book' Una kept an exhibition catalogue 'in plastic wrapping', something 'that she had picked up from her mother'. She was also 'compelled to keep' her sewing machine booklet 'precious inside a plastic thing' which 'annoyed her because she 'had to look after it' when 'she should really be throwing it out' whereas in digital form she wouldn't have to because then 'she didn't really have it'. She had also made a pouch for her Kindle but felt it 'was only a prototype because it's too thin, it's tearing really'. Rather than wrapping his books, Gus kept 'two copies of the 'Lord of the Rings'. He bought a new copy a few years ago to replace the 'original copy that he had when he was about 10' and was 'falling apart' and 'becoming all creased and tattered'. Doing so allowed him not to 'risk that one any further', but still 'be able to read it and take it to places'. A few books had been re-bound for preservation. Una's grandfather 'used to go to second hand bookshops and buy books he felt were of value' or 'he felt the story was a proper story, a story of worth' and 'he would bring them home and re-bind them' and gave to her because 'they were beautiful books'. Tia had received a book from her father of old London maps he had rebound which was 'quite pricey', but at the same time some books were 'worth having them rebound'.

5.3.4 Social Practices

In this section I show how *discussing and recommending* books was used for social engagement inside and outside the home, how *sharing* books was a way of sharing reading experiences and keeping books in use, how *gifting* and *passing on* books helped maintain present and past social relationships.

Discussing and Recommending

All participants engaged in discussing and recommending books, either informally and/or as part of a reading group (May, Una, Jay). Books allowed participants to create 'a talking point'. Before her husband acquired an e-reader, Tia said she 'knew what he was reading' and could recommend books to him, with the Kindle she didn't know, because 'there's no cover on it' and 'you can't read the back'. Since she had 'made it a point to him' that she found his use of the Kindle 'isolating' he agreed 'to make an effort' to let her know what he was reading on the Kindle. *But it's not sharing. Whereas a book is sharing. You know what somebody would like and you can hand it over whereas with an e-reader I believe you can share them between Kindles but I haven't got one. It's me being awkward, I just don't want the Kindle, you know.* To Eva sharing books was 'a way of communicating' with her daughter and sister.

Sharing

Sharing books was a common practice for all participants, particularly among partners and family (all but one), but also friends (all but three) and colleagues (Ben, Una). Nevertheless, several participants were reluctant to lend their books to others. A major concern was the condition in which the book might be returned. Gus 'tended to look after his books' and so 'hesitated' to lend them as 'people tended to take slightly less better care of them than he did'. He found 'spines came back a lot more creased' and 'pages might be more dog-eared'. He could tell which of the Sci-fi my dad has read because if he's read it the spine is more cracked, whereas the ones that only I've read to have a more pristine ((laugh)) spine. Una, too, felt that *most of the time people don't have that sense of importance with books that I have. They don't put them in plastic bags to keep them safe, for example.* Lyn on the other hand would 'be a bit more careful' with borrowed books whereas with her own she didn't mind if she 'battered' them, because *it means it's been read, that's good.* Also, whereas her books 'could sit on the shelf for years' she would give priority to borrowed books. Una felt 'really, really bad' she had damaged a book she had borrowed from a friend. She also *bought my own one, but rather cheeky, I didn't give him the new one, cause I wanted the nice one for myself. So there's something about owning and keeping them safe for myself.*

Not getting lent books back was an additional concern. Zoe recommended but didn't like sharing books because they were typically ones she had 'an attachment to' and didn't want to lose them. Eva, on the other hand, wouldn't mind not getting back books like 'current novels, that weren't really important' but thought it was 'polite' to give them back. Ben considered sharing 'lending in inverted commas', and losing books part of a give and take: *I'm not particularly bothered. I'd rather give them away because likewise they would give me them. I don't mind as long as they are (being read). In fact, I'd encourage that rather than building up an anti-library (of unused books).* Part of the problem of losing books was failing to remember whom books had been lent to. Una's 'anxiety from sharing books' was that 'her memory was really bad' and while she didn't 'blame them for not

remembering' she didn't want to lose books. As a result, she 'would never give away a book without her name in it'. While Gus replaced lost books, Ben 'wasn't too bothered', but kept track of any read books on goodreads.com so he could *look back and try to remember the books and see what I thought about it and see whether it's worth reading again*. Conversely, May had 'appropriated' a book she had given her boyfriend, and some of Gus's father's books had 'sort of migrated onto his bookcase and never really left again'.

Gifting

Books were commonly given and received as presents by all participants, typically for Christmases and birthdays. Apart from newly bought books, several participants would give used books. May gave second hand books 'all the time' either for birthdays and Christmas or 'just for random presents' *because I do like shopping in second hand shops and if I see something that so-and-so would love and especially when I've seen books that I read and really loved and want to share them with then I'll just buy them and give them. They're not worth much but I think they're quite nice, thoughtful presents*. Ole added: *Normally doing that is either financially inadmissible or inadvisable or it makes people feel awkward because if you buy (brand new) things people get all awkward about it but if it's a second hand book it's not very much money so don't get awkward and everyone wins really*. Some participants gave away their own books. Lyn: *I love giving books. I do buy books for people, but mine that I give away are just anytime if anyone takes an interest in it and I don't particularly want that I'll just, 'yeah, take it'*. Ben had already bought a favourite book twice and given it away twice: *I bought it, read it, thought it was fantastic and gave it away and then thought aww I'd really like to read that again so bought it again*. To Ole, on the other hand, giving away books that 'had a history with him' was 'a very important thing for him to do' and 'a fairly special thing'.

Receiving book presents were often perceived as affirming or disconfirming the receiver's sense of self and intimacy of the relationship. May, for instance, felt it was 'reaffirming' when she got books she was interested in by people who knew her well. Ben particularly liked *when some people buy me a book I would have never thought I would have read*. Equally, book presents could contradict a person's sense of self. Una: *My friend bought me that and it's something I would never buy cause she has me down as the arty person, but it's there because my friend gave it to me. It's bloody enormous as well*. May would re-gift any disliked books: *I have a friend in [city] who buys me books that I rarely like and I tend to like re-gift them to other people. ((laughs))*. Most of the time, however, presents would be understood as a sign of someone caring. Una, for instance, had received a cookery book from her brother and his wife who had 'thought about the fact' that she and her husband were too busy to 'feed themselves properly: *they're trying to look after us*. May had received a collection of poems from her boyfriend who had *copied out loads of the poems for me and a card that he gave me with it, so it means a lot to me that he bought me that and he doesn't really read poetry, so it's nice that he's gone to the effort*.

Passing On

Many participants owned books that had been informally passed on to them (May, Ben, Ole, Una, Tia, Eva, Jay) and several had the intention of passing on books in the future (May, Ole, Tia). Passing on and passed on books were often cherished for the connection with distant or lost family members they enabled. Tia wanted to pass on her collection of local history books to one of her sons: *I don't know (what*

to do with them), I mean some of them cost me quite a bit of money and stuff, I mean if they sold them, fair enough, but I wouldn't just get rid of them. I would find that very difficult when it's something that I've been collecting for a long time. She also wanted to pass on a book of old London maps that had been given to her father by a neighbour: So I've got it now, it's something worth handing down to the next generation, especially London doesn't look like that anymore. May wanted to pass on her collection of poetry books and a collection of children's books she had 'all read like so many times' that it had become 'a battered thing', 'all faded from the sun': It's not worth any money, you can get them really cheap, but I'll just never get rid of it, I love it, I want to give it to my kids. Ole wanted to pass on a book that had been passed on to him: Somehow because it's prophecy and because it's very much a message that was meant to be passed on I like the idea of passing the book on as well. And that is one I certainly hope goes to someone else after I've dropped my perch. His collection of books on the other he felt was too personal to be passed on: Because these are my memory and as a collection they are intensely subjective. Anybody who took them over as a collection would either have to think very much like me which is very unlikely or they'd be faking it. But at some point it will cease to be my problem and then each of them will have to (trace out) its own story again.

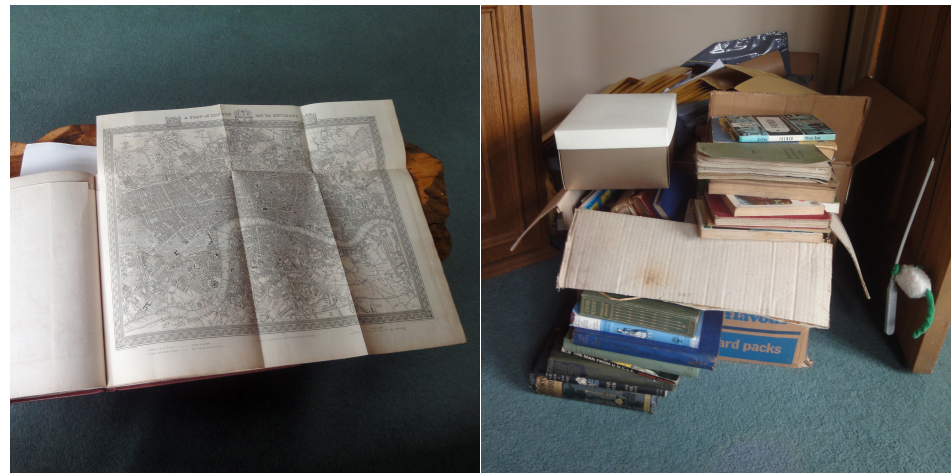


Figure 5.5: Bequeathing: re-bound book with old maps of London to be passed on to the next generation (Tia). **Inheriting:** one of several boxes of books taken on from a parent's house clearing (Tia)

Books were used in a range of ways to pass on particular values, practices or knowledge. Una had been given books by her grandparents and parents that would be left on her bedside table 'in the hope that I would pick up reading because I'm dyslexic'. Ole had received 'businessy' books by a former employer to 'do him proud and actually start making some money'. Una lent books to her colleagues at work *because they're driving me mad because they're not doing it right. Yeah, I need people to think the way I think in order to do my job so I'm trying to give them the same knowledge that I have.* Zoe tried to pass on her own appreciation for books by sharing books with her daughter rather than her Kindle: *I don't want her to use the Kindle. I want her to develop to love the books. It's not really fair. I say I can read the Kindle because I've already read physical books, it's like I've earned the privilege, and I don't want her to go straight to the Kindle. It's weird, I love the fact that she's got her little book at the side of her bed, so she can touch and feel them.* Giving books rather than 'fluffy toys' to her friend's children was a way for Una to pass on her values through books *because it feels like for my*

family it's this big thing that things must have use and merit and be useful and these kinds of things.

5.4 What Books Do

These findings demonstrate the ways in which books are much more than reading devices. They also allow people to engage with their personal and social pasts, presents, and futures. We have seen how people act and draw on books socially, materially, spatially and temporally, and how books in turn are being transformed in the process. In the following I discuss what books do for the people in terms of experiencing the self and connecting with others.

5.4.1 Making the Self

Books are drawn on to establish and reflect on a person's social self¹² through:

- Acquiring books in physical places helped people evoke associated experiences (e.g. their honeymoon)
- Owning, collecting, and displaying books allowed people to project forward into their future, maintain a certain sense of self in the present, and re-create their past
- Storing books outside the home enabled people holding on to their past and possible futures while managing the present
- Placing of books around the home helped people manage their reading and sharing activities, as well as to comfort and make a home for themselves
- Making and re-making books served to prolong the life of the book and the experiences associated with it, both for oneself and others

5.4.2 Connecting with People

Books are drawn on to connect with close and distant others through:

- Divesting rather than disposing of books allowed them to be able to be re-valued by others
- Placing books around the home served to manage and maintain relationships among household members
- Displaying books around the home allowed people to present oneself to others and create 'talking points'

¹² The self here is very much understood as a social self as discussed in [17] as 'an individual's reflexive sense of her or his own particular identity, constituted vis-à-vis others in terms of similarity and difference without which she or he wouldn't know who they are and hence wouldn't be able to act'.

- Augmenting and sharing books allowed people to encounter and connect with past and future owners through the creation and interpretation of traces of use and ownership (e.g. wear, inscriptions, etc.)
- Sharing and gifting books helped people establish and maintain close and distant relationships through sharing experiences and values associated with particular books; giving used books made it possible for people to give without producing an obligation to reciprocate
- Passing on books over generations enabled people to connect with distant and deceased family members and pass on the values, knowledge and experiences associated with particular books

5.5 Books as a Resource for Design

No, I was thinking about ahem, the Kindle versus the paper books and I love having my paper books around me, I really do. I love having my bookcases, and I'd love having a library like I said before, but the Kindle is so convenient and it stops my eyes from hurting and things like that, and there is so much other stuff on it that's free which is nice, so it's really really good but I don't think I'd ever get rid of all my books, I love my books. (Lyn)

What was striking about the findings, and neatly summarized in the above quote, is how the participants' relationship with books seemed intensely emotional. This stands in contrast to people's relationship with e-books, which we will see in the next chapter, seems much more instrumental in nature, centring on features like mobility, instantaneity, or the availability of free and low cost content. In other words, e-readers are primarily valued as *reading technologies*. They are designed for individual reading, thereby not only ignoring the socially embedded nature of reading, but also their role as a *social technology* that is enacted through various everyday practices, such as placing, sharing, and passing on books.

I have already discussed some of the ways in which e-reading could become more social. These might include the move from closed to open formats, from personal to social media, and from business models based on ownership to subscription services. It needs to be emphasized, however, that the shortcomings of current e-reading technologies in this respect are not a result of their being digital. In fact, e-reading technologies are unsocial by design. Thus, in addition to improving on e-readers, we might want to consider ways in which e-reading technologies could be re-thought as a social technology. As has been demonstrated in the field of electronic literature [13], e-reading technologies do not have to take the book as their precedent for design. Instead, electronic literature attempts to make use of the unique affordances offered by digital technologies as 'networked and programmable media'. By focusing our attention on what books *do* rather than what books *are*, we can start designing e-reading technologies that are meaningful to people's lives beyond supporting activities of reading.

For instance, how can we design e-reading technologies that:

- Allow personal histories of use and ownership be passed on to others?
- Make uses of and relationships to e-books visible to facilitate social relationships and personal reflection?

- Support the management of social relationships among members of a household?
- Support processes of homemaking and settling in through connecting e-books with places of use and ownership?

5.6 Conclusion

In this chapter, I presented findings from a field study into people's everyday uses of books. Based on these observations I argued for a re-framing of books, not as reading technologies, but as social technologies. Moreover, I suggested ways in which this framing could be used as a resource for design. Assuming the worst fears and hopes of e-book critics came true, and what we currently observe is just an intermediary step on the way to a future without printed books, our findings not only addressed the questions whether printed books mattered, but why they mattered to those using them. While our participants' relationships to books could be dismissed as mere bibliomania, I suggested that people's engagements with books could be interpreted as a more general strategy for personal and social engagements through everyday artefacts. In the next chapter, I explore some of the design opportunities and challenges raised in the previous two chapters through a series of concepts and designs that aim to support processes of self making and connecting with others by integrating some of the affordances of books and e-books.

6 Book-e: Design and Analysis

6.1 Introduction

Central to the findings from the field studies is the insight that e-books complement rather than replace books as people draw on the particular affordances of books and e-books depending on the particular situation they find themselves in. These include, among others, the book's capacity to be owned, placed, augmented, modified, and shared, and the e-book's potential for instantaneity, mobility, at-handedness, one-handed use, etc. Some of these affordances are based on books being material artefacts that are socially situated in the ecosystem of the home, and e-books being disembodied conceptual artefacts with the range of e-reading devices as their only, if inadequate, physical surrogates, which in turn form part of an ecosystem of applications, networked infrastructures, and storage facilities. Others are designed into the artefact, such as ownership, share-ability, annotatability, etc. The design takes its starting point from this observation and the fact that despite their complementarity in use, there is currently no interface connecting the two as books and e-books were designed to be acquired, read, organized and shared independently of each other. Related to the issue of complementarity are a number of more specific observations that the design aims to address:

1. **Visibility:** unlike books, e-books lack visibility, which has implications for the accountability of reading as a social activity inside and outside the home. Being able to display and for others to observe what one is reading forms an important part of reading as a social activity, and thus being able to connect with others through the display of books and reading inside and outside the home.
2. **Ownership:** digital rights management software prevents e-books from being owned and shared. Workarounds such as the sharing of devices and accounts are unsuitable replacements. As a result, e-books fail to support the building of social relationships through lending, borrowing, and gifting books.

3. Organization: Activities conjunctive to reading, such as the organization of e-books to support the reading process (e.g. flagging books as ‘to read’, ‘to share’, etc.) is limited and disconnected from how books are organized. This affects the way people are able to plan their future reading, create a representation of their current reading, and reflect on their past reading, and consequently, limits creative engagements with books and e-books that support the development of a complex sense of self.

In this chapter, the aim is to explore alternative ways of enabling people to integrate their e-book and print book ecosystems, and to cultivate e-reading as a social activity within and between places. To do so, I took a research through design approach, in which design as a practice, process, and product acts as a form of inquiry. In particular, I followed an interaction design process of ideation, concept, and design, in which, through cycles of concept generation, selection, and refinement, an initially broad design space was reduced down to a single design. Part of this process was the fabrication of a series of artefacts, including sketches, mock-ups, and photo scenarios, which detail the design to various levels. There are three ways in which the practice, process, and products of design served inquiry. First, through the practice of design, design becomes a mode of thinking, in which the generation and rejection of design ideas created a design space outlining both opportunities and constraints relevant to the problem at hand. Throughout the process, the sketches, mock-ups and scenarios served as a scaffold for discussion and decision-making with other designers and researchers. Finally, the design acted as a communication and conversation piece with readers. As opposed to being performed post-hoc, analysis of the design was thus integral to the entire process, achieved in conversation with the material, other designers, and readers. In sum, this chapter makes the following contributions:

- A reflection on the design process which renders explicit insights drawn from working through the design space of designing for everyday social interactions with books and e-books
- *Book-e*, a design exemplar of a device supporting everyday social practices around books and e-books inside and outside the home
- A design analysis of *Book-e* in participation with users highlighting possible future practices and values surrounding the everyday use of books and e-books

I start by outlining the design process, highlighting the rationale behind the design decisions, followed by a detailed description of the *Book-e* design. Finally, I present and discuss findings from the design analysis with potential users.

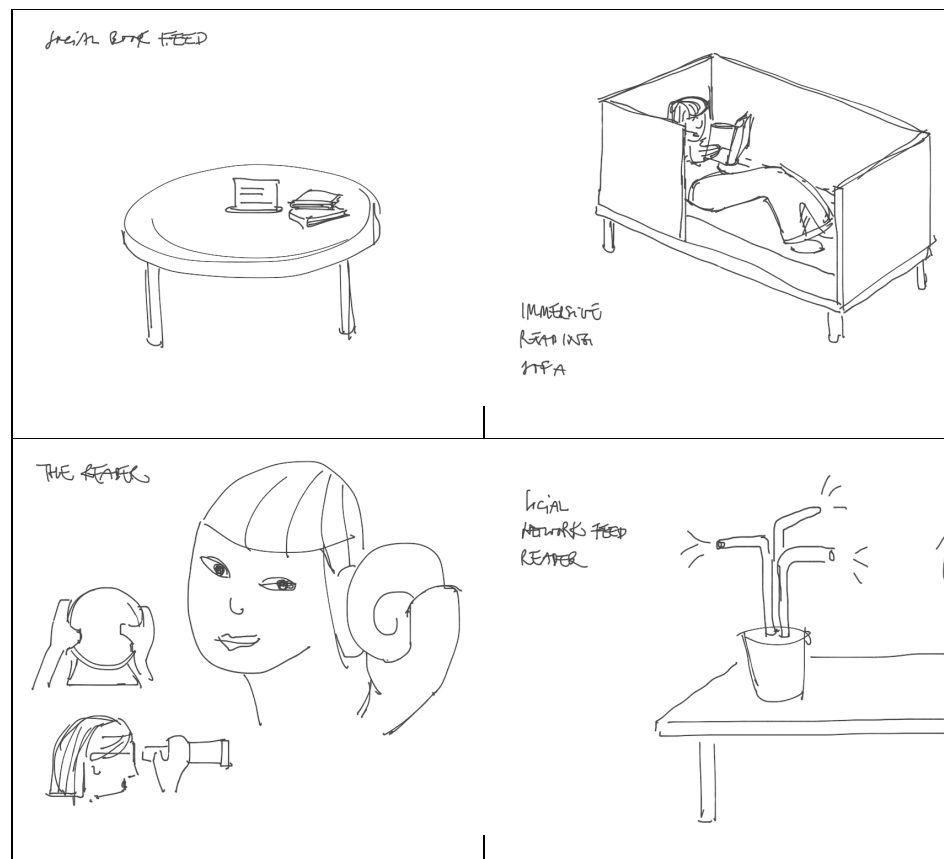
6.2 Design Process

I loosely followed a process of ideation, concept, design, and analysis, highlighting the way in which a design progresses from a broad set of design ideas to a detailed design artefact. This delineates an ideal rather than the actual process, which is more iterative than linear. For instance, in the final stages of refining a particular design, we may need to further ideate around various details. Conversely, we may start with the design of a particular detail and develop several concepts around it. And as mentioned previously, analysis was done throughout the process. Accordingly, sketches, mock-ups and scenarios were produced throughout the

process. However, sketches tended to play a more prominent role during the early stages of ideation, while scenarios and mock-ups took on greater importance during the later stages of concept and design. For the sake of clarity, the chapter follows a linear process of ideation, concept, design, and analysis. In ideation, I present a set of early sketches around reading and e-reading as a shared and solitary activity in the home. A selection of these early sketches was further developed into a series of concepts focusing on the sharing of books and e-books inside and outside the home. Following discussion with other designers, the concepts were refined into a design that was then presented to a small number of households for analysis.

6.2.1 Ideation

Ideation started around a number of themes that emerged from the studies, such as sharing reading with others in the home, exchanging books, private and public places of reading, and keeping track of one's reading through placing books. Figure 6.1 shows examples of sketches exploring these themes.



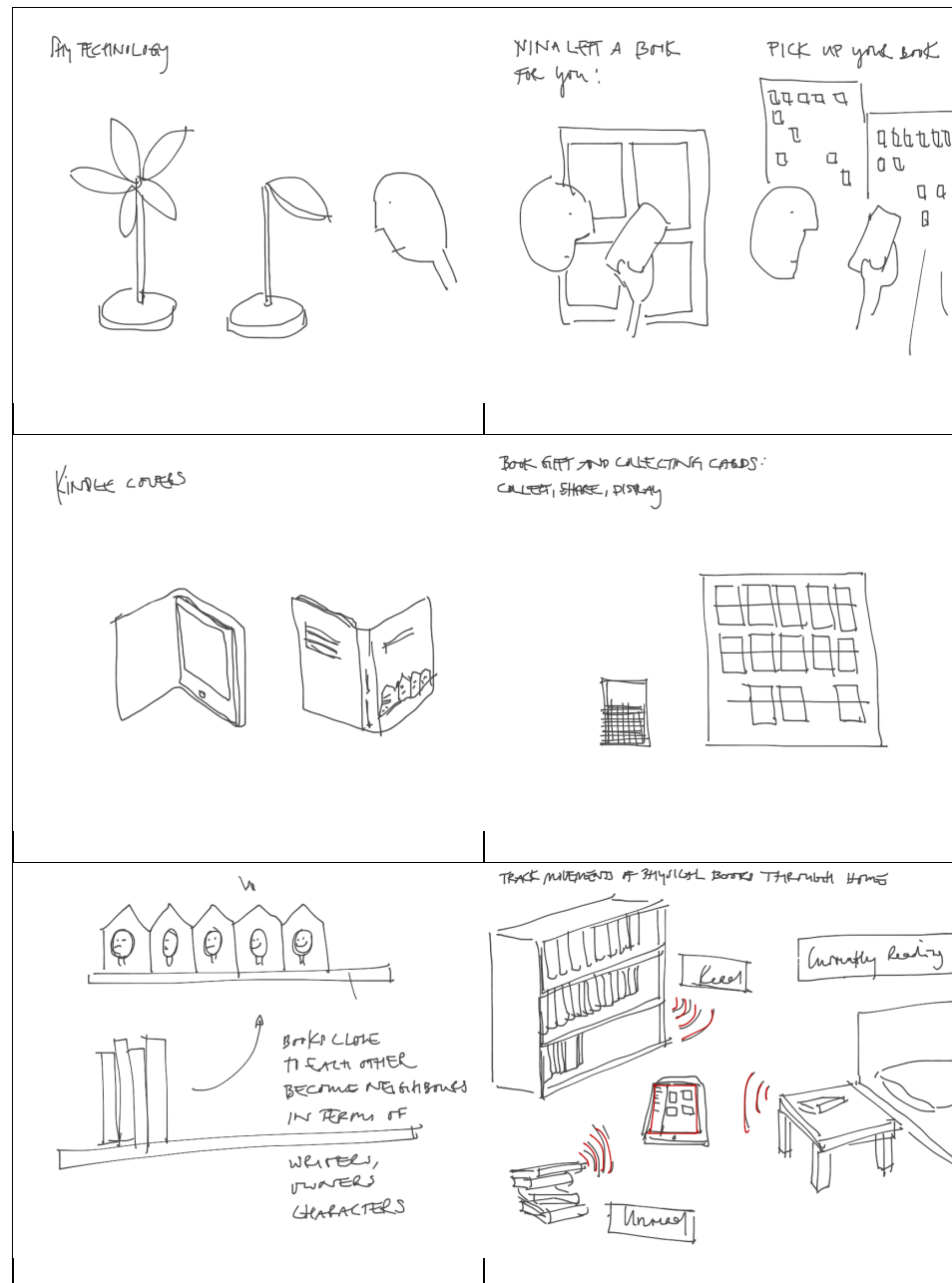


Figure 6.1: (1) coffee table printing reading activity feed, (2) immersive reading sofa, (3) book excerpt audio shell, (4) book excerpt audio plant, (5) do not disturb plant, (6) hide and seek gifted e-books, (7) Kindle e-book covers, (8) e-book gift and collecting cards, (9) socially networked book collection, (10) reading activity tracker.

The sketches were initially aimed at integrating with the existing aesthetic of the home - a prototypical version of the home, to be fair - by drawing on the visual vocabulary of domestic furniture, including sofas, coffee tables, bookshelves, house plants, picture frames, etc. For instance, beds and sofas are places in the home that we commonly choose to read. Through the act of reading we are able to carve out a personal imaginary space for ourselves inside a shared home. The places we have to read in the home can either support or disrupt this process. Reading in the bedroom allows us to physically get away from others and signal to them that we would not like to be disturbed, whereas reading in the living room tells others that we remain available should our attention be needed elsewhere. In the absence of a 'calm' space in the home the reading sofa (right column, first row) provides a

retreat from our messy home environments and allows us to immerse ourselves in the book while retaining an awareness of our surroundings. Conversely, books are often discussed over food. The table plant (right column, second row) can read out quotes family members highlighted in their e-books or sections of books they read out and recorded to act as conversations pieces during shared meals or to keep one company during solitary meals. The gifting of e-books is not well supported and many are reluctant to do so as the gift cannot be personalised, e.g. through inscriptions, cards, or gift wrappings and because giving and receiving e-books via e-mail strips people off the opportunity to exchange gifts in person. The smartphone e-book gifting app (right column, third row) allows people to leave an e-book in a particular location for the recipient to collect, such as a park bench or the café where you first met. Doing so allows the giver to add a personal layer of meaning to the digital gift by associating it with a place. At the same time, the additional layer can be tangibly experienced by the recipient by going on a journey to find her gift, and on finding it, being able to open it in a meaningful environment as opposed to ‘anytime, anywhere’ she happens to read her e-mail.

Some of the sketches were combined and further developed into concepts, such as the coffee table printing a feed of family members’ current reading, Kindle covers that act as surrogates for e-books to be displayed and shared inside and outside the home, and the tracking of one’s book placement throughout the home to reflect and manage one’s reading activity (e.g. ‘currently reading’, ‘read next’, ‘to lend’, etc.).

6.2.2 Concept

After a broad exploration of the themes outlined above I focused in and further elaborated on four main themes, including (1) organizing one’s reading, (2) sharing and gifting e-books, (3) sharing reading at home, and (4) sharing reading in public. To be able to explore concepts in more detail while retaining flexibility to relatively quickly develop alternatives, I moved from paper-based sketches to mock-ups around which I created a series of scenarios in the form of a photo story.

Organizing One’s Reading

This scenario draws on the observation that the placing of books around the home reflects and structures people’s reading activities. Books that have recently been finished, are currently being read, or to be read in the near future are often located where reading takes place in the home, such as bedside tables or coffee tables. While a reader can already keep track of her digital reading activity through her reading device¹³, her physical reading activities remain implicit in the placing of books around the home. At the same time, the shared visibility of placements of books around the home makes an individual’s reading activity visible or accountable to other members of the household, whereas one’s digital reading activity remains hidden in the individual’s reading device. The scenario below aims to complement the affordances of books and e-books so as to allow readers to make their physical and digital reading activity traceable and sharable with others

¹³ Even so, keeping track of one’s digital reading is limited in the sense that reading devices capture past reading activities by indicating reading progress on an individual title, but does not allow for planning one’s future reading. While new titles have a ‘new’ label attached to them, in order to mark a title as prospective reading a user would need to add it to a collection of ‘to read’, for instance.

both inside and outside the home, and thus support the social organization of one's current and future reading.

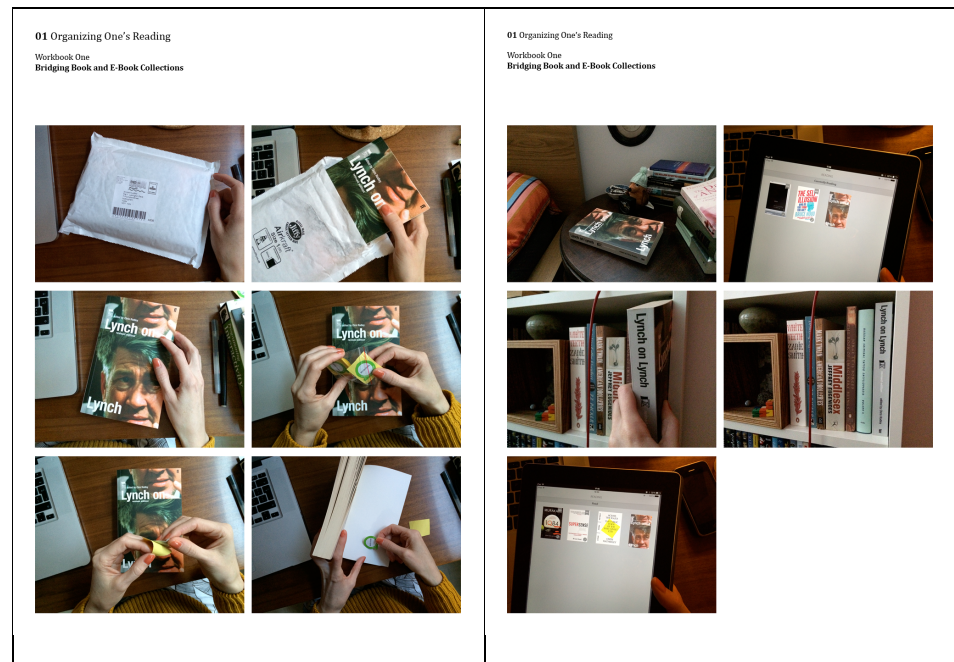


Figure 6.2: Organizing one's reading by digitally tracking books as they move around the home.

The series of photographs shown in Figure 6.1 develops a scenario in which books are electronically tagged so as to be able to reflect a person's reading activity online. A reader will now be able to keep track of and manage her reading alongside her digital reading and/or share her reading with others. In the scenario, a new book arrives in the home and is being tagged by attaching an electronic sticker inside the back cover. This allows the book to be tracked as it moves around the house. As the book is placed on the bedside table to be read, for instance, the title is marked as 'currently reading' online, as 'read' as the book is put on the shelf, etc. The scenario more generally draws on the idea of the smart, context-aware object. It is based on the assumption that there are patterns in human behaviour, routines, that can be recognized by the technology and translated into a set of commands or outputs. At the most basic level, it takes away the need by the user to manually enter the information into the device and trigger an action. What lifts a burden off the user, however, also takes away her control. To begin with, not all books placed on the bedside table may actually be a person's current reading or want to be shared as current reading. While misrepresentations of one's reading are likely to be of limited consequence to the user, they are surely undesirable. As a result, the technology not only tracks the user's organization of books, but conversely requires her to keep her books in a particular order the computer can understand, thereby not merely passively monitoring her actions, but shaping them.

Sharing and Gifting e-Books

Sharing e-books is currently restricted by digital rights management: as opposed to owning a particular e-book file, users pay for accessing e-books through a particular application or device, such as Amazon's Kindle. In the absence of true ownership that allows people to share, gift, or re-sell their e-books, I'll here

assume a subscription rather than ownership model, in which users pay a monthly fee for access to a database of e-books, possibly graded according to use volume. This model is already available for digital films (e.g. Netflix and Lovefilm) and digital music (e.g. Spotify), as well as for e-books through Amazon US. Choosing titles from the database users are able to build personal collections of e-books, as well as share and recommend books through the application.

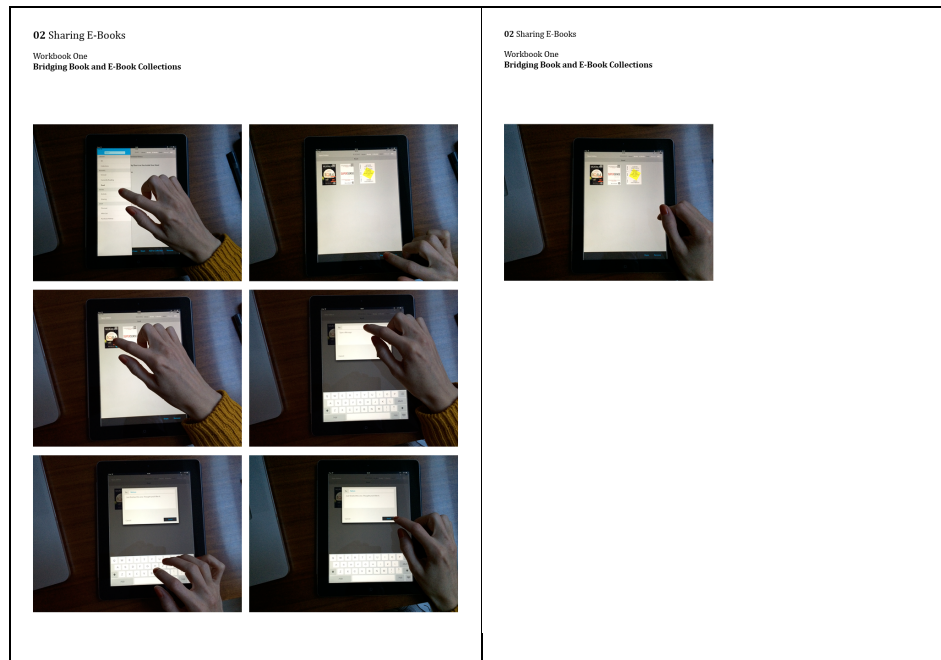


Figure 6.3: Sharing and recommending e-books through an iPad app.

In the scenario (Figure 6.3), a user selects an e-book to share from their digital library, adds a message, and a web link is sent to another user to either add the e-book to their library, if they are a subscriber, borrow it for a limited period of time, purchase it, or simply ignore the recommendation.

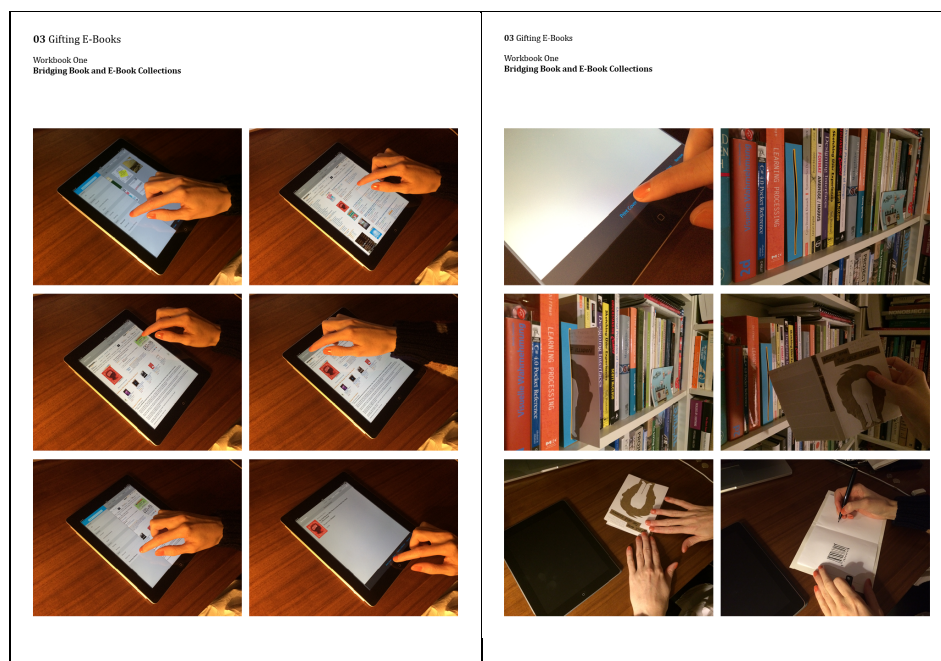




Figure 6.4: Gifting e-books using paper covers as tokens.

In addition to sharing e-books through the application, users can gift e-books by printing and passing on a paper-based card containing a barcode, which the recipient can use to download the title. In the scenario in Figure 6.4, the gift giver purchases a title to give, prints the card using a custom printer that here lives among other books on the shelf. The card has a picture of the title's cover on the front, its title on the spine, and its barcode on the inside. There's also space to add a message to the recipient. On receiving the card, the recipient uses her application to scan the barcode inside the card, download the book, and add it to her digital library. She can then use the card as a sleeve for her Kindle when reading the e-book. On finishing, she can add the card to her collection of physical books while retaining the digital copy in her digital library.

Sharing Reading at Home

The following scenarios present variations of devices for households to share their reading activity. In the first set of scenarios, the devices are shared within the household, whereas in the second set reading activity is shared with individual members through personal devices.

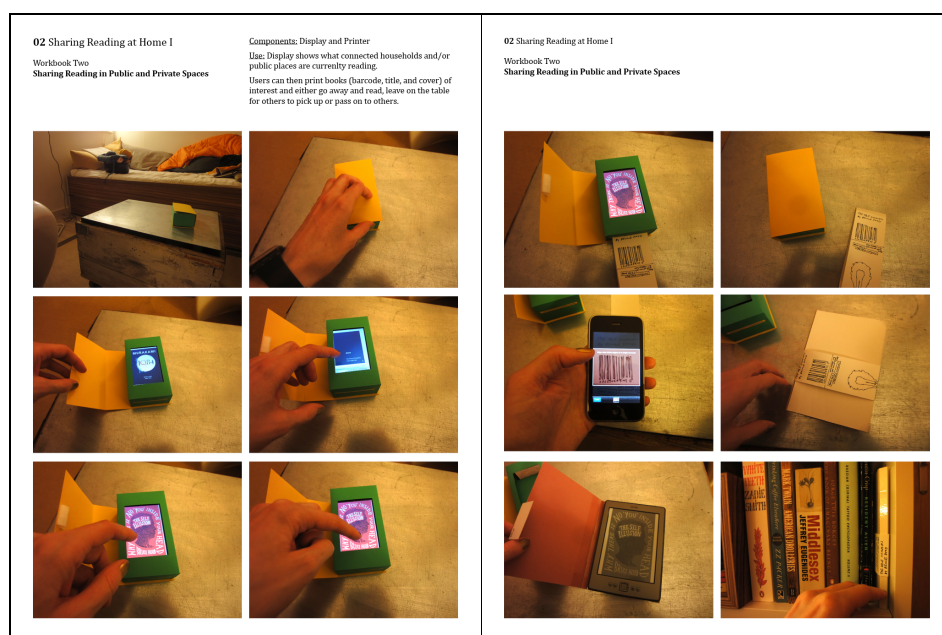


Figure 6.5: Sharing reading in the home through a shared device presenting a ‘currently reading’ feed.

In this scenario (Figure 6.5), a household or individual can keep track of other readers’ current reading outside the home. Coffee tables are commonly used to keep and display one’s current reading material where it is visible to members of the household, as well as visitors to the home. The books’ placement on the coffee table signals to others our ‘current reading’, which they are able to take as a prompt for discussion, simply acknowledge, or ignore. While a Kindle on a coffee table may signal that it is currently being read it hides its contents behind a screen saver taking away the opportunity for an ‘at a glance’ awareness of our current reading. Providing a ‘currently reading’ feed on a coffee table allows members of the household to make other members peripherally aware of their reading while granting them the option to act on or ignore the prompt. Specifically, the device displays covers of titles that places connected to the household have decided to share. These places could be family and friends connected to the household or public places, such as cafes, libraries or bookstores. Using the book as a visual metaphor, it only reveals its contents on opening the lid. Unless the lid is left open, the device requires explicit engagement for the sharing activities to become visible. Titles of interest can be printed onto a paper slip. The paper slip contains the e-book’s title, cover image, and barcode. The barcode can be scanned to add the e-book to one’s library. On reading the e-book, the slip can be attached to the Kindle cover, and added to one’s physical collection after reading.

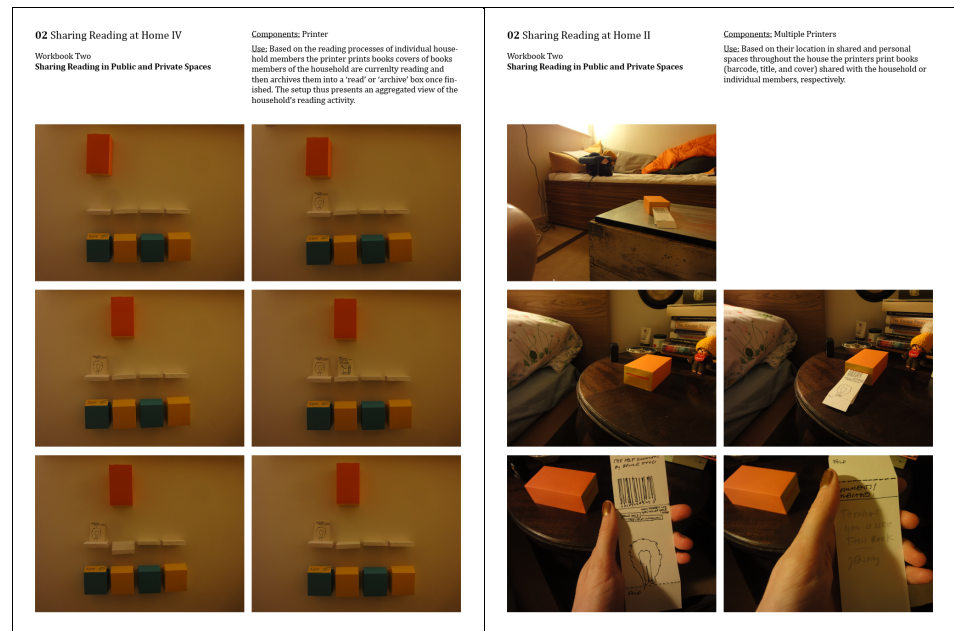


Figure 6.6: Sharing reading with individual members of the household.

In scenario Figure 6.6 (left), a printer prints book covers of books members of the household are currently reading and then archives them into a 'read' or 'archive' box once finished. The setup thus presents an aggregated view of the household's reading activity. In the scenario on the right, a speaker presents audio messages of excerpts from books that people have shared with the household, either internally or from outside, e.g. by calling a dedicated number. Alternatively, reading could be shared more selectively by placing printers in personal spaces throughout the home (Figure 6.6, right). So for instance, a feed shared with the household would arrive in the living room, whereas one shared with one of the children, would arrive in their bedroom.

Sharing Reading in Public

Reading takes place in a number of places outside the home. In the following set of concepts the reading activity occurring in a particular place is shared with the public in that place.



Figure 6.7: Sharing e-reading in public through a park bench and a public screen.

The scenario in Figure 6.7 (left) draws on the observation that benches in public parks are often sites of reading. A call on the bench reading “What are you currently reading?” encourages bench users to share with it their current reading by scanning a book’s barcode. Shared titles are then displayed on a small screen that is integrated in the bench’s back. Visitors are able to scroll through shared titles and print paper slips of titles of interest. The bench aims to act as a place-making device by providing a tangible record of the past reading activity that occurred in that particular place over time, thereby evoking a sense of community among local readers. In addition, it may act as a conversation piece that may encourage conversation around books and reading among a broad demographic of park visitors. The concept in Figure 6.7 on the right shows a public screen, here shown outside a local cinema and cultural centre in Nottingham, that reflects the reading activity of visitors to the site. Readers share their reading by sending a text message of a quote or scanning a barcode of a currently read title to the screen for it to appear on the shelf. Visitors can then browse through the quote or shelf upon interacting with the screen and learn more about individual books by selecting a particular title. The concept allows visitors to the site to find inspiration for what to read or simply to get a sense of what the local community is reading. Both the bench and public displays aim to make visible activities that are usually not readily apparent and spread out over time, and provide a record of past reading activities, reflecting the current and past interests of the local community.

The following four scenarios explore ways of sharing one’s reading, as well as books and e-books ‘third places’ such as a cafés, bookshops, or public libraries drawing on the concepts developed above.



Figure 6.8: Sharing one's e-reading at a café through a wall display

In the scenario Figure 6.8, visitors are able to share annotations made on their e-reading devices to a public screen in the café. For particular quotes of interest, visitors can then print paper slips showing the associated book's title, cover, and barcode using small printers located on various tables throughout the café.

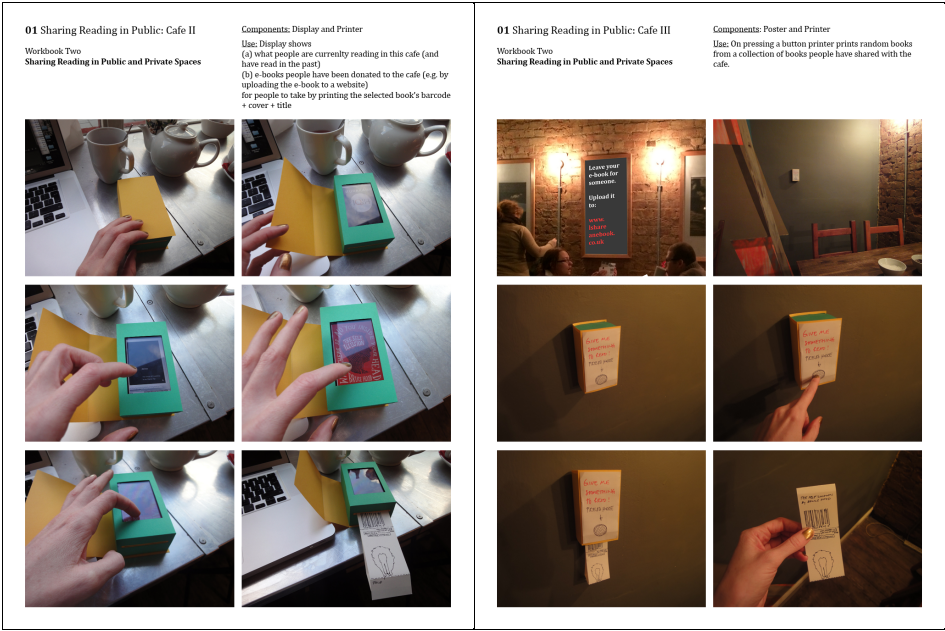


Figure 6.9: Sharing one's reading through public devices at a café.

In the scenario Figure 6.9 on the left, a touch screen device shows (a) what people are currently reading in the café and have read in the past, and (b) e-books people inside or outside the café have donated to the café (e.g. by uploading the e-book to a website) for people to take by printing the selected book paper slip, again containing its cover, title, and barcode. In the scenario on the right, visitors to the café press a button on wall-mounted device in order to receive book

recommendations randomly selected from the collection of titles people have shared with the café.

6.3 Design

Following on from the concepts developed above I focused in on two core issues and potentials of books and e-books, including the bridging of physical and digital book collections and the sharing of reading activities inside and outside the home. Specifically, the aim of the design was to enable:

- the bridging of digital and physical collections in order to allow readers to interact with them as a single library
- the organization of books and e-books so as to support the reading process
- the sharing of one's digital and physical reading activity inside and outside the home

The design integrates and elaborates on the concepts developed above and so will only be described here briefly.

6.3.1 Overview

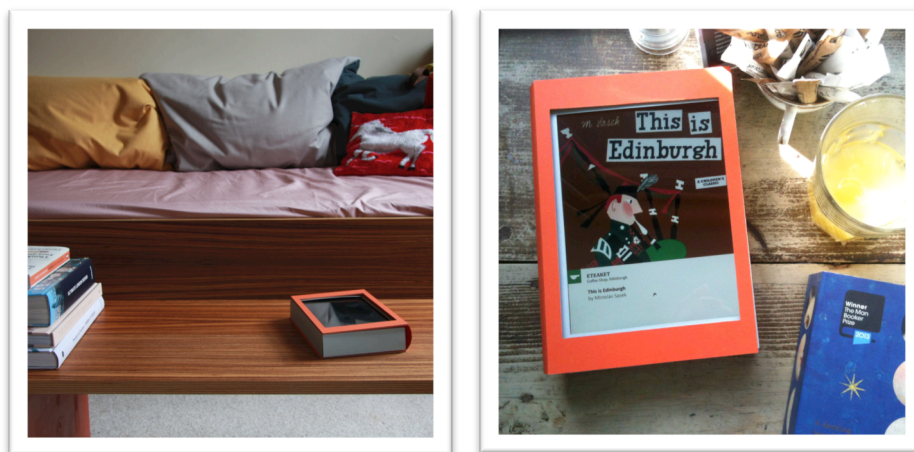


Figure 6.10: Book-e in the home (1) and at a café (2).

Book-e is a situated device that allows readers to integrate their physical and digital book collection and share their reading activities inside and outside the home. Rather than simply augmenting physical books with digital technologies or making digital books physically tangible, I took a two way approach by creating an interface between the physical and digital. It is a shared device that was designed to live in the home or in public places, such as cafes, bookshops, or libraries. It borrows its form from the book so as to integrate with the ecosystem of books in the home and be recognizable as a book related technology in public. Book-e can be placed both horizontally, e.g. to be displayed on a coffee table or side board, or vertically stored away on a book shelf, for instance.



Figure 6.11: Book-e's two modes: (1) Book-e's library when the lid is opened, and (2) a 'currently reading' feed is displayed when the device's lid is closed.

Book-e has two 'modes', a library mode on opening the lid and a sharing mode when Book-e's lid is closed (Figure 6.11). The library is a digital representation of a place's (e.g. a home's) physical and digital book collection. In sharing mode, the device displays an at-a-glance 'currently reading' feed, showing titles shared from inside or outside a household or public place. Unlike in previous versions the sharing screen is now visible through a window in the lid so as to offer a peripheral display of the feed and to add to the visual metaphor of the device as a book, albeit with changing cover designs.

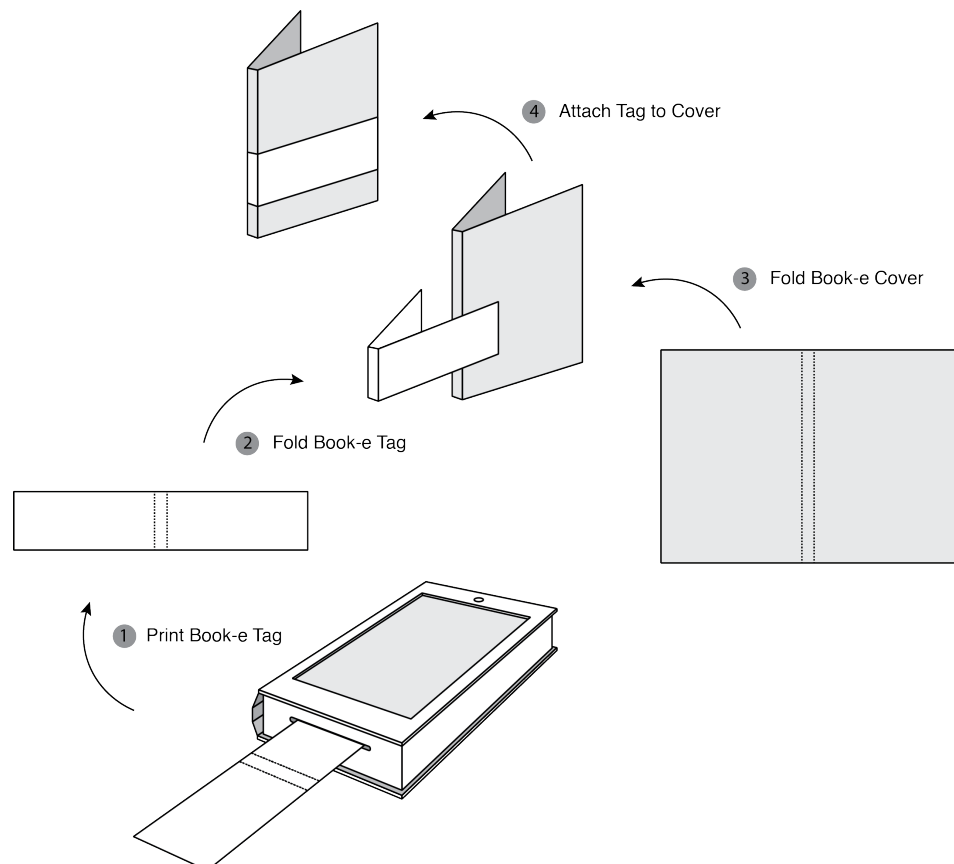


Figure 6.12: Creating a Book-e Cover: (1) Print Book-e tag from library or sharing feed, (2) fold Book-e Tag, (3) fold Book-e Cover, (4) attach adhesive Tag to Cover.

Book-e aims to bridge book and e-book collections by allowing users to create both a digital library of their books and e-books on the device as well as add tokens of e-books to their physical library in the home (Figure 6.12). On opening the device's lid, it displays a digital library containing the household's e-books. Print books can then be added to the library by scanning a title's barcode. The barcode provides an existing analogue to digital interface that can be drawn on in the design, i.e. print books don't require modification to integrate with the *Book-e* system. Conversely, users can add e-books to their library of print books by creating a paper instantiation of an e-book. These 'token' e-books are made by printing an adhesive tag, containing the e-book's identifying information and barcode, and attaching it to a paper cover. Book-e covers can then be used as Kindle covers, placed in the home, or shared with others.

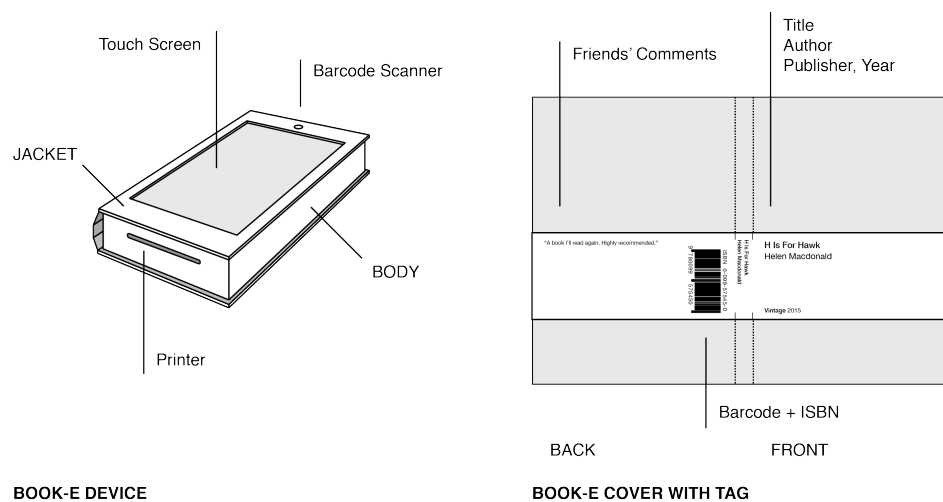


Figure 6.13: Components of Book-e: (1) Book-e device with touch screen, tag printer, and barcode scanner. (2) Book-e cover with tag showing title, author, publisher/year on the front and the e-book's barcode with friends' comments on the back.

Book-e consists of a touch screen, a tag printer, and a barcode scanner (Figure 6.13). It wirelessly connects to the internet and has a power adapter for charging on the top. Book-e covers are composed of a paper cover and an adhesive tag. The tag shows information about the e-book, including its title, author, publisher, and year of publication on the front, its title and author on its spine, and friends' comments and the title's barcode on the back. In order to evaluate the design with potential users, the Book-e was mock-ed up using an Apple iPad mini encased in a paper mockup of the device. On the iPad mini a PDF file was used to show individual screens of the library and currently reading feed interface. Book-e covers were made of card and adhesive labels, as they would be in their final implementation. Again, the mock-up was used as a prop to create a series of photo scenarios, demonstrating the various uses of the device, such as the creation and management of a personal library consisting of books and e-books, as well as the sharing and gifting of books and e-books. The reason for printing on a tag rather than the cover directly was to be able to use a smaller printer (e.g. a standard baggage label printer), but also to give people more flexibility in the choice of the cover design and material. The tags themselves are visually neutral (black on white) to provide a balance to a potentially busy background, to be legible, and

again, to be able to use a standard printer. Covers need to be sturdy enough to stand up by themselves when placed on a shelf or when being passed on to other people. In addition, tags can adapt to the varying sizes of the covers according to the size of the e-reader.

6.3.2 Bridging Book and e-Book Collections

The following presents a brief walkthrough of the Book-e library, including viewing the library, adding books to the library, and conversely, adding e-books through one's physical library by creating Book-e covers.

The Book-e Digital Library

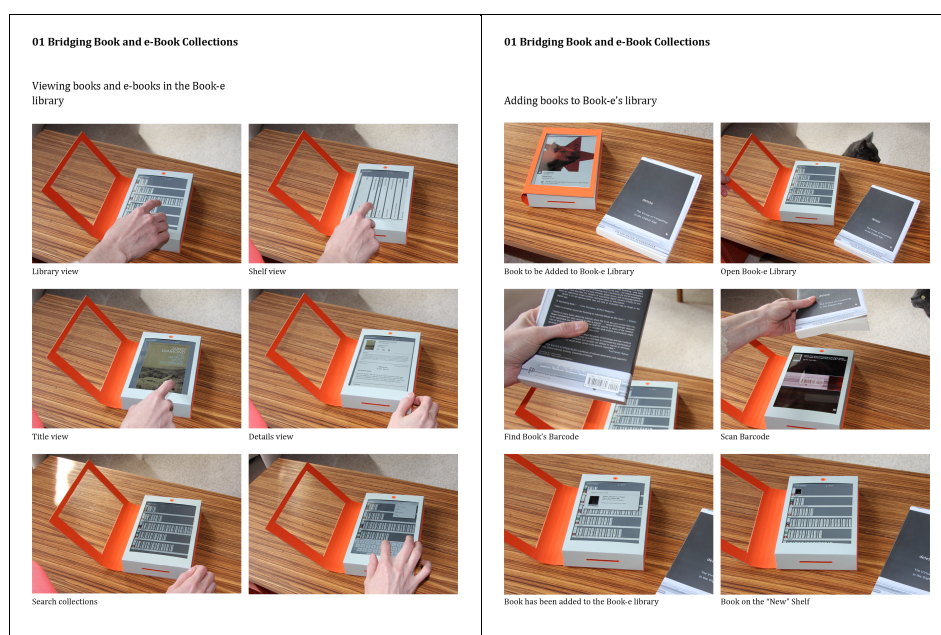


Figure 6.14: Viewing Books and e-Books in the Book-e Library (left) and adding books the Book-e library (right).

Viewing Books and e-Books in the Book-e library

Figure 6.14, left: The Book-e library holds a household's books and e-books. E-books can be added by being downloaded from the internet. Users can explore the library zooming into particular shelves and titles. In the library view (1), the books are organized on stacked shelves with their spines facing the user. In the shelf view (2), shelves can be looked at in more detail by tapping them. The title view (3) presents the cover of a title. Tapping the cover reveals the back (4), showing a thumbnail of the cover, the book's author and title, synopsis, first pages, and comments from friends and family (if available). In addition, the Book-e library can be searched (5 and 6).

Adding Books to the Book-e Library

Figure 6.14, right: To add a book to the Book-e library (1), users open the Book-e lid (2), find the book's barcode (3), scan the barcode using the in-built camera (4), make sure the book has been recognized by Book-e (5), and added to the 'New' shelf (6).

The Book-e Physical Library

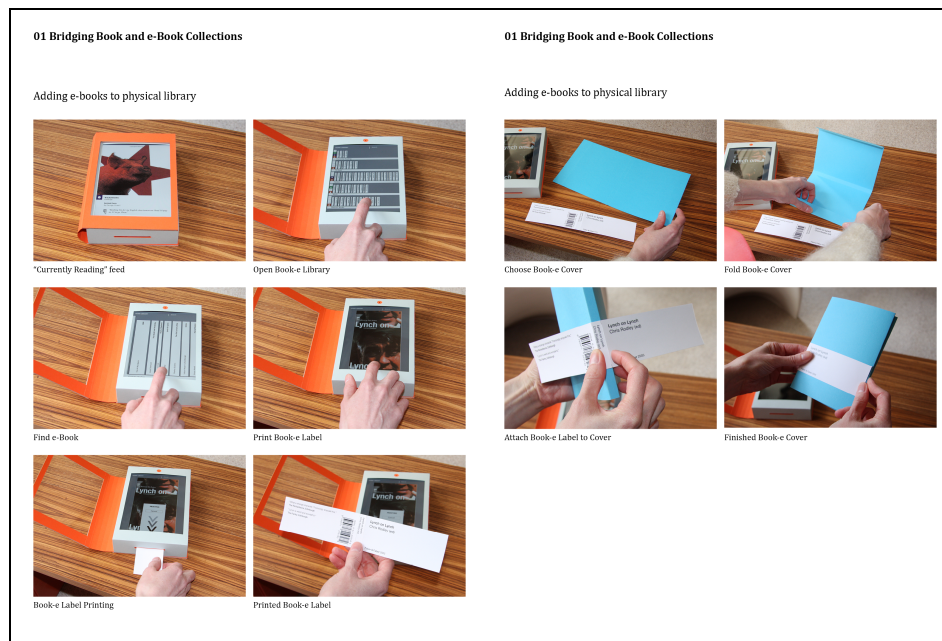


Figure 6.15: Adding e-books to the physical library by creating Book-e covers.

Adding e-Books to the Physical Library

Figure 6.15, left: To add an e-book to the physical library of books, users open Book-e by lifting its lid (1), find an e-book on the shelf (2), select the e-book (3), print a Book-e label by dragging down the cover image (4), wait for the label to print (5), and remove the label (6). Figure 6.15, right: Users then choose a card Book-e cover (1), fold it (2), attach the self-adhesive label to the cover (3), to arrive at their finished Book-e cover (4).

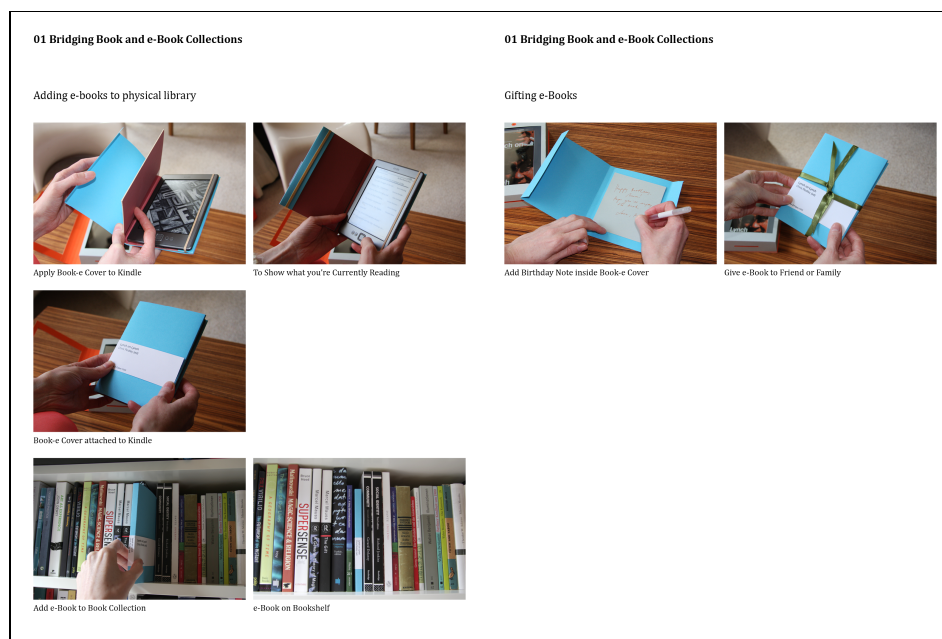


Figure 6.16: Using Book-e covers to display one's reading and gift e-books.

Figure 6.16, left: The Book-e cover can be attached to the Kindle (1) to reflect that title that is currently being read (2). After finishing the e-book (3), its Book-e cover can be removed and placed on the shelf with the shelf (4) to become part of the physical book collection (5).

Gifting e-Books

Figure 6.16, right: Alternatively, the Book-e cover can be passed on as a gift by adding a message to the inside of the cover (1), wrapping it (2), and passing it on.

6.3.3 Sharing Books and e-Books

Book-e also enables the sharing of one’s reading activities inside and outside the home, such as a café.

Sharing Reading at Home

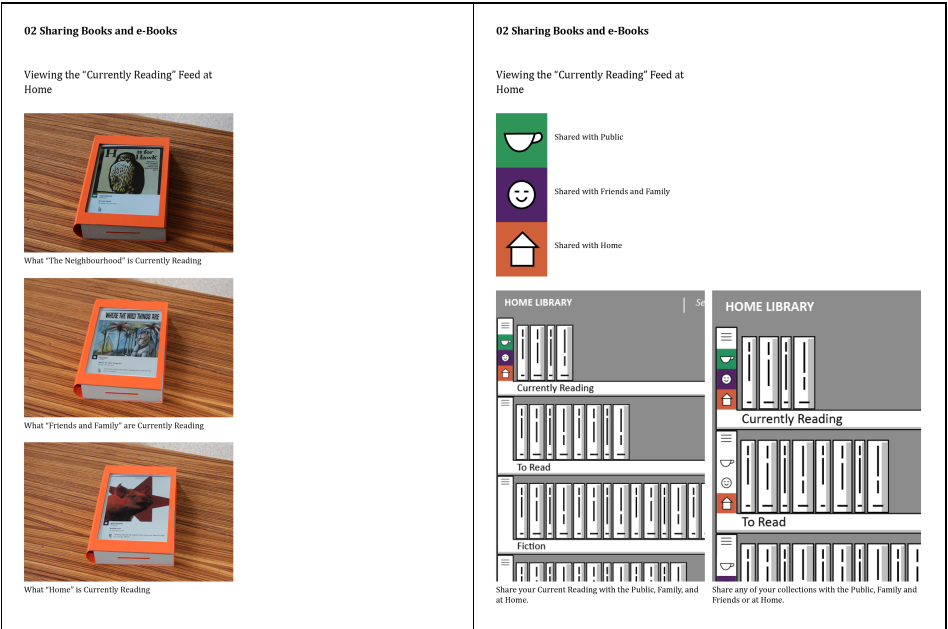


Figure 6.17: Viewing the currently reading feed at home.

Figure 6.17, left: When Book-e’s lid is closed, users can see what people in connected places are reading, such as in the neighbourhood (1), among friends and family (2), and at home (3). Figure 6.17, right: Readers can specify what shelves to share with the public, friends and family, or in their own homes.

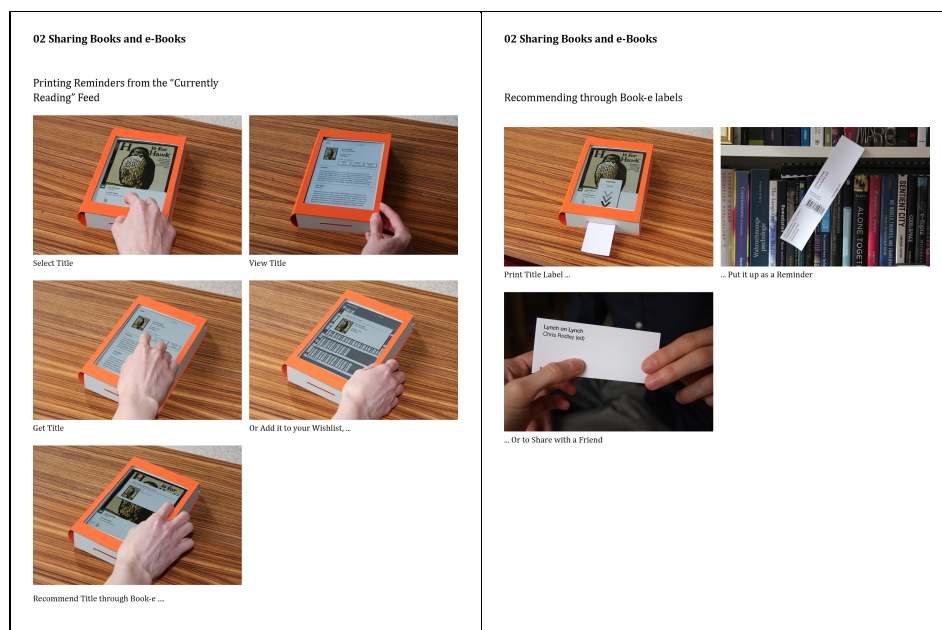


Figure 6.18: Printing Book-e tags to remember or share titles of interest

Figure 6.18, left: When viewing the Book-e currently reading feed, readers can select a title of interest (1), view more detailed information on the title (2), buy the title as either book or e-book (3), add it to their wishlist (4), or recommend the title through Book-e (5). Figure 6.18, right: Alternatively, readers can print a Book-e label (1), to pin up as a reminder (2), or to pass on as a recommendation to someone else (3).

Sharing Reading in Public

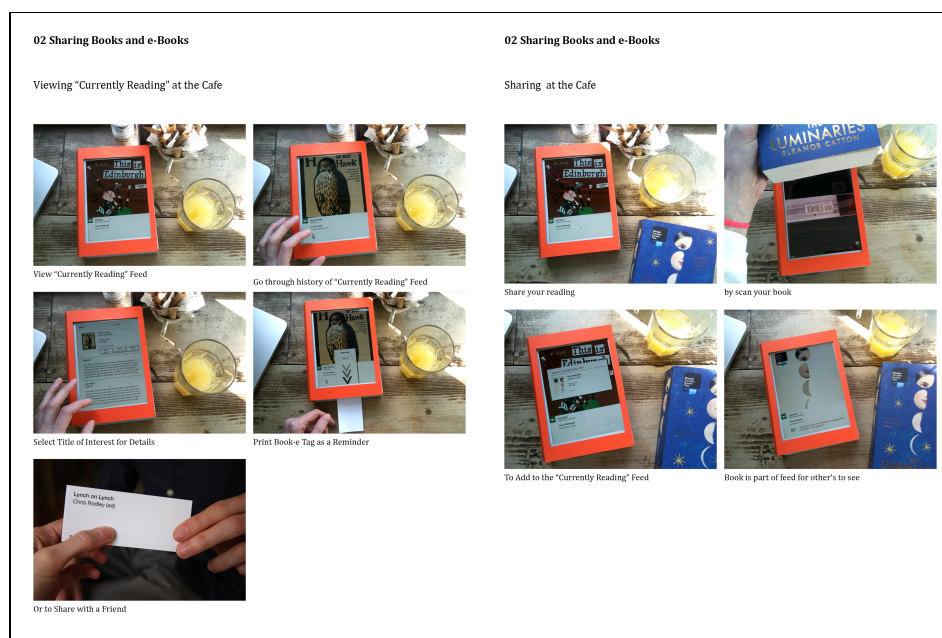


Figure 6.19: Viewing and adding books to Book-e's reading feed in public.

Figure 6.19, left: Titles currently being read in connected places appear on Book-e's screen as they are being posted (1), viewers can flick through titles posted in the past (2), get more information about a particular title (3), print a Book-e label

for titles of interest (4), and share the title by passing on the label to others (5). Figure 6.19, right: Visitors to the café can share their own reading through Book-e (1), by scanning the barcode of their book (2), to add the title to Book-e's 'Currently Reading' feed (3), and for others to see (4).

6.4 Design Analysis

The aim of the design analysis was to understand how readers might see the device augmenting or changing their existing book and e-book related practices. Specifically, I was interested in how the bridging of physical and digital book collections may change the way people organize and share their books within the household, between households, and between households and the public. If book collections could be both physical and digital, how would we want to interact with them? If book collections were built and shared by households rather than individuals, how would they be organized? And, if book collections became sharable between places, such as with other households and public places, how would they be shared and with whom?

6.4.1 Method

To answer these questions, I conducted a series of semi-structured contextual interviews. Using the mock-up, I was able to demonstrate interactions with and through the device. Seeing the design in action then allowed the participants to speculate about their own uses of the device and reflect on how they may relate to their existing reading practices. Interviews were contextual in that they took place in the participants' homes. This was to allow participants to experience the device in situ, and conversely, for me to understand the social and material environment they were referring to in our discussion. Finally, it was to encourage all members of the household to take part and voice their views. Typically, interviews took place in the evenings or on weekends, when the majority of household members could be available. All members of the household were interviewed as a group.

The interviews proceeded in two parts. First, participants were asked questions about the household, such as who lived in the household, what a typical week looked like, any friend and family connected to the household, etc. Next, participants were asked about their reading practices covering topics, such as use of reading technologies (books vs. e-books, reading devices, etc.), reading habits (e.g. times and places), reading goals (work vs. leisure), the organization and ownership of books around the house, and the sharing and gifting of books and e-books. After the initial interview, participants were introduced to the design mock-up. This involved giving a brief overview of the device's two main functionalities, i.e. combining physical and digital book collections and sharing collections inside and outside the household. Participants were told that the device featured a touch screen, a camera, and a printer. They were then walked through each of the two corresponding photo scenarios, using the mock-up to demonstrate details where possible, each of which was followed up with questions. The walkthrough involved explaining actions and outcomes for each of the steps in the scenario. To do this, the scenes depicted in the photos were 're-enacted' by the researcher using the mock-up.

In relation to the first scenario *Bridging Book and e-Book Collections*, questions included the establishment of links between their physical and digital book collections, the shared management of the device, and gifting e-books. The aim was

to understand how participants would organize their Book-e library collaboratively as a household, in terms of building, viewing, and interacting with the Book-e collections. For the second scenario *Sharing One's Reading*, questions concerned the sharing of one's reading with others, others' shared reading, and sharing books and e-books. This set of questions was to elicit what reading activity or parts of their library households wanted to share with familiars and members or the public. Finally, participants were asked to place the device in their preferred location in their home in order to understand how they saw the device in relation to the existing artefacts and spaces in their home. For instance, is the device for display or to be stored away? Would it be kept in a shared or personal space of the house?

Interviews lasted between 57 and 93 minutes (mean 73.25 minutes). Interviews were audio recorded. The audio data was transcribed and analysed for themes in NVivo. In addition, the placements of Book-e in the home as suggested by participants were photographed and are included in the findings.

Participants

I recruited 8 participants (5 female, 3 male) from 4 households. All households were based in the UK and included one single mother with her teenage daughter, one married couple without children sharing with a friend, and two couples without children. Participants' ages varied between 13 and 51 (mean 30). Occupations included university lecturer, gardener, artist, designer, gallery attendant, occupational therapist, evening job at a cinema, and high school student (some participants had more than one job). All working participants were in full-time employment.

| Household | Members | Gender | Age | Occupation | Reading Technology | Reading Volume |
|-----------|-----------|--------|-----|--|----------------------|----------------|
| 1 | Ada | F | 51 | University Lecturer | Books, Kindle, Phone | Medium |
| | Tamsin | F | 13 | Highschool Student | Books, Kindle, Phone | High |
| 2 | Spencer | M | 29 | Artist | Books, Kindle | High |
| | Alice | F | 31 | Gallery Attendant, Gardener, Cinema Worker | Books | Medium |
| 3 | Niall | M | 27 | Designer | Books, Kindle | High |
| | Kyna | F | 30 | Occupational Therapist | Books | Low |
| 4 | Frederick | M | 29 | Gardener | Books, Kindle | Medium |
| | Cait | F | 29 | Gardener | Books | Medium |

Figure 6.20: Participant demographics.

About half of the participants worked regular hours (Ada, Alice, Kyna, Frederick and Cait), while Niall was more flexible, but tried to keep regular hours, and Kyna worked at home one day a week, Spencer often worked at home and sometimes on weekends. Tamsin is at school in the mornings and takes classes in the afternoons. She spends her weekends at her father's house who lives locally. Participants' majority of friends were local and had family in other parts of the country. Two participants had moved into town more recently from another UK city (Ada) or

abroad (Frederick) and had most of their friends there. Two participants' families lived locally (Spencer, Cait), and three's abroad (Frederick, Niall and Kyna). Participants kept in touch mostly through Skype (Niall, Kyna, Frederick), phone (Ada, Frederick) and e-mail (Ada, Tamsin, Frederick), and occasionally through Facebook (Ada).

In all households at least one person read both books and e-books. With the exception of H1, where both members read books and e-books, all other members read books only. Those reading e-books did so predominantly on the Kindle, Ada and Tamsin also read on their smartphones, and Niall had read on his smartphone and iPad in the past, but found it too distracting and now exclusively uses his Kindle to read e-books. The amount of reading done for leisure was high (5 to 7 days/week) for Tamsin and Spencer, medium (3 to 4 days/week) for Ada, Alice, Frederick, and Cait, and low (0 to 2 days/week) for Kyna. In addition to their everyday reading, several participants had more intense periods of leisure reading, such as holidays and travel. Most reading was done in the evenings and on weekends, as well as during breaks (Tamsin) and commutes (Alice). Participants owned and estimated number of 7 bookcases¹⁴ (Alice and Spencer), 5 (Ada and Tamsin), 3 (Frederick and Cait), and 2 (Niall and Kyna), and between xx and xx e-books. In addition, two participants kept books outside the home with parents. Tamsin kept most of her books in her a second bedroom at her Dad's and Spencer had more books in his parents' attic. Two participants bought e-books (Niall, Tamsin), and two exclusively read e-books that were either free or low cost (Frederick, Spencer), and one participant had a digital newspaper and magazine subscription (Ada). Tamsin had her own Amazon account and received 'Kindle money' from her mom through Amazon.

6.4.2 Findings

Bridging Book and e-Book Collections

Building the Book-e Library

Book-e provides the ability to add book titles to the Book-e library. These could be books and e-books participants had obtained in the past or new titles they had obtained individually or through a subscription. When asked which e-books they would like to add to the Book-e library Ada would only add her most recent books and e-books from the point when she started reading e-books and her collections became disparate. In addition to recent books she would add favourite or 'key' books that have been important to her, such as Dickens 'A Tale of Two Cities'. Tamsin wanted to add series books that she currently had in two formats so she could see them together as a collection. Frederick wanted to add most of his books except for ones he considered embarrassing, a concern Cait did not share as she recently had a clear out and got rid of 'embarrassing' books in the process. Niall and Kyna wanted to add all their books to the Book-e library. Finally, Spencer imagined it to be 'satisfying' to look at his collection as a whole, but felt he already had a good sense of what books he owned. Being able to interact with their digital collection 'like with a paperback', Ada and Tamsin thought would make them more likely to 'go digital', i.e. get e-books rather than books where possible, whereas everyone else wanted keep their physical books.

¹⁴ I use IKEA's 'Billy' bookcase as an arbitrary unit, which measures approximately 80 x 200 cms (width x height).

Using the Book-e Library

Several participants expected to be able to read on Book-e, possibly because *it looks like a book* (Niall). There is no support for reading on the device as Book-e was designed to augment rather than replace the existing ecosystem of dedicated reading devices. However, Ada thought she would ‘probably want to read on it’, but thought the ‘sizing was wrong’: *It would have to be more like a Kindle or something, you know, thin enough*, whereas her daughter would *feel a bit silly because it would be like massive*. Cait didn’t think she would have Book-e, *plus a Kindle, plus a physical book. I mean I think it would have to be slightly all-inclusive. But then if you could do all the library stuff from there and read them, then that would be brilliant*. Rather than reading on the device itself, being able to interact with their books as a collection allowed participants to take stock of what they had when deciding to read next (Kyna, Ada). *On Saturday, if I decide to read something I could sort of scan my bookshelf and decide what I wanted to do, or if we’re close to holidays to decide on what books I’m taking*. Ada she also saw the Book-e library as a good discussion point when she had friends visiting. Tamsin, on the other hand, thought it would help her tidy her books. Finally, Neill was hoping to monitor his current reading progress. So, in addition to the library reflecting his reading progress on individual titles, he envisioned his physical books ‘syncing’ the page position with e-books across reading devices, *‘cause that’s one of the main things I like about the e-books, like being able to transfer from device to device wherever you are*.

Organizing the Book-e Library

In terms of organization of the library, there was a divide on whether or not organization should be shared among members of the household. Ada, for instance, suggested for them each to have their own shelves and one shelf that was shared. She was happy for her books to be visible to her daughter, but doubted there was much overlap in their reading interests. Jokingly, she suggested having a shared library would allow her to monitor her daughter’s school reading and the amount of money she spent on books. Tamsin did, however, see Book-e as giving her the opportunity not only to combine her book and e-book collections, and series in particular, but also to get a joint view of books that were currently spread between her two bedrooms at her mom’s and dad’s houses. While she spent most of her week at her mom’s, she had most of her books at her dad’s, which is also where she did most of her leisure reading. Similarly, Niall and Kyna would have one shared shelf, but otherwise keep their books separate in personal accounts. While they didn’t mind their books to be visible to others, requiring users to sign in would prevent others in the household from ‘shuffling things around’. The remaining participants intended their shelves to be shared. Spencer would leave the organization up to Alice, who in turn, would enjoy organizing as a shared activity, because ‘it gets you talking about books and their relationships’. Spencer could see himself ‘spending/wasting’ a lot of time organizing their shared collection, a form of procrastination he surmised. So while he was clearly drawn to the activity, he was possibly concerned that it might not benefit him in any tangible way. With the exception of Niall and Kyna then, the organization of the Book-e library largely reflected the household’s current organization schemes, where book ownership was mixed on the shelves.

The ability to create an infinite number of shelves and to replicate titles across shelves inspired participants to use the shelves both for topical and activity based organization. Ada and Frederick would use their shelves to create different genre categories (e.g. 'technology', 'romance', etc.), and Tamsin would organize her books similar to how they were organized on her bookshelves (e.g. series, animals, etc.). In addition, Frederick would have his 'top 10' books on the top shelf, presumably for better visibility and/or access. Spencer, on the other hand, was interested in exploiting the device's digital affordance of replicability and wanted books to go on multiple shelves in order to 'complete collections in a certain area' and because *the books talk to each other in different ways in different places*. Thus seeing his books and e-book together allowed him to organize his 'past reading space' by placing' e-books in the context of the collection of read books: *if we're talking about memory about what you are reading, then it's kind of a way of remembering what you are reading at different times, then having these books incorporated because otherwise there's no tangible evidence of what they were or what they are called*. Niall was similarly interested in organizing his books to reflect on what he was reading vs. what everyone else in the household was reading. In addition to topical organization, activity based organizations included shelves for 'leisure' and 'research' (Ada), as well as a 'to borrow' (Cait) and a 'to read' (Kyna, Cait) shelf. Similarly, Tamsin would like to be able to highlight books to read later. Both Frederick and Spencer didn't tend to plan their future reading, but liked to pick books 'in the moment'. Still, Spencer suspected that having his entire library visible might make him more likely to read certain titles when it came to picking the next book to read. Using shelves to plan one's future reading also tied in with future ownership. Tamsin, for instance, would like a bookshelf for books she wants, but doesn't have, as would Cait and Frederick who currently kept Amazon wishlists for titles they might want to get as they needed time to ponder their decision. Similarly, Alice was interested in compiling reading lists in Book-e around a project, theme, or interest to create a 'scrapbook of future reading' of some sort, consisting of both books she had and didn't have. She currently kept track of books she might want to read in a more general paper notebook.

Several participants wanted to receive recommendations through the device. As recommendations would be based on the books they owned and read, they expected them to be more accurate than those they received from Amazon. Alice was particularly interested in receiving pointers relevant to her wishlist/reading list, and Niall wanted his past reading to be analysed for recommendations for future reading, either as a continuation or divergence of past interests: *Seeing themes across books, so something that might help you pick future books that you'd like to read, or both in like staying within the genre or staying within a specific type of book but also moving out of it*.

Visualization

People obtain information about their book collection at three levels: the library, the shelf, and the book. What information people should be presented with at each and how they complement each other is crucial in enabling meaningful interactions with and through the device. At the library level, people get a sense of the amount of books they own. This information is implicit in the visual representation of the number of shelves and books on each shelf. At the shelf level, there is information about the author, book title, and number of pages (width of the spine is indicative of the number of pages). Finally, at the book level, people

can see the book cover, its author and title, publisher and year, and on flipping it to its back, a synopsis and reader comments. This section is less about how people would like the information to be presented than eliciting what type of information people are interested in. Giving people a particular example should help them reflect on how they would like to know their books as individual artefacts and a collection.

Again, much of the information participants were interested in was reading related. Tamsin, for instance, was particularly interested in the length of a book, as she preferred longer books over shorter ones and planned her reading accordingly. Spencer wondered whether the blank spines created 'a level playing field', making *each as interesting as the other, which would then mean that your interest would be drawn by different things, which would be a different sort of experience altogether*, whereas Alice relied on the covers and spines as visual cues for locating books. Ada was interested in learning about her reading progress on individual titles, e.g. by showing a book as half full / half empty, as well as the download date for individual titles as a way of keeping track of her reading: *[I don't keep track of my reading] as much as I could or should. That might be an interesting one, yeah, but at the moment, it's all in the back of my head*. Frederick was also wanted to see some 'basic data' to monitor and adjust his reading, including the genres he had read in the past and whether he had any unread books in his collection: *Just to tell you if you have acquired books, but never read them, or if you only read reference or fiction or if you ever read anything else*. Similarly, Niall wanted some quantitative information about his reading activity, including when he started and finished a book and the time it took him to read it. The information was to give him *a sense of how engaging [the book] was, your relationship to the book and to the story*, whereas Kyna who identified as a 'slow reader' clearly rejected this idea: *I wouldn't want that. Rub it in my face that it's taken me a year to read a book*. With respect to his collection as a whole, Neill also wanted to 'pinpoint' when he read a book: *Like you know some books that are my favourite books, and times that I've really remembered parts of it, you know, while I was travelling, or read that when I was in so and so, so it becomes like a memoir thing as well*. Spencer's interest related less to individual titles than the relationships between them. He was keen to see a visualization of his past reading as it could *make you contemplate what you read and their relationships, I'd be very interested in seeing that, cause it would allow you to step back and see books in relation to each other and also [in relation] to time and space*. Alice, on the other hand, wanted to take a more active role in curating her past reading through the Book-e library: *being able to incorporate [books], but with a common place, [so] that you have this kind of scrapbook. And I would want to be able to write something or slot something in, so you could look back on it, and maybe pulling out things you've liked in it or you've responded to in a certain way, or if something you've read, kind of made you think about something else, just being able to curate it, I suppose*.

Using Book-e Covers

Participants were split over whether they would create Book-e covers for display. While some participants appreciated having their e-books visible among their physical books, many worried about them taking up space on their shelves. Spencer: *I quite like seeing the tangible thing, I probably would quite enjoy that actually. I think maybe if they were quite nicely designed and even nicely designed in a different way than physical books, that would create the desire to have them on the*

shelves. It was for 'newer novels' he thought it would be *nice to have some kind of representation*, as well as out of copyright books for which it felt *appropriate to get an aged representation on the cover, to make some kind of correspondence between form and content*. At the same time he 'worried about space', *'cause we do have a collecting habit that's a bit of a problem; we need somewhere to put everything so yeah, I don't know*. Similarly, Neill liked being able to 'visually see what e-books you have as well', but wanted the Book-e covers to take up less space, like a card index to flick through: *If you can make it like nearly as thin as vinyl record sleeves, you could fit many of them of the shelf. I think that's part of the problem with books and stuff; once you've done with them they just stay in your home, whereas if you could get hundreds and hundreds of e-books you'd be able to store them really neatly*. Finally, Ada and Frederick didn't think they would have Book-e covers on their shelves, *mainly for spatial reasons, and also 'cause I'm quite messy* (Ada), and Frederick: *I guess that's the whole thing about eBooks; not have millions of stuff on your shelf*.

In addition to using Book-e covers for display, they can be attached as covers to the Kindle to show what is being read on the device. Apart from serving as a visible reminder to readers, it also acts to show others inside and outside the household what is currently being read on the device. 'Advertising' one's reading to strangers was both intriguing and worrying to Spencer who liked 'the anonymity of reading': *I do enjoy looking at what other people are reading; maybe if I go and talk to them, then we'll be friends, and of course I don't, but it is nice having just that connection with strangers, I s'pose letting them see something too. [] I like to talk to people about what I'm reading, but [] if it was actually on the cover of the Kindle then, yeah, I think to put it on while I was reading, maybe I wouldn't do*. Similarly, Frederick wouldn't 'take the trouble' of printing and attaching Book-e covers to his Kindle: *What happens if you change your mind and read another book? I would rather show other people what I am reading through the device than having the cover on my Kindle*. Niall was concerned changing covers might become tedious: *I really like the cover, but changing the cover all the time, like if it wasn't a really easy thing to do, it would annoy me. It's like the sleeves on hardback books you get sometimes, I often throw them away*. Rather than have the covers reflect their reading, Alice and Cait suggested using them for 'decoration': *If I did have the cover I would probably end up keeping the same one that I liked for multiple, so it would not necessarily be what I'm reading, but a book that just looked really nice to decorate it with, 'cause, yeah, that seems quite nice, and if there was an edition of a special cover that was in this format for a digital edition, that would probably make me want to get it*. (Alice). And Cait: *I think it's quite cute. It's like putting different covers on your phone. I think it's cool to do. I feel like it's a fashion that might take off...if it's easy*.

A third option was using Book-e covers for sharing and gifting e-books. Being able to give e-books as a 'physical thing' that can be annotated appealed to many. Alice and Spencer: *I think that would be a good thing, if it was a present, to have something physical to mark that gift, so that would be something that would make me want to put it on the shelf. [] Even it's quite nice way of buying it for yourself as well, like, if you go to bookshops and buy... yeah, that that was a different way of... And make the design special like with a bookplate just something to make it special*. Niall and Kyna, too, thought it was 'much nicer' to have 'something physical' to give. It would make them more likely to gift e-books: *And if you're posting, for example, like to friends its light but it's also still something solid*. Frederick and Cait, on the other hand, although they thought it was 'a nice way to make a present',

they would still prefer to give physical books: *No, I really like physical books. I really am into e-books because they are free. I can see the point of the Kindle for holidays 'cause you can't take physical books, but other than that I think I'd quite like to have a physical book.* Obviously, giving e-books required identifying recipients that read them. Cait thought she might give them to Frederick, her parents, brother and friends who use Kindles, whereas Ada thought the number of friends and family who read e-books was 'limited'.

Sharing Books and e-Books

Learning about Other People's Reading

Book-e was designed to allow members of the household to learn about the reading of others within the household, between households, and in public. There are two ways in which people can learn about other people's reading through the device. One is through the 'reading feed', which shows other people's current reading by displaying the book covers on the screen when the device's lid is closed. The other is through directly browsing someone's library (if shared).

From within Households

Again, Ada thought there was a 'disconnect' between what she and her daughter were reading: *I'm quite up for discussing books. I just think it's just the difference in reading styles. I think her fiction is kind of, not quite the kind of fiction I would be reading, and I don't think my fiction is sort of what you'd necessarily read.* Tamsin whose dad was 'more of a bibliophile' would be interested in being able to see his library: *I don't know, I feel that in some ways it would be more useful with my dad, because occasionally I'll get a book and he'll already have it. So it's useful to know whether someone already has a book which I'm thinking of getting. And also, because like for research, he has quite a lot of books. Most of the time I don't particularly feel like walking around the house going 'Have you got this? Or, have you got that?'*

From Family and Friend Households

There was limited interest in learning about friends' and family's reading activities through Book-e as *that usually comes up in conversations anyway* (Niall, Spencer, Ada), because there was a *pleasure in not knowing before you see them 'cause it's something to talk about* (Spencer), and because it was *so much more verbal anyway* (Ada). An exception to Ada were *special friends who are apart by distance or whatever, like Sam's in America and Sharon's in Johannesburg, and that would be interesting 'cause I guess what links us is literature and books and things like that.* Frederick was interested in his best friend's and brother's reading as they were reading books he was 'quite likely to enjoy the most'. In addition to following someone's reading activity, there was some interest in looking at other people's bookshelves: *It would be really successful, like, if I want to get a book for someone for someone, but I don't know if they already have it. I have often asked a friend or partner to go and have a look to see if they have it* (Spencer).

From the Public

More so than learning about friends' and family's reading, participants were interested in public places and figures. Among public places, participants suggested cafes, bookshops, public libraries, and schools as a way of gathering 'what the vibe is': *I can see that thing being there, interacting with it more, 'cause I*

think that would be a pull, certainly to someone like me, to maybe once a month find out what's trendy. [] It could also tell you where you want to go or what's happening. Yeah, that'd be quite good. In addition to cafes, Niall thought it would be quite cool if you could pinpoint locations, especially thinking about social events that are happening I mean like large changes, if you go to Syria, what people are reading in Syria that might be very interesting, sometimes it might be very predictable or whatever, but other times it might be really into it, it might allow you to get a richer sense of what that country is experiencing. That'd be cool and if you could do it chronologically as well. Tamsin saw a role for Book-e in sharing recommendations within her school: Often schools get you to say like, what was your favourite book this year, and why did you like it, and why would you recommend it, so that might be cool. Spencer was reminded of his intrigue in a visualization of loans at the British Library: you could see what books were being checked out and so there is a kind of visual graphic and that's kind of interesting and provoked a lot of jealousy like, 'oh I want to read that!' as each one popped up and this was the British Library, so there was quite a lot of obscure things, that of course makes them more interesting.

In addition to public places, there was some interest in public figures, such as writers, critics, or experts in a field, and public groups, such as book groups. According to Alice, learning about an expert's reading, for instance, was a way of gleaning their insider's knowledge: *Someone who's an expert, I guess, who knows a lot about a certain subject, to know what they are reading, if they're prepared to share that, then you're obviously going to benefit from it. It's just like a reading list, I guess; it's someone I know that I trust their opinion, 'cause it's hard to find things. It's kind of like a service thing, where you can be, 'ah ok'. It's an easy place I can go to get a trusted opinion. And there are notes on how they found it as well. Spencer, on the other hand, while interested in learning about a writer's library, speculated whether his interest was voyeurism: It's kinda like if you are reading a biography or something and knowing somebody's library is very interesting. I s'pose I would be quite interested in people whose writing I admire what they were reading, but I'm aware that quite often those people recommend stuff to Twitter. The opportunity is already there, which I don't [take] so, but it does feel like a bit of a peeping thing to do, yeah, it's purely nosiness, that is why I want to know what other people are reading. Neill was more interested in family, friends, and colleagues rather than 'famous people', possibly because he couldn't be sure that it was actually what they've read and not just a marketing tool. Both Ada and Alice were interested in learning about book groups. To Ada, the feed would give her a way of deciding which one to go to: *I'm quite promiscuous about that, I'd have about three book groups on the go and find which one is most interesting, whereas to Alice, like for Spencer, it was a way of learning about a subject area: Perhaps you could be part of a group on some particular subject and there would be kind of, yeah, maybe if it wasn't an individual, but a group thing that I could go into, if you were thinking of a particular thing and you could browse through that, as it was for Kyna: being pregnant, it would be great to have something like this, interesting articles that people are reading and being able to share things like that, specific topics, prenatal stuff and Tamsin who would like to receive recommendations through the device and know what others said about a book: I think it would be more groups of people knowing what they like and a bit like people who looked and this looked at this.**

Sharing One's Own Reading

When it came to sharing one's own reading with others, there was a spread in responses in terms of what to share and who to share with. Niall currently only

‘actively’ shared his reading in a professional context, but said he ‘wouldn’t mind’ if anyone could see what he was reading as long as it was done passively, *if it came up automatically, if it just like every time you read something popped through, but I wouldn’t really like to actively do stuff, I wouldn’t have to go ‘this is a great book’*. He was particularly thinking of sharing his reading with his best friend in New Zealand: *We often read quite similar things*. Cait was equally happy to share with everyone as she didn’t feel her reading was ‘private’. Other participants were in degrees more guarded about what they would like to share, and with whom. Kyna was generally happy to share with ‘everyone’, but might keep particular titles on a private shelf: *if you are reading about personal things, I don’t know, say if you were suffering with your mental health, low mood or something like that and you were looking at something about counselling, or something that maybe you wouldn’t want everybody or even your close friends and family to know about or, yeah, people in the home*. Similarly, Frederick was concerned about others knowing about particular books: *I would not scan all of my books, ‘cause then all could see...I might be ashamed of some of my reading, like all three trilogy walking dead books! I don’t want to share everything*. Cait, on the other hand, *had some in the past, but I’ve recently had a clear out to the charity shop, so now I’m all clean!*. Ada, while happy for her family to see her library, both Ada and Tamsin would limit their sharing to their current reading (from the last two to three years), mostly as a matter of concern over whether their reading was relevant to others: *I think I’d be sharing what I’m currently reading rather than what I have, [when] I particularly really like a book, because there are a lot of books I’ve read and some of them are fairly unremarkable*, a concern Cait shared: *I mean, I think a few people, not that many, ‘cause I guess I mainly read gardening books, and they’re obviously fairly specific, so I don’t know how interesting that would be for a lot of my friends*. Finally, Ada would limit public access to her library to *my top three books or whatever*, ‘cause I would probably be a bit more guarded in terms of what books I’ve read. *I don’t think there are any books that I read that are terribly controversial, but once it’s in a public place, I guess you curate your own image in a way. So you curate what you show people in terms of what you read*.

Finally, several participants were reluctant to share any of their reading. Tamsin, for instance, was worried about her reading being monitored by her mom: *I don’t really see a point in sharing my books with my mum. She might say, ‘I’m not sure I want you to be reading these books’*, whereas Ada insisted that she wasn’t ‘bothered’ and ‘quite laid back about what Tamsin read. Jokingly, she suggested to *put all your academic books on the shelf and say have you read them?! I mean, I’m not bothered, I mean book reading should be social. I think that thing about knowing how much there are... just to see how much money you’ve been spending on books recently*. Finally, Spencer was more generally wary of how sharing on Book-e might contribute to a culture of ‘oversharing’: *I don’t think we have that much desire to share. I s’pose in social media there’s that sort of strain, I think it’s to do with a pressure thing, because there so much social media about, it’s more like the private spaces I want. I feel like there’s enough of what everyone else is doing and there’s no way you can keep up with that anyway, so it’s more about what interests me just now. That’s my gut feeling to it anyway. With the covers I would be quite interested in seeing what everyone else is reading, but I probably wouldn’t up hold my side of the bargain, yeah and I wonder if that’s something to do with how we use social media. We tend to be creepy voyeurs. We fall into this particular character on social media. I’m sure lots of people would love to do this. [] I think I feel a bit wary of my own tendency to bang on about my reading, and my reluctance to share is also a*

worry that I might share too much, you know? If I was to start like advertising what I read, I'd worry that I was doing it [for] reading to share, rather than reading to read, if that makes sense. To Alice the way the device facilitated sharing was incompatible with how she shared books: *I s'pose it's a kind of process when I read, that I hope it will change me, and I feel that that's the important part, and hopefully that will impact and that might come up in my life somehow, but it's not a sort of one off thing I'm doing, reading this and it goes up on the [feed] and then I'm going to move on. I s'pose it's the context of sharing that would spark an idea or a feeling or a thought or whatever, but if you just have long list coming your way of things, then it's...*

In discussing the aims of sharing, Ada saw Book-e as a prompt for talking to visitors about what she was reading: *Chances are if friends were over, it'd be what you are reading and I'd be able to have this discussion and the visual would actually make it quite interesting as a discussion point. [] If I had friends over, which on occasion I do, it would be like 'what are you reading?' so it would be a discussion object*, and Cait thought it might mediate borrowing and lending books among her friends. She would have a 'to borrow' shelf to let others know what books she's interested in obtaining and allow others to borrow from her device: *I guess if I could share with some people that were not with me, like with friends, and then they would have access to my shelves and they could go through my books and say, 'oh god you've got this one' and I could do the same with their library, that would be quite exciting*. In addition, Book-e might help her keeping track of her lending: *you just kind of forget about it, but then a month later you what to get it back, it would be kind of cool to keep a trace of that*.

Placing the Device

Book-e was designed to be placed flat on its back for showing the 'currently reading' stream, to be picked up for browsing one's library, or to be stored away upright on a bookshelf. Asking participants to place the device in their homes was to give an indication of the role they saw it taking in their homes.



Figure 6.21: Ada and Tamsin suggested placement on the coffee table in their living room.

Two households placed it flat on tables: Ada on their coffee table in the living room *cause that's the interaction point* and Spencer and Alice on their table in the kitchen, where they eat, sit down to work, and where we did our interview.



Figure 6.22 *Left:* Spencer and Alice’s suggested placement of Book-e is with the other current reading on the kitchen table. *Right:* “Maybe put it down next to the lamp if it’ll fit. Yeah, I think somewhere like that would be perfect.” (Niall and Kyna)

Tamsin saw it going flat on her bookcase in her Dad’s house where she spends most of her time reading on the weekends: *I’d probably put it somewhere like, near where other books were.* Unlike Tamsin, who would place it flat to see the feed, Niall and Kyna placed it upright on their bookshelf in the living room: *I would probably put it on the bookshelf with the books, especially if it has that visual cue, like currently you have it styled like a book so, somewhere communal especially in this house ‘cause we have a flatmate, we wouldn’t just leave it in our bedroom, for example. But maybe if it was just us, in the bedroom it might be... But then still I think I would set it on the bookshelf, because it would be a productive thing like ‘I’m doing this now’ not like a massive thing reading is.* To Kyna then, Book-e was a dedicated reading planner rather than for keeping an awareness of other people’s reading activities: *But even if that device could just sit on the shelf, for example, like in a communal area in the kitchen or in the bathroom, you know, ‘cause then you can just use it to select stuff from. It becomes like a universal selecting device, yeah, trying to think of it like that.*



Figure 6.23: *Left and Right:* Frederick and Cait placed the device on the back wall of their bookcase (C): “I guess I might put in the bookshelf like in an obvious spot.” or on the wall next to it (F): “So you can see the screen.”

Finally, Frederick and Cait’s suggested placement was in their living room, because *it’s more communal*, they spend most of their time there, it’s *where you relax and*

stuff and where they *read quite a lot in here as well, on the sofa*. Specifically, they chose to attach it to the wall next to their bookshelf (Frederick) or at the back of their bookshelf (Cait): *It looks like a terminal. If you have got it on that wall, if it was on a smartphone you could plug it in, then you can Skype from it and listen to music and stuff and [] then you can have all your books and audio speakers. Like everybody can come and use it in the house, but then you can also take it with you in the cafe and share*. In doing so, Frederick clearly wanted to return Book-e to its former life as an iPad.

6.5 Discussion

6.5.1 Book-e Library

Negotiating Ownership

Book-e seemed to facilitate the negotiation of ownership over the shared library in a number of ways. First, by curating their library through the *inclusion and exclusion* of particular titles in and from the library, participants were able to re-create how they wanted to be seen by others, such as when leaving out ‘embarrassing’ titles, or only adding favourite and recent books. By not adding any books to the library participants were able to reassert mental ownership over their books, as Spencer might have done when saying he already had a good idea of what books he owned. Second, ownership was negotiated through *visibility and access*. Participants drew on several levels of sharing, such as creating personal and shared shelves that were marked in terms of ownership (‘my shelf’, ‘your shelf’, ‘our shelf’), but visible and openly accessible, as well as several versions of closed and open shelves, some of which were visible, but inaccessible (‘you can look, but don’t shuffle them around’), or both invisible and inaccessible (‘I don’t want you to know about these books’). Finally, participants displayed ownership by *bringing disparate collections together* in the Book-e library (e.g. series) that were currently stored separately, either due to their format (books and e-books) or location (e.g. at books mom’s and dad’s). Participant then didn’t simply replicate the way they organized books in their homes, but drew on the on the affordances of Book-e to create alternative forms of ownership through inclusion and exclusion, visibility and access, and joining disparate collections, while at the same time offering the potential for reflecting and re-negotiating their relationships inside and outside the home.

Past, Present and Future Reading

Participants intended to organize their books and e-books in Book-e so as to support past, present, and future reading. First, Book-e collections were seen as an opportunity to curate one’s past reading space through the *placement and annotation* of titles in the collection so as to create new relationships between books. This new organization didn’t merely reflect the participant’s organization on the shelf, but created a new organization that drew on the e-book’s affordance of having several instantiations, in which a particular title can become part of multiple collections. Here participants were hoping to actively re-engage with their books and re-think their relationships in interaction with other members of the household, and by implication, broaden and deepen their understanding of them. Organizing one’s library collaboratively was to spark conversation about books and their relationships, thereby creating the potential for the co-creation of meaning that goes beyond any individual’s understanding of their past reading. In addition to active curation, participants envisioned Book-e making available

information about their past reading, such as by *keeping track of their reading process* in terms of showing usage data (e.g. when the books was bought, started, and finished, time to complete, etc.) and contextual information (e.g. where the book was read). This passive creation of a reading space was to serve participants as a memory prompt for active reflection on the past surrounding the reading of a particular title (e.g. a holiday in Greece), as well as to create new meanings around one's reading, such as 'how engaging a book was' or to position one's reading in relation to that of other members of the household.

Second, participants organized books for future reading. This included highlighting books to read later by creating a 'to read' shelf for them, including titles they didn't already own, thereby envisioning a space for the future ownership of books, whether through purchase or borrowing. This space took the form of a 'wish list' where participants could add titles they considered obtaining in the future, or the compilation of 'reading lists' around a certain topic or project. Most online book retailers already offer the option of creating wish lists to their registered users. However, what is different here is that these 'to be owned books' are not merely titles in a list, but have a place on a shelf in the library, and thus are able to support the planning of future reading in the same way owned books do (e.g. through replacement). In addition to the active planning of one's reading, the library increases visibility for readers to pick future readings among their full range. Finally, some participants wanted Book-e to provide reading recommendations based on their library. Given that Book-e may contain a complete library of books, including books and e-books, as well as titles they wished to own, participants expected recommendations to be more accurate than those a book retailer or e-reader alone could provide.

Finally, the visualization of the library was to support current reading. For instance, the spines of books should reflect their physical version so as to serve as visual cues for locating titles and individual titles should indicate progress made (pages read) in addition to length (number of pages). This was to help participants in choosing titles to read (e.g. 'I prefer longer books') and keeping track of their reading when reading multiple books at a time. Many of these features are already available on the Kindle, albeit in a different design. There was some expectation that Book-e should support reading on the device so as to be all-inclusive and make obsolete the need for a dedicated reader. Book-e was designed to augment the current e-reading ecosystem rather than to replace e-readers. As a stationary device enabling reading on Book-e runs counter to much of what readers value about e-books, i.e. their mobility and being able to read across devices. More generally, while there is clearly space for improvement in the design of current e-reading devices (as discussed in chapter 5) the design of an alternative e-reader is outside the scope of this thesis.

6.5.2 Book-e Covers

Things vs. Tokens

Participants appreciated the tangibility Book-e covers provided to e-books, but were concerned about them taking up space in their home. As all participants owned books this suggests that the book form cannot be divorced from the book's instrumental role as a reading technology. In other words, the fact that books take up space is accepted and justified because they can also be read. What participants consequently suggested was that Book-e covers would have to move away from

being tokens of e-books to becoming objects in their own right. Specifically, their design was to create the desire to own them, as experiential objects and abandon their role of making e-books visible in the home as representations of particular e-book titles. At the same time, participants were wary that their new desirability may exacerbate an existing collecting habit, thus negating their space saving intentions. Another suggestion referred to the miniaturisation of the covers, again at the expense of allowing Book-e covers to be part of the existing ecosystem of books. Not being able to stand up alongside and in relation to books on the shelf, Book-e covers, and by extension e-books, would be forced into establishing yet another parallel system that exists largely isolated from books. As a way for viewing and building one's collection the Book-e library was clearly preferred at least among those interviewed. Since books commonly build their value as objects over time – as they accrue a social history – it is possible that Book-e covers may do likewise.

Display vs. Sharing

In discussing Book-e covers for reading, there was a sense that changing Book-e covers to reflect one's current reading was too burdensome. Making the covers 'easy enough' to use is a matter of tweaking and testing. A more fundamental issue is the question whether the concern was an expression of a more general reluctance to put e-book reading up for display, whether it be before, during or after reading. Some participants leant towards the digital display of their reading through Book-e instead. In contrast to the local display of one's reading to one's immediate environment via Book-e covers, the digitally networked display through Book-e requires users to specify whether their reading is shared discretely or by default, and with whom. Still others preferred the explicit verbal communication of what they were currently reading, giving them ultimate control over what was being shared, with whom, and how. To be sure, the display of one's current reading through Book-e covers only affords situated interactions, inside and outside the home, but it doesn't guarantee them. Thus mediated sharing, whether done remotely or locally, and verbal sharing shouldn't be treated competitively, but can complement each other. As an alternative to displaying their current reading participants suggested giving Book-e covers a decorative role, thus divorcing their design from the content being read on the device. This not only enables the concealment of one's actual reading activity, but allows readers to communicate to their environment a curated reality, for instance, in showing one's favourite book cover. This suggests that observers may benefit from Book-e covers more than readers in that we all want to know about other people's reading without revealing anything about our own. There's a conundrum here: what is there to take (observe) if no one is willing to give (display their reading)?

Physical vs. Digital

The tangibility Book-e covers gave to e-books certainly mattered when it came to gifting e-books. It was their affordance of being able to be annotated that most appealed to people, and possibly a sense that an e-book's value increased due to the covers having the potential to be valued as artefacts in their own right, either as gifts or when purchased for oneself. Still, giving a Book-e cover or e-book token didn't seem to live up to giving physical books as many participants still preferred to give books if given the choice, either due to their own preference and/or the recipient's presumed preference for physical books. To them, like for many people

in the previous studies, e-books occupied a niche role, and thus didn't lend themselves as replacements for books.

6.5.3 Sharing

Learning from Experts

Looking at who participants intended to share with, we found a concern for a lack of shared interest, or conversely, participants already had established practices for sharing in their household. Outside their own home, participants showed some interest in being able to see the libraries of their friends and families to find out what they had for identifying gifts or books to borrow, or out of 'voyeurism'. With respect to learning about families' and friends' current reading activity, again, many felt it was already part of their conversations. The exception were people who shared reading interests. Many were able to identify one or two friends or family members who read 'similar books'. Learning about the reading activities in public places or by public figures certainly evoked the most interest. Being able to follow what was being read in particular cafes, libraries or even countries was a way of finding out about the 'vibe' or mood of a place, or current reading trends. With respect to public figures, participants were hoping to glean a professional's interests (e.g. of favourite writers) or insider knowledge (e.g. of an expert in a particular field) by following their reading activity, thereby identifying books that are pertinent to their own interests. Finally, participants showed some interest in learning about the reading activities of certain communities of interest, such as book groups, either in order to decide over whether to join, or again, for tapping into their insider knowledge. What made public figures' readings possibly more attractive than that of participants' own or connected households was the prospect of a 'trusted opinion' on a topic. Certainly, many participants had people in their own networks whose opinion they trusted, but being able to get an expert's opinion without having to know them is valuable indeed. Not knowing the source personally, however, brought with it the danger of inauthenticity: it is hard to know if the interests and knowledge they shared was genuine or merely 'a marketing tool'. Obviously, the problem of establishing the trustworthiness of an online source is not specific to book reading, but to online social interactions more generally, and beyond the scope of this thesis.

Curating the Self

When it came to sharing their own reading with others, participants considered several degrees of revealing their reading to others. One form of sharing was the open, but passive communication of one's reading activities to others. Here Book-e would automatically post one's read titles for anyone to see without the reader's intervention or need to voice an opinion about a particular title. Other forms of sharing allowed participants to maintain privacy over some of their reading. This included sharing with selected individuals, keeping certain titles private, or only sharing one's current reading or favourite books. In actively rather than passively sharing their reading, participants were able to address concerns over projecting a self that is at odds with their desired sense of self, over revealing sensitive personal information (e.g. relating to one's mental health), over being monitored (e.g. by one's parents, and thus impeding the development of an independent self), as well as doubts over whether one's reading was relevant to others. With respect to sharing one's own reading then it was essential that readers retained control over how their reading was presented to others and themselves.

Questioning Sharing

Discussing the participants' motivations for sharing raised the issue of how Book-e may be contributing to a culture of 'oversharing'. Being able to readily and widely communicate one's reading activities may incline readers to be drawn away from reading as an experience towards reading as a means for sharing. Rather than relishing a book for its own sake, and the ways in which it may contribute to the development of a 'complex self' [39], we may become more focused on performance measures, such as the numbers of books we read in a year, or the number of poetry books among them. The concern raises a more general question about what we mean by sharing. In the context of Book-e we may ask whether broadcasting one's reading constitutes sharing. It might be that rather than engaging in a give and take, we are allowed to become voyeurs, or, since sharers are at least aware of our presence, passive observers: we watch, but don't participate. Instead, one participant argued, sharing should be considered a process rather than a discrete action. The participants' tendency to tap into the reading activity of the public, while at the same time being more willing to share their own reading with friends and family, suggests two of the roles sharing has in promoting knowledge exchange (instrumental) versus intimacy (experiential). Finally, the sharing of reading activities was not the only way in which Book-e facilitated sharing. The device itself was seen to prompt discussion with visitors to the household, as well as having the potential to facilitate sharing through borrowing and lending of e-books directly through the device or to organize the exchange of physical books.

6.5.4 Placing Book-e

Book-e was designed to sit on a bookshelf or a table. Book-e was placed in communal areas of the home, such as living rooms and kitchens¹⁵. Within these spaces, Book-e was placed on tables, on bookshelves, and walls. Each of these placements suggested a different framing of the device's main role in the home, which was maintaining an awareness of the current reading activity feed (table), as a dedicated reading and planning device (shelf), and as an entertainment system (wall).

6.6 Further Design Directions

In light of these findings we can now envision some further directions for the design of digital technologies supporting everyday social interactions around books and e-books:

- **Ownership:** Book-e was designed to be shared by all members of a setting. The findings revealed that while participants were happy for the device to be shared they were reluctant to give up ownership over their personal collections even within the same household¹⁶. This suggests that the design will need to make some provision for people to mark collections as personal and control their access and visibility. We may thus think of 'private', 'public' or 'shared' bookcases within Book-e, or alternatively, enable people to manage their personal library through a

¹⁵ Tamsin was the notable exception here. As a teenager she will seek her main connections outside the home so as to be able to develop an independent self.

¹⁶ Although this seemed to depend on how much overlap there was in the members' reading. Alice and Spencer, for instance, retained mental ownership over their books, but kept them in a single shared library.

personal device, such as a smartphone application, and retain Book-e as a shared access point of a setting's shared library. While adding e-books to the physical library seemed less appealing, people valued the opportunity to include physical books in their digital library, especially if books were kept in multiple locations. This not only enabled people to obtain a unified view of their library, but also opens up the opportunity to view their library through different lenses (e.g. 'books I read last summer', 'books both me and my friends have read', etc.).

- **Reading Process:** the findings showed that there needs to be support for people to manage their past, current, and future reading. This is done through the building of more ephemeral collections that transcend the building of more permanent collections, such as based on genre. Revisiting one's past reading allowed people to reflect on and re-frame their reading as well as reminisce about the past context in which the reading occurred, such as a holiday or exam period. Reading histories thus need to provide rich contextual information so as to evoke memories of the content of the book as well as the context in which it was read. This information will likely need to go beyond the provision of metadata, but include a combination of system and user-generated data. In terms of people's current reading, detailed information relating to one's reading progress on an individual title will be key as well as keeping currently read titles visible in the home so as to prompt readers and invite discussion. Finally, when planning their future reading people need to be able to include both owned and wished for titles, as well as receive reading recommendations from trusted 'experts' whether they come from algorithms or members of the public. Wished for titles can come from several sources, such as being borrowed from a friend or bought from a retailer. In the absence of a subscription service we may even think of a digital peer-to-peer lending library and e-book swap. Wished for titles are also part of one or more 'to be read' collections within the library.
- **Sharing:** the sharing of books seemed to take its most common form in conversations with family and friends. Sharing one's own reading activities with others raised some concern about a lack of interest from recipients as well as about engaging in a culture of 'exhibitionism' and 'voyeurism'. Anonymous sharing might mitigate this problem, particularly when sharing in a public setting. In a digital technology context sharing has certainly become an umbrella term that possibly homogenises a broad range of sharing practices and processes by reducing them to the discrete action of sending information from one person to another, often without receiving anything back or the recipient being a corporate server. Indeed, sharing can take multiple forms and is not so much a practice in itself, but a collection of practices. We can share books by talking about them, lending or borrowing them, gifting or bequeathing them, etc. In being geared towards the building of relationships sharing is also an on-going process and implies some degree of reciprocity. As we stop sharing our relationships will start to deteriorate. Sharing, too, typically involves the loss of some resources, whether they be mental, physical or material. While Book-e's focus was on broadcasting one's reading activity the feed aimed to primarily act as a prompt for discussion around books and reading in the home and in public. While there was little interest in using

Book-e covers for displaying one's reading activity, they do have some potential for supporting the gifting of e-books through personalisation. As designers we thus need to consider carefully what forms of sharing our designs encourage and how they affect our social relationships.

6.7 Conclusion

In this chapter I presented a reflection on the design process around themes emerging from the empirical studies on the uses of books and e-books in everyday life. These early explorations led to the articulation of a design exemplar of an interactive device that supports the bridging of physical and digital book collections and the sharing of one's reading activities at home and in public. The aim was to offer opportunities for making digital reading more visible and tangible inside and outside the home so as to foster social interactions around and through books and e-books. A design analysis with four households revealed that participants specifically valued being able to manage their reading process across physical and digital collections, to be able to reflect on their past reading, and to plan their future reading. This involved learning about other people's reading as a way of receiving recommendations or simply learning about the 'vibe' of a particular place, i.e. the particular reading activities occurring in a place. Book-e was designed to be shared by the members of a setting rather than for individual use. However, within that or alongside that people needed to be given the option of carving out their own personal space. Book-e thus has the potential to support people in managing their own reading, but was less successful in fostering practices of giving, such as sharing one's own reading with others inside and outside the home, whether it was through implicit display or explicit sharing of one's reading activities, or the passing on of recommendations and gifts. With the findings from these three studies at hand I will now discuss some of their broader implications.

7 Discussion

7.1 Introduction

This thesis was motivated by an apparent disconnect between e-books having recently become a ubiquitous technology and a lack of understanding of its actual everyday uses. Through a combination of empirical fieldwork and design practice I set out to understand how e-books were finding their place in people's everyday lives and how their emerging practices changed their uses and orientations around books, as well as to imagine tangible alternative ways of interacting with and through books and e-books. In doing so, this thesis made four contributions to the existing literature of human-computer interaction:

- An account of the *situated practices* surrounding books and e-books across their consumption lifecycles, including their acquisition, organization, use, exchange, and divestment. This is in contrast to literature focused on reading, and particularly active reading in educational and professional settings (Chapter 4 and 5).
- An explication of the complementary nature of books and e-books based on their distinctive *affordances*. This is in contrast to literature treating books and e-books as antagonists (Chapter 4 and 5).
- A discussion of the distinctive *values* associated with books and e-books, and a re-framing of books as a social technology based around social uses, material forms, and spatio-temporal trajectories. This is in contrast to literature framing books as a (disembodied) reading technology (Chapter 4 and 5).
- An articulation of possible futures of books and e-books in the form of a *design exemplar* and design analysis of how it may change future practices and values. This is in contrast to theoretical speculations about the future of books and e-books and design explorations concerned with books as texts rather than artefacts (e.g. for storytelling and information access) (Chapter 6).

I will discuss each of these contributions in more detail below. Given the central role books play in the development of our selves, our social relationships, and our culture at large, it is also worth drawing some broader implications of the findings for the design of everyday reading technologies, and possibly everyday technologies more generally, with a particular focus on how they may contribute to our everyday well-being.

7.2 The Social Life of Books and e-Books

7.2.1 Books and e-Books are more than Being Read

The thesis provides an understanding of the uses of books and e-books across their lifecycles of use. It has thereby revealed the ways in which books and e-books are socially and materially embedded in a range of everyday situations or settings, both inside and outside the home. Rather than approaching the study of books with a preconceived idea of what they are for, i.e. reading, the studies ‘followed the human and non-human actors’, i.e. observed the ways in which books and e-books over time moved through and lingered in spaces, and interrogated them as material artefacts, and as expressions of human intentionality. Taking a lifecycle view revealed that books and e-books possess a distinct set of properties, which facilitate this range of practices beyond reading. The findings of the studies show that reading only forms one part of the processes and practices surrounding books and e-books. This broader ‘web’ of practices sometimes precede and follow reading and are often interleaved with reading. They include the acquisition, organization, placement, modification, preservation, exchange, and divestment of books and e-books, all of which impact on our experience of reading.

Specifically, books have a range of spatio-temporal, material, and social affordances. With respect to its spatio-temporal affordances we have seen how the placement of books around the home both reflects and supports processes of reading by categorizing them into future, current and past reading. For instance, currently read books were placed next to beds or sofas to remain accessible, thereby also indicating where these books were currently being read. Readers placed books as reminders and calls for action around the home, both for themselves and other members of the household, so as to encourage them to put a read book back on the shelf, return a borrowed book to its owner, or take to be disposed books to the charity shop. Books were placed for comfort to be accessible in sleepless nights on the bedside table or for home-making when moving into a new home. Taking books into distraction-free environments, such as a bedroom, helped readers channel their attention and moderate their privacy, such as when hiding work related books from view. Keeping books in bedrooms also helped preserve books for future use by restricting access to their owner. Conversely, by placing books in prominent locations in the home, people were able to express and further their aspirations and invite discussion and sharing. Placing books in relation to each other facilitated the generation of new ideas, for instance, by clustering books into collections of related content, provided quick access by allowing people to build a mental model of their library, and to renegotiate their relationships with others inside the home, for instance, by keeping one’s collection separate from one’s partner’s. Acquiring, keeping, and divesting certain books at certain times and in certain places aided the reflection on and reconfiguration of one’s past, present, and future, such as when building a collection of books to be read to one’s future children. People connected with others through buying books

together or re-organizing one's library as a social activity, through the sharing and gifting of books, aimed to socialize others, for instance, by passing on values and practices around books to their children, and to transcend their own mortality by bequeathing one's books to others. Among its material affordances are the book's capacity for collecting implicit (e.g. wear) and explicit (e.g. annotations) traces of use, which can act as an indicator of the quality or popularity of a book, as a record of use, as a way of making books inalienable (e.g. through inscriptions), help avoid creating an obligation to reciprocate (e.g. when giving a use book), to augment it (e.g. with notes), but also be a cause of concern as books can get damaged or lost (e.g. when lending them to others), and can make re-gifting them more difficult (e.g. when they are no longer pristine). Books can also be appropriated and modified to serve alternative purposes (e.g. for decoration or to keep a web cam in place) and their aesthetics can be valued as an expression of the craftsmanship, creativity or labour that went into their production.

E-books, too, are valued for the range of practices they afford. The at hand nature of e-readers supported both routine and opportunistic reading inside and outside the home, such as while waiting for the pasta water to boil or when waiting for a friend in public. Being able to use books with one hand enabled multi-tasking, such as when reading and eating at the same time or taking notes alongside reading. Its networked nature gave people an experience of immediacy: instantaneous and (nearly) ubiquitous access to new content opens up new opportunities for more seamless reading, such as when needing to download a new e-book on a holiday or when quickly wanting to move between books in a series. The availability of low cost or free content was one of the main drivers in acquiring e-books, as well as their taking up no physical storage space. Both of these aspects led people to read more than they used to, both routinely at home or because e-books were more likely to be taken on a commute or a longer trip away from home. They also invited the exploration of unknown authors, and possibly a broadening of one's reading. The 'hidden' nature of e-books inside devices ensures the reader's privacy, allowing people to feel more relaxed about their reading, particularly when reading in public. Having a library at their fingertips promoted choice and meant that people were able to match their reading to the particular moods and situations they were in, such as switching from James Joyce to a thriller when one's attention was divided over watching the children, or selecting shorter pieces to read right before going to bed. Finally, annotation, bookmarking and search facilities eased access to significant parts of a text that can be more easily drawn on during face-to-face discussions and the ability to adjust font sizes made e-reading more accessible to dyslexic readers.

In unpacking the practices and values around books across their lifecycles of use the findings stand in stark contrast to and augment the existing literature on books and e-books. Rather than being disembodied containers for text, books emerged as everyday material artefacts that are tightly embedded in the social and material ecosystem of the home. In doing so, they draw their significance not only from the content they carry, but from their particular material properties that give rise to not only specific experiences of reading, but also of being a member of a deeply social environment. E-books, too, while lacking many of the affordances of books, have a life before and after being read as they are acquired, organized, and shared with others. More so, as e-books find their embodiment in a range of surrogates of digital reading devices, these devices have a life of their own and just like books form part of their social and material environment. By unpacking the varied

situated uses of e-books in an everyday environment the findings also augment the literature in human-computer interaction whose focus has been almost exclusively on the practices and processes of reading, particularly active types of reading done in professional and educational settings.

7.2.2 Books and e-Books Complement Each Other

Related to this, I have shown that e-books have found a place alongside books in people's everyday lives in that they complement rather than replace books. That e-books are no suitable substitute for books (and vice versa) becomes apparent when we consider their respective affordances not in isolation but in relation to each other. In first adopting e-books and e-readers people go through a process of discovering their particular affordances, and in doing so, gradually find a place for them in relation to their established practices surrounding books. Just as these established practices will have informed their newly developed practices around e-books, so do any new digital practices change existing print based practices, and with it, the values associated with each technology. Thus book and e-book based practices and values are interconnected and mutually transforming. Finally, it needs to be noted that while so far I have focused on how the particular affordances of books and e-books are enabling certain practices and values, these same affordances give rise to undesirable practices thereby inevitably working against people's values.

In making decisions about whether to use books or e-books people take into account their distinctive affordances and the particular practices they give rise to, both desirable and undesirable. Being able to use a set of single devices to access a library of e-books, for instance, was offset by the devices' cost. Thus, reading on a Kindle in the bath, for instance, was considered too risky and reading on an iPad on the train too conspicuous. It further meant that devices were not readily shared with others, particularly if these devices held content other than e-books, such as tablets, smartphones and PCs. This was due to the inconvenience of losing temporary access to one's library and the reluctance to give other's concurrent access to private content, such as e-mail. Similarly, despite the ability to store a library of books on a single device, there is little support for managing large e-book collections or linking physical and digital collections to organize one's reading process. What enabled people to retain their privacy in a public setting also obscured their reading activities from people in their own homes, thereby removing an important point of discussion between partners, the lack of which was reason for one person not to adopt e-books. The lack of visibility also caused problems when planning reading sessions, such as when trying to assess the time required to finish a chapter. While linear (fiction) reading is well supported on e-readers, active, non-linear, visual, or parallel reading is less so. The ability to instantaneously acquire books online also gave rise to rendering one's consumption less transparent and format incompatibilities between devices raise concerns about the sustainability of one's collection. Finally, while e-readers offer seamless reading experiences across devices, sharing e-books outside this ecosystem is prevented by digital rights management software and the e-reading devices are insensitive to different readers and their preferences.

It was in these circumstances that people drew on books for reading, occasionally combining books and e-books in a single reading session, as we have seen in the case of one participant who combined digital and physical books to support his daily bible reading. Conversely, it was the situations in which books failed them

that led participants to seek out and value e-books¹⁷. However, in making choices around books and e-books people not only consider practices of reading, but take into account their entire lifecycle of use, including their acquisition, storage, organization, and sharing. Decisions were thereby not necessarily made based on past or actual uses, but on the anticipated situated uses of a particular title. So, for instance, when looking to acquire a new title, a participant may consider not only the circumstances in which the title will be read (e.g. “Will I want to read this book in the bath?”), but also how it will be used after it will have been read (e.g. “Will I want to add this title to my collection of books on the shelf?” or “Will I want to pass this book on to someone else after I finish it?”, etc.). In addition to making in the moment choices, people thus have to make judgements about future practices and values surrounding a particular title, which needless to say, cannot be made with any certainty until the particular situation arrives. Thus people’s choices around books and e-books apply practical reasoning, considering past, present, and anticipated uses across their lifecycle of use.

The complementarity of people’s practices and values surrounding books and e-books raise questions about the suitability of current approaches in the literature that treat books and e-books as competitors, and aim to design e-reading technologies without a deeper understanding of the underlying values that drive their respective uses.

7.2.3 What Books and e-Books Do

What these varied, but complementary practices show is that books and e-books are valued differently, crudely, as a social technology versus a reading technology. Books are valued *primarily* over e-books by enabling people to develop a sense of self and connect with others. E-books, on the other hand, are *primarily* valued for offering new opportunities for and experiences of reading. As we have seen, books and e-books do so through the particular affordances they offer, part of which are designed into them, and part of which are embedded in their materiality or digitality.

Books

I have argued that books obtain values by supporting three distinct but interrelated practices and processes: social, material, and spatio-temporal, or what Appadurai referred to as an artefact’s uses, forms, and trajectories, all of which contribute to an artefact’s social life [5]. E-books create value by enabling reading across a range of settings and situations.

Uses: Values are Social

Books enable us to develop a certain sense of self and connect with others by helping us manage processes of difference and similarity. It is because we’re so attuned to interacting with each other socially that we extend our social machinery to our interactions with the non-human world. Treating books as if they were social allows us not only to be social *with* them, i.e. drawing on well-practiced interaction mechanisms, but also to be social *through* them, i.e. employ them as social mediators in our interactions with other people. It is in doing so that books help us manage processes of similarity and difference. Through our ownership and uses of books we express affiliations with one group of people

¹⁷ These included loss or damage, unwanted annotations, books taking up storage space, having to return lent books to their owners, books going out of print, etc.

while distancing ourselves from another¹⁸. Throughout adulthood we treat our possessions as extensions of ourselves, and other people's possessions as extensions of other people [11]. Ownership - the state, act, or right to possess something, and thus to tie it to our self - is central to this process. Ownership gives us the right to use, augment, share, divest of or destroy a book. The more control we have over a book, the more we will see it as part of our self, and vice versa. Uses are commonly communicated through narrative or the stories we tell each other about books. These can be stories of making, ownership and exchange, such as when talking about books we have made ourselves, about books that belonged to a famous poet, or about books that we received from our first girlfriend. Some of these stories will make books more valuable to us, while others detract from their value by interfering with extending our own self onto the artefact, such as when learning that our favourite books was also our worst enemy's. Social narratives usually tell stories of the past, but can equally pertain to the present or future. For instance, we might be told that a certain book will bring us luck during an exam (apart from studying its contents) or pick an untouched copy from the bottom of the stack at a bookshop.

Forms: Values are Material

Books further help us develop a sense of self and connect with others through their materiality. Materiality gives authenticity to uses and trajectories: it makes stories more (or less) believable. Authenticity means a book's form (or materiality) is consistent with its contents (or history). We experience materiality primarily through a book's material and traces of use. It is not incidental that books are made of paper: paper is extremely modifiable (it can be written and printed on, torn, cut, folded, pressed, decomposed, burned, etc.), but is also subject to decay. Traces of use can be implicit or non-intentional, such as signs of wear and decay (bumps, creases, stains, the yellowing of pages, etc) and explicit or intentional, such as annotations, inscriptions, augmentations (e.g. inserts), folded corners, envelopes, etc. The reason material traces give books authenticity is that we interpret them as traces of human intentionality. A book showing significant wear, for instance, could be interpreted as having been well read, and thus, as having been popular, or as having lost much of its monetary value, and thus make a gift that doesn't require reciprocation. Whether traces of use add or detract from the value of the book seem to depend on how these manifestations of human intentionality advance or interfere with our own intentions. When we see an annotation in a book, for instance, we understand that another person put it there and that it expresses the thoughts of that person. While we may interpret a previous reader's annotations in a book as intrusive, preventing us to develop our own understanding of a book, they might also greatly enhance the value of the book if they were those of a Charles Darwin. It has been suggested that our ability to extend human qualities onto a book, or artefact more generally, is based on an investment of 'psychic energy' in an object that then becomes 'charged' with the energy of the agent [38]. Alternatively, it has been based on our tendency for essentialist thinking. Essentialism is a cognitive bias that makes us prone to believing that things have an underlying reality, true nature, or essence that is not

¹⁸ Schools in the UK have recognized the differentiating role of clothes and introduced school uniforms to create equality among their pupils. Nevertheless, there is sufficient scope for both children to differentiate themselves from their peers by bringing in expensive smartphones, for instance, and for their parents by sending their children to expensive private schools (with their own differentiating set of uniforms).

directly observable but gives an object its identity [57]. Not only do we believe that artefacts adopt the human qualities or a human 'essence' of their owner, but also that this essence can be transferred onto humans through proximity or physical contact with the 'contaminated' artefact through a process of 'contagion' [11]. These particular beliefs are evident in valuing a book that has been touched by the author more than one that has been touched by a stranger. In addition to anchoring books socially, materiality also anchors them spatio-temporally. The uses of a particular paper, binding, or typography are indicators for where and when a particular book was made. Its age and origin is manifest in explicit and implicit traces of use, such as the name of the owner or yellowing of pages [154].

Trajectories: Values are Spatio-Temporal

Finally, books enhance our development of a sense of self and connect with others through their spatio-temporality or particular trajectories. Spatio-temporality adds (or detracts) value from artefacts by way of their age or location, or association with significant events or places. Like sociality, spatio-temporality can be communicated in narrative or non-narrative form. We tend to value old books because we understand that books don't tend to survive the ages by accident, suggesting the book is valuable enough for someone to have invested a significant amount of resources in its active preservation. Another reason for us to value old books is that they are more likely to be rare or unique. Again, rare books are often desirable (a relationship between availability and demand) because their ownership boosts our social status by rendering our self unique. A book can obtain its significance through its location, such as when being exhibited in the Victoria and Albert museum or placed in a prominent location in our homes. Here, their location in relation to other things in the room (e.g. on a shelf), whether or not they were books, in relation to the room (e.g. on a coffee table), and in relation to the home (e.g. in the bedroom) gave books their significance. In addition, books could be associated with particular places or events, such as a book bought on a holiday becomes evocative of that time and place, as building a visible collection of children's books on one's shelf can become evocative of one's future as a mother.

E-books

"The book as a text is something which is open to various kinds of surrogacy, but the book as an object is something for which there is no complete substitute."
[153: 22]

E-books don't operate in the same way books do. The book's materiality that gives rise to a set of affordances promoting the development of the self and connecting with others is replaced by a system of data, connectivity, computation, and hardware. It is due to their lack of material authenticity, I would argue that practices and processes of similarity and difference, and beliefs of essentialism, contamination, and contagion, do not transfer to the digital domain. This is because e-books (or data more generally) are infinitely reproducible as identical copies and don't typically change over time. Annotations or the building of collections work to differentiate our data from others, but what we value here is the work that has gone into their creation rather than the files they're based on. For instance, we would not mourn the loss of our digital data if we had a back up (we wouldn't feel like the replacement copies were essentially different). We may program mutability into a file (e.g. letters fainting with each additional reading), or imagine an e-book that is generated dynamically as it is being read, thus creating a unique and transient reading experience. Still, we perceive these experiences as

inauthentic, precisely because it contradicts our understanding of digitality's reproducibility and immutability. E-books thus offer little scope for supporting processes and practices of similarity and difference due to a lack of mutability and the materiality that gives it authenticity. E-reading devices, on the other hand, due to being mutable and material, do offer capabilities for having a social life, much in the same way books do, although their networked nature means that their social lives are much shorter than that of most books. E-books themselves have no material presence in the world, but adopt a conceptual presence through a range of material surrogates of material devices and technologies: e-books are stored on hard drives, distributed through cable and wireless networks, and accessed through a number of reading devices, such as e-readers, smartphones, tablets, laptops, and PCs, which materialise them on the screen. So while each of these devices has a social life by way of their materiality, or at least the potential for it, e-books lack this capacity by being conceptual rather than material artefacts. We further know that their particular (designed!) presence (or affordances) in the world is significant to how their social lives play out. E-reading technologies thus not only offer a range of affordances books do not offer, but also lack many of the secondary, non-reading related affordances books have, that are not specific to books, but to material artefacts more generally. The current e-reading ecosystem is designed around the individual, for solitary use.

7.2.4 The Futures of Books and e-Books

This thesis further offers a design exemplar that tangibly articulates a possible alternative to the current e-reading ecosystem. This design exemplar, *Book-e*, facilitates the bridging of digital and physical book collections and the sharing of one's reading activities inside and outside the home. It does so by creating an interface between book and e-book collections through the use of an existing interface between the physical and digital, i.e. the barcode. People are thus able to add covers or tokens of e-books to their physical shelf, making them locally visible to themselves and others inside and outside the home, as well as tangibly sharable. Being made of card these tokens are quick to produce and disposable, but can also take on a social life of their own if they need to. Conversely, books can be added to a digital library of e-books through a barcode scanner. In its digital form people are able to organize and share their reading explicitly and remotely. They are able to gain an alternative view on their unified library of books and e-books to reflect on their past reading, manage their current reading, and plan their future reading. Finally, a peripheral display of a 'currently reading' feed makes remote reading activities visible locally.

There is much we can do to design better e-reading technologies, including a shift from designing e-books as commodities to designing services around e-books (e.g. a subscription service akin to Spotify for digital music and Netflix for digital films) in order to circumvent sharing restrictions and compatibility issues; providing better support for finding e-books by allowing people to receive recommendations through social rather than corporate networks of readers; offering mechanisms to organize large collections of digital books to help people manage their reading process and build collections across formats; making reading more relevant to the reader's current situation, for instance, by allowing them to make quick judgments about e-books as a 'quick', 'easy', 'favourite' or 'comforting' read; and enabling people to share their libraries with others without compromising on convenience or privacy.

The design is based on two main insights from the study that are at the core of many of the issues outlined above. First, despite the complementary nature of books and e-books there is little support to use them in conjunction with each other, as a single collection. This has consequences for how people are able to organize their collections to manage reading processes and for how they build and reflect on their collections to develop a sense of self and connect with others in the home. Second, the social life of e-books is severely diminished due to sharing restrictions and content being hidden inside digital reading devices. At the same time, there is a shift from local sharing to remote sharing as digital technologies allow people to connect with a global network of readers, but exclude those in their immediate environment. Without an afterlife the value of e-books collapses down to only include those directly related to experiences of reading stripping them off the opportunity to create more sustainable value.

The reason for concentrating on the bridging of digital and physical book collections and the sharing activities around book and e-book uses was threefold. First, a deeper understanding of what books and e-books do revealed that some of their affordances are by design, others inherent to their materiality/digitality. Thus, however well we design digital reading technologies they are unlikely to provide many of the values that books offer to people today (and vice versa). The best approach, to me, then seems to try and capitalise on the inherent affordances of digital and physical technologies while trying to eliminate some of the less desirable ones that were designed into them for corporate reasons¹⁹. Second, we need to acknowledge that we cannot predict the future of the book or e-book. Thus it seems sensible to start with what we know about books and e-books today by enabling people to draw on their digital and physical book collections as they see fit. This approach also seemed to offer the richest space for enquiry as it helped us tease out how we would justify our choices if we lived in 'the best of both worlds'. The aim here was less to find a 'fix' for the e-reading ecosystem, but to elicit how the particular affordances of books and e-books could be combined to make 'hybrid' reading more social. Finally, as I will argue in more detail below, when designing for everyday life, designing for sociality and well-being should be our ultimate goal.

The findings that emerged from presenting the design exemplar to a set of households for analysis, suggested that the hybrid approach was successful in some ways and less so in others. With respect to Book-e's digital library, we found that within a locally shared library individual members wish to carve out a personal space for themselves so as to enable them to renegotiate their relationships in a shared home. It further emphasized the need to provide support for people to reflect on their past reading by augmenting reading histories with context rich information, to manage their current reading by providing detailed information about their reading process and progress, and to plan their future reading by including both owned and wished for books, which should be linked to sources of acquisition, such as retailers or a peer-to-peer sharing library. With regards to Book-e's physical library we found that Book-e covers were seen as suitable for gifting e-books, but interest in displaying one's e-books to themselves and others before, during and after reading was limited. Finally, comments on the

¹⁹ The aim here is not necessarily to design technologies that exist outside capitalist markets (although this too is an option), but to find alternative and more sustainable business models that are more in line with people's needs and values.

reading feed suggested that there was much interest in receiving recommendations from ‘experts’, such as recommender systems and public figures, but when it came to sharing their own reading people were generally reluctant to do so unless they were able to carefully curate their reading activity. Sharing one’s own reading or learning about their friends’ and family’s reading mainly occurred through conversations with select individuals and so there was limited interest in sharing them through digital means. Finally, there was some interest in selectively sharing one’s library, for instance, in the context of peer-to-peer sharing.

My research through design approach offers an alternative to existing approaches to theoretical speculations about the future of books and e-books by offering a tangible articulation of a possible future of books and e-books. When I began research for this thesis, the popularity of e-books gave rise to fears of books becoming obsolete. Today, the latest sales numbers suggest a decline in e-book reading, giving rise to new, albeit a little more cautious, predictions about the resurgence of the book. I maintain that the only certainty about the future of books and e-books is that it is impossible to predict. In the vein of, “the best way to predict the future is to invent it” it is only through a collaborative and participatory process of articulating alternative tangible futures that we can start to understand possible future practices and values.

7.3 Designing Everyday e-Reading Technologies

Given the importance of books and e-books to our personal and social well-being, and well-being as a culture, it is worth considering some of the broader socio-technical implications of the findings. Designing for everyday experience inevitably means designing for sociality or processes and practices of similarity and difference, which the current e-reading ecosystem largely fails to support. I have further argued that this failure is largely designed into the system rather than inherent to digital technologies. In the following, I offer some thoughts why this should be so and how we might ameliorate the situation by drawing on the principles underlying well-being in everyday design.

That e-reading emerged as an everyday activity at this particular point in history is largely due to technological developments, a combination of the miniaturization of hardware, increased battery life, advances in screen technology, wide adoption of mobile devices, ubiquitous mobile networks, monopolistic content providers dropping prices, the availability of free content online, etc. However, the reason why the e-reading ecosystem was designed the way it was - for individual rather than social consumption -, I would argue, is largely cultural. Current e-reading technologies were designed as a system that is not just closed to other systems and services, but also does not interface with people other than its owner, excluding not only the participation of one’s immediate social relations (friends and family), but also the wider community of readers.

Certainly, digital technologies have enabled us to be more independent of others. Rather than asking strangers for directions we look them up on Google maps; rather than asking others to take a photo of us in front of the Eiffel Tower, we take a selfie; rather than asking a shop assistant for help with finding an item we check their stock online. There are few occasions when our phones couldn’t be equally or more helpful than the next person in the street. At the same time, the argument seems counterintuitive as the connectivity of most digital technologies today has

indeed given rise to a wealth of social interactions unprecedented in quantity and scale, as a result of social networking, digital content sharing, and online gaming, to name but a few. So whether digital technologies have actually made us more or less social is an on-going debate (e.g. [196]). What seems certain, however, is that we create and consume much of this digital content on personal rather than shared devices, meaning that there has been a shift from situated social interactions to mediated social interactions. Unlike situated interactions, most of these mediated interactions are facilitated by a small set of mostly US-based companies who financially profit from them. If sociality has not changed in quantity, it has certainly changed in quality. The very notion of what it means to be social is up for debate. Let's take sharing as an example. 'Sharing' in a digital technology context can encompass many activities, some of which actually involve mutual communication and the passing back and forth of resources, while others are more akin to broadcasting or loss-less giving. Part of the problem, I think, might be that 'social' is still seen as a particular category of activity or technology (there is a branch in HCI called 'social computing'), suggesting that there are forms of computing that are somehow non-social, as if indeed there was anything in this world we could accomplish outside a network of social relationships.

In suggesting that the phenomenon is cultural, I am also suggesting that indeed individualism is not merely a trend in technology development, but a broader cultural paradigm that the US and UK and many other nations in the West have subscribed to. Humans have a natural tendency to think small, but this tendency is at odds with an increasing need to think big - we think about the me-here-and-now rather than the them-there-and-then. This tendency has found its peak in our current 'democratic crisis': "a crisis in the capacity for collective decisions to be taken and upheld" [59:vii], which neoliberalism is a symptom and promoter of. Neoliberalism assumes that "the isolated, competitive individual is the basic unit of human experience. They treat all creative agency and potential rationality as properties of individuals rather than of groups, which are in turn understood only as fetters on the freedom and mobility of individuals. They enforce and normalise market relations in every conceivable social sphere, promoting and atomised, fragmented and commodified culture within which it becomes difficult even to imagine belonging to a group on any scale which is actually capable of getting things done." [59: viii]. This trend has severe consequences in leaving major human crises, such as global warming, unaddressed, but also has implications for our everyday experience. A focus on individual agency not only renders us politically impotent, but also negatively affects our happiness.

Happiness, it has been argued, is the ultimate goal that public policy and individuals should strive for [110]. In order to start approaching the ideal of the greatest happiness we need to acknowledge that humans are deeply social, that they want to be able to trust each other, need a certain level of continuity, that inequality creates more losers than winners, that we quickly adapt to material gains (we take them for granted and strive for more) but not to experiential gains (e.g. friendships)²⁰, that happiness depends as much on our inner well-being as on our circumstances. At the same time, happiness is a very human-centric goal, largely disregarding the fact that we are part of a larger non-human world that we

²⁰ Of course, material and social or experiential gains are not independent: money can buy experiences and opens up social opportunities; material things facilitate experiences and relationships.

depend on, not just for our happiness, but our very existence. It might thus be more appropriate to speak not of The Greatest Happiness, but the greatest possible well-being for humans and non-humans alike. What we need is not a de-centering of the human, but a framework that makes non-human well-being a prerequisite for, rather than antagonist, of human well-being.

That human-centric concepts (including human-centred design) are too limited in scope to be suitable frameworks for design has been argued elsewhere [54]. My aim here is to extend the misguided focus on individualism to the design of everyday digital technologies. I have previously argued that books allow people to strike a crucial balance between developing a sense of self and connecting with others. E-books, on the other hand, have shifted this balance over to the individual and diminished people's opportunities to connect with others through the various practices associated with everyday e-reading technologies. In the following, I offer some thoughts on how we may design everyday digital reading technologies, and indeed everyday digital technologies more generally, so as to promote human well-being. The following concepts are loosely based on the five principles of well-being [4] found in the medical literature. The five principles I propose here – relationships, body, self, community, and being – aim to emphasize the interrelatedness of our own well-being and the well-being of not just the network of social relations, but also non-human relations.

Relationships

Emphasizes the importance of developing relationships with the people closest to us, such as friends, family, colleagues, neighbours, etc.

What I am arguing for here is a move away from designing for social activities to activities and practices that promote intimacy. While current technologies offer a wealth of opportunities for sharing, few of these sharing activities actually promote intimacy. Reading to and with others, discussing books with others, giving and receiving books all have great potential for promoting intimacy. Intimacy, in order to be built, maintained, and allowed to thrive, requires the ongoing performance of activities that promote intimacy. Everyday technologies should aim towards increasing rather than minimizing opportunities for building intimate relationships. Rather than mediating relationships designers may want to think of ways of occasioning the kind of social interactions that we benefit most from, which continue to be our most basic forms of social interaction, i.e. talking and huddling together. The design in this thesis has aimed to do so by making digital reading activities more visible inside and outside the home and offer a way of collaboratively building collections. Others have started thinking about how we may connect with others by passing on our personal possessions to others after our death. Another strand of enquiry may involve supporting practices of gifting. Gifting always involves a sacrifice of some sort, whether they are material or cognitive resources. When giving digital things we normally don't sacrifice anything in the process, which is possibly why 'sharing' digital content is so pervasive, but gifting relatively rare. Allowing people to make sacrifices for the sake of others may bring us closer to a form of sharing that actually promotes well-being.

Body

Emphasizes the importance of physical engagement that promotes a positive bodily awareness.

There are obvious ways in which digital technology can engage the body. However, I am not thinking of physical exercises in particular. Physical engagement can take much more subtle forms. When we read, our bodies take on a particular position in space that orients to the setting they find themselves in. Reading in bed, on the sofa, while walking, or in a library, conditions not just the ways in which we read, but the enjoyment we derive from a particular activity. The reading technology itself, its physical presence, conditions how we carry and physically interact with e-books. More often than not, reading is a solitary activity, but it never occurs in a social vacuum. E-readers could be designed to be used by more than one person. This could be achieved, for instance, by merely increasing the screen size of the device to make it viewable by more than one person, or by enabling reading devices to connect and mirror their content across devices. Reading technologies not only orient to people (and vice versa). As conceptual entities e-books rely on a range of physical surrogates or devices that give them a presence in this world. The devices, in turn, possess a physical presence or 'body' that positions them in relation to other devices and spaces. And as physical entities these devices are also subject to temporal processes. Designers may draw on a wealth of materials to enhance the sensual qualities of a reading device and choose materials that age well. Reading technologies can also take on a presence that speaks to other artefacts, either digitally, over space in the vein of the internet of things, or over time, in terms of increased interoperability. Artefacts, however, also speak to other artefacts in terms of their aesthetic. Many readers today wrap their e-reading technologies into covers, possibly in an attempt to protect the device and to add some individuality. There is a wealth of opportunities in designing reading technologies that aesthetically speak to other artefacts, and in particular books. The design presented in this thesis is one example of how device covers can take on a much richer role as members of a social and material ecosystem of a particular setting, in this case, the home.

Self

Emphasizes the importance of developing a 'complex self' by setting (achievable) goals and learning new skills.

The aim in promoting a sense of self is not to promote individualism. What we should aim for as designers is to allow people to develop a 'complex' self through the development of our skills, thoughts, ideas, and feelings [39]. Technologies supporting this process require our active involvement. Technologies can provide spaces and opportunities to be creative and productive, again, not to achieve some external end or goal, but for the intrinsic enjoyment an activity has to offer. Colouring books are one example of technology that caters to our need to engage in creative and intrinsically rewarding activities that allow us to take our minds off ourselves and be productive without judgment. What makes them so successful, I believe, is that they strike a balance between being sufficiently constraining (a black and white drawing is already there), while giving people sufficient space for being creative (in their choice of colour). It is this combination of a challenging, but achievable and intrinsically rewarding activity that allows us to be our best selves. Too many of the everyday technologies we encounter today emphasize consumption over production and either under or over-constrain our activities. Striking a balance between the two is challenging, but worth pursuing.

Community

Emphasizes the importance of active engagement with the wider public for the common good, e.g. through volunteering, political campaigning, etc.

Our well-being not only benefits from intimate social relationships but also from relationships with strangers. There are various ways in which we can connect with people we don't know, some of which may become friends, some of which we may know very little about, and some of which we have never met. Fiction books are already one technology that allows us to connect and empathise with other fictional selves. In reading groups we may discuss the most personal feelings with strangers based on having read the same book. By giving books to the charity shop we give to people we will never meet. Designers may want to think about how technologies may help us find out about things we have in common rather than helping us emphasize our differences. Rather than allowing people to spy on other people's activities online, which promotes social comparison and makes us unhappy, designers may want to create opportunities to allow people to connect locally or to give to their community. Technologies that create external incentives, like receiving publicity for one's good deeds on Facebook, rob us of the opportunity to pursue activities for the intrinsic rewards they offer. The design in this thesis aimed to support these goals by allowing people to share their reading anonymously with a local public. We may think of other ways of facilitating local giving and sharing that celebrates our diversity while creating a sense of community and facilitate collective action. There are existing approaches to designing for the self in human-computer interaction (e.g. [210], [152]).

Being

Emphasizes the importance of 'reflective practice', being aware of the present moment, but also taking time to reminisce and imagine.

In an age of information overload maintain awareness is a challenge. Reading books is only one of the ways through which we focus our minds. Rather than designing technologies that foster our ability to be anytime and anywhere, that is to be not here and not now, we may need to think about ways of bringing people back into the here and now. Book-e aimed to do so by creating a shared, situated, ambient display of a live reading feed that does not call for any action. Design work around 'slow technology' [69] has taken steps towards fostering reflection over action. Through books we also imagine and explore alternatives selves before we actualize them in the real world. Technologies play a key role in this process. Technologies can help us reflect on our past selves, become more complex selves in the present, and imagine our selves in the future. The design work in this thesis has aimed to do so by allowing people to build shared collections that reflect their past and future reading both in the digital and physical realm.

7.4 Conclusion

In this chapter I discussed the thesis' four contributions to the literature of human-computer interaction. These included first, an account of the situated practices of books and e-books across their lifecycles of use, including their acquisition, organization, use, sharing and divestment; second, an explication of the complementary nature of books and e-books based on their distinctive affordances; third, a discussion of the distinctive values associated with books and e-books, and a re-framing of books as a social technology based around social uses,

material forms, and spatio-temporal trajectories supporting processes of developing a complex sense of self and connecting to others; and fourth, an articulation of possible futures of books and e-books in the form of a design exemplar and a design analysis of how it may change future practices and values. Finally, I offered some thoughts on the broader implications of the design of current e-reading technologies for our well-being and proposed to draw on principles underlying well-being for the design of everyday reading technologies.

8 Conclusion

8.1.1 E-books as an Everyday Technology

This thesis was motivated by a recent development of digital reading technologies, such as e-books and their associated digital reading devices, having become ubiquitous. Their increase in popularity added fuel to a long-standing debate over whether books would finally become obsolete. While this debate made some unfounded assumptions about the development of technologies it also suggested there was some concern that something valuable might be lost in the move from physical to digital technologies.

In light of these concerns, it was surprising to find that little research had attempted to understand how books and e-books were actually being used in everyday life and the particular values people associated with each. Despite the wealth of literature on books and e-books across disciplines as varied as the arts and humanities, social sciences, and information sciences, what emerges is a very limited view of what books and e-books are and are used for. There are theoretical understandings of books as historical artefacts that allow glimpses into the pasts of (mostly) prominent figures; of books as containers of texts to be interpreted by a community of elite readers; and of books as products and makers of culture. In comparison, the literature on e-books is even more limited. Here the focus is clearly on the study and design of e-books as active reading technologies, i.e. technologies supporting a certain kind of activity (reading), for a certain purpose (the study and dissemination of information), in certain contexts (educational and professional). Consequently, efforts to design alternatives to current e-reading technologies have almost exclusively aimed to support active reading practices or to digitally augment books and bookshelves to enhance digital storytelling and improve access to digital libraries. What this literature ignored then were the practices and values surrounding books and e-books in everyday life, the broader uses of book and e-books across their lifecycles of consumption, and the ways in which e-books change practices surrounding books, and vice versa. It further failed to offer designed alternatives that take into account the socially situated nature of books and e-books inside and outside the home.

8.1.2 The Social Life of Books and e-Books

The aim of this thesis then was to understand the situated practices and values surrounding books and e-books in everyday life, and to explore possible alternatives to the existing ecosystem of digital reading technologies. This included developing an understanding of e-books across their lifecycles of use, across different e-reading devices and across settings. In the case of books this involved unpacking the practices surrounding books as they moved into, through, and out of the home. It did so by combining design ethnography with research through design. Specifically, I used diaries studies and home tours to observe the uses of books and e-books inside and outside the home, combined with semi-structured interviews to elicit the rationale behind the observed practices. Based on the insights derived from the study, I developed a series of design proposals, exploring alternatives to the current digital reading ecosystem. This led to the articulation of a design exemplar, which was presented to a set of households for analysis in order to understand the ways in which this different material situation might change practices and values around books and e-books. In doing so, the thesis makes four main contributions to the literature of human-computer interaction:

First, is an account of the situated practices surrounding books and e-books across their consumption lifecycles. Taking a lifecycle view revealed that books and e-books possess a distinct set of affordances, which facilitate a range of practices beyond reading. The findings of the studies show that reading only forms one part of the processes and practices surrounding books and e-books. These broader practices sometimes precede and follow reading and are often interleaved with reading. They include the acquisition, placement, organization, modification, preservation, exchange, and divestment of books and e-books, all of which impact on our experience of reading. Books were placed throughout the home to support the management of one's reading process from books that were unread, currently being read, or to be read or returned to its owner in the future, as calls for action, for comfort, for home-making, to restrict access to them, and to foster discussion. Books were organized and re-organized to generate new ideas, to build a mental model of one's library, or to re-negotiate one's relationship with others in the household. Acquiring, keeping, and divesting of certain books at certain times and in certain places aided the reflection on and reconfiguration of one's past, present, and future. The sharing and gifting of books helped people to connect with others, as well as to socialize others. By bequeathing books to others people were able to transcend their own mortality. Books were also appropriated and modified to serve alternative purposes, such as for home decoration or as a webcam holder, and were preserved for future use. With respect to e-books we found that the ready availability of e-reading devices supported both routine and opportunistic reading inside and outside the home, that their one-handed uses enabled multi-tasking, and that instantaneous access to low cost or free content made reading more seamless, led people to read more, and more variedly, as well as in places where they would have not read before, such as on commutes. Being able to carry a library of e-books on a single device enabled people to read in private and promoted choice. Finally, annotation and bookmarking facilitated access during reading and book discussions.

Second, is an explication of the complementary nature of books and e-books based on their distinctive affordances. Following a process of domestication, people discover the e-reading device's particular affordances and in creating and

dismissing new practices alter and abandon established print based practices. In making decisions about whether to use books or e-books people take into account their distinctive affordances and the particular practices they give rise to, both desirable and undesirable. These related to the device's cost which made it suitable to use in some situations, but less so in others. As a preferred reading device people were reluctant to share their Kindles with others due to the inconvenience of temporarily losing access and one's place in an e-book, and other reading devices, such as tablets, smartphones, and PCs due to concerns over privacy. Sharing e-books across devices was prevented by digital rights management software. While e-readers are able to hold an entire library of books, this library makes it also difficult to organize one's reading process into past, current, and future reading. The private reading experience people enjoyed in public also meant that their reading activity was hidden from those closest to them. The e-book's lack of physical cues meant that people lacked information that enabled them to make reading choices that were sensitive to the particular situation they were in. Being able to seamlessly acquire new books could also lead to 'overconsumption'. What opened up new opportunities for fiction reading also limited more active, non-linear, visual, or parallel types of reading. Finally, while e-books seamlessly moved between devices, which greatly enhanced people's reading experience, they were unable to move outside the particular e-reading ecosystem, thus raising concerns about the sustainability of one's collection in light of changing formats and e-reading device developments. Based on this awareness of the desirable and undesirable practices e-books afford people fell back on print practices to augment their uses of e-books (and vice versa) not only during reading sessions, but throughout their entire lifecycle of use. Applying practical reasoning people made choices about books and e-books not only reflecting on past uses, but also anticipating future ones.

Third, the thesis offers a discussion of the distinctive values associated with books and e-books, and a re-framing of books as a social technology based on social uses, material forms, and spatio-temporal trajectories. Books and e-books are valued differently, crudely, as a social technology versus a reading technology. Books are valued *primarily* over e-books by enabling people to develop a sense of self and to connect with others. E-books, on the other hand, are *primarily* valued for offering new opportunities for and experiences of reading. Books create value by enabling social processes of similarity and difference through their uses, forms, and trajectories. In our interactions with and through books we express affiliations with one group of people while distancing ourselves from another. As books offer true ownership, that is the right to use, modify, share, divest of, or destroy them, they allow us to exert control over them, and thus to extend our sense of self into the books and act through them. It is through our uses that we appropriate books and make them part of our self. Uses are transmitted through the stories we tell each other about books and thus affect the ways in which others appropriate books for their own uses. The book's form or materiality gives authenticity to these stories. Our interactions with books leave material signs of use in the form of explicit or intentional and implicit or non-intentional traces of use, such as annotations or creases. We interpret these traces as traces of human intentionality and re-calibrate our practices values associated with a book accordingly. Materiality also anchors books spatio-temporally in allowing us to make inferences about a book's age or origin based on its design and signs of use. Just like values of use, spatio-temporal values can be transmitted in narrative form, such as when books are associated with particular events or places. Old books can

be valued due to having become rare or lost their value due to having become unreadable. The placement of a book in a museum or prominent location in the home reflects and makes the value of a book, as does its place on a landfill or in the attic. By contrast, e-books primarily generate value through their ability to be read in a broad set of contexts and settings. E-books are rendered concrete only through a range of surrogates of physical e-reading devices. Due to their inability of occupying a place in the world and having a social life e-books offer little scope for supporting processes and practices of similarity and difference in non-narrative form. Without an afterlife the value of e-books collapses down to only include those directly related to experiences of reading stripping them off the opportunity to create more sustainable value.

Fourth, is an articulation of possible futures of books and e-books in the form of a design exemplar and a design analysis of how it may change future practices and values. Book-e is a situated device that facilitates the bridging of physical and digital book collections and the sharing of one's reading activities inside and outside the home. The design is based on two main insights from the study: first, despite the complementary nature of books and e-books there is little support to use them in conjunction with each other, as a single collection. This has consequences for how people are able to organize their collections to manage reading processes and for how they build and reflect on their collections to develop a sense of self and connect with others in the home. Second, the social life of e-books is severely diminished due to sharing restrictions and content being hidden inside digital reading devices. Book-e alleviates these issues by creating an interface between the digital and physical through a barcode interface that enables people to add books to a digital library, and vice versa, by adding e-book tokens to their physical book collections. People are also able to share their reading activity inside and outside the household through the device in the form of a 'currently reading' feed. The findings from the design analysis that presented Book-e to a set of households for analysis suggested that everyday reading technologies need to provide support for the building of personal and shared collections in a setting's library, for people to reflect on their past reading, manage their current reading, and plan their future reading through owned and wished for books, for a physical means of gifting e-books, for receiving recommendations from computational or human experts, for allowing people to carefully curate their own shared reading activity, and for selectively sharing their library with others.

8.1.3 Future Work

Future research may enhance both our understanding of current uses of e-reading technologies in everyday life, as well as explore further design directions relating to the future of books and e-books.

The focus in this thesis has been on the everyday lifecycles of books and e-books. It thereby neglected a more in-depth view of each of the particular practices associated with them, such as acquisition, organization, gifting, sharing, and divestment.

- Books are common Christmas and birthday gifts and routinely passed on to family, friends, and charity. How might we allow people to derive value from gifting e-books?

- Books are acquired from a wide range of sources, including books shops, secondhand and charity shops, markets, and online. How could these settings become sites for the social discovery of e-books?
- E-books are associated with a range of 'fringe' practices, such as piracy, self-publishing, or experimental literature. How might these practices inform more mainstream uses of books and e-books?

In focusing on the broader lifecycles of books and e-books this thesis neglected to take a more in-depth view on practices of digital everyday reading.

- Most research in this space is focused on reading with children. How may we enhance and augment the reading experiences of teenagers and adults?

The thesis has aimed to develop an understanding of the everyday practices surrounding books and e-books without considering books and e-books in their wider socio-technical context

- The book is the last among a set of cultural artefacts that have undergone cultural transformations as they entered the digital age. What are the parallels and differences in the developments of other media that have gone digital, such as music and film?

For now, we should distrust predictions about technological futures in order to avoid falling prey to the determinist fallacy that assumes that new technologies will inevitably replace existing ones. What this research has shown is that the new and old can and does co-exist as people practically adopt and adapt new and old technologies. To really understand the implications of everyday technologies we need to consider the broader context in which they are being used. This inevitably means studying them in situ, in relation to other human and non-human actors, and as part of a social, material, and spatio-temporal ecosystem. We also need to understand the internal and external qualities or affordances of digital and physical technologies and how they interact. Fact is not fiction, and existing technologies are not immutable, but are designed realities, which can be changed (to a degree). Finally, in thinking about how to design future everyday reading technologies our ultimate goal must be the flourishing of the human and non-human environment.

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