

Leisure-Based Reading and the Place of E-Books in Everyday Life

Annika Hupfeld, Abigail Sellen, Kenton O'hara, Tom Rodden

► **To cite this version:**

Annika Hupfeld, Abigail Sellen, Kenton O'hara, Tom Rodden. Leisure-Based Reading and the Place of E-Books in Everyday Life. Paula Kotzé; Gary Marsden; Gitte Lindgaard; Janet Wesson; Marco Winckler. 14th International Conference on Human-Computer Interaction (INTERACT), Sep 2013, Cape Town, South Africa. Springer, Lecture Notes in Computer Science, LNCS-8118 (Part II), pp.1-18, 2013, Human-Computer Interaction – INTERACT 2013. <10.1007/978-3-642-40480-1_1>. <hal-01501751>

HAL Id: hal-01501751

<https://hal.inria.fr/hal-01501751>

Submitted on 4 Apr 2017

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Leisure-Based Reading and The Place of E-Books in Everyday Life

Annika Hupfeld¹, Abigail Sellen², Kenton O’Hara², Tom Rodden¹

¹ Mixed Reality Lab, University of Nottingham, NG8 1BB, United Kindom

² Microsoft Research, 21 Station Road, Cambridge, CB1 2FB, United Kindom

psxah4@nottingham.ac.uk; tar@cs.nott.ac.uk;
{asellen, keohar}@microsoft.com

Abstract. With the proliferation of digital reading technologies and their underlying ecosystem, practices of reading are currently undergoing significant changes. Despite the currency of the topic, we find there is little empirical research on how people incorporate digital reading technologies into their existing leisure-based reading practices. In this paper, we explore the place of e-reading for pleasure in daily life, and how it is co-evolving with practices surrounding printed books. We present a diary study with 16 readers tracking their behaviors and motivations surrounding e-book use. Our findings are relevant to designers of digital reading technologies in highlighting the values guiding people’s choices and behaviors concerning e-book use.

Keywords: leisure e-reading; e-books; e-readers; tablets; smartphones; books; diary study;

1 Introduction

Nearly 15 years after the launch of the first commercial e-book reader, digital reading devices and associated e-books have finally reached a mass market. According to recent survey data [21], almost one third of the American population now owns an e-reading device or tablet, and that trend is set to rise sharply. At the end of 2011, e-books were outselling the top 50 bestselling printed books (USA Today). Last year, in the US, e-book sales rose across the board for adult books (49%), children and young adult books (475%), and religious publications (151%). What is clear from this is that the digital is both transforming and being transformed by everyday leisure reading.

It is interesting to contrast this with work-related reading. There has been a long history of HCI work focusing on why digital technologies often fail to support the deep kinds of reading we need to do for knowledge work. This kind of reading, often called “active reading” has been studied in work and academic settings [e.g. 1; 16; 27] with research suggesting that these kinds of activities require good support for annotation as well as more fluid and flexible ways to navigate and deal with multiple documents. Digital technologies often fall short of the affordances of paper in such tasks.

For leisure-based or ludic reading [17], however, the story is clearly quite different. It is curious then, that for this type of reading we know relatively little about why people choose e-reading over printed books, what the relative advantages and disadvantages are of digital versus physical books, and how e-book reading is becoming embedded into everyday practices. Discourse has largely been confined to debates on the impact of e-books on physical books, either mourning or celebrating the future demise of the latter [2, 8]. More than anything, it reflects the ambiguity we encounter during this ‘late age of print’ [3]. Alternatively, there are survey data (such as that offered by [21; 4]) that look broadly at trends, without delving deep into people’s practices, choices and motivations. Rouncefield et al are the exception here in a chapter that beautifully highlights the situated and embodied nature of digital and physical reading in the home [23].

Our aim is to explore the mundane ways in which e-books are finding a place in everyday life. In particular we are concerned with the social and material circumstances that come to shape e-book practices. Rather than simply focusing on reading itself, we are concerned with the broader lifecycle of e-book acquisition, ownership and sharing. More specifically, we 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. We 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, we 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, we 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 our study, we chose to focus on the reading of e-books (the digital content) for leisure, regardless of the platform on which they are read. Given our interest in everyday practices we 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.

2 E-Reading Literature

Human-computer interaction and information and library sciences have had a long standing interest in e-reading and its potential in professional and academic environments including a number of empirical studies on the impact of technology on reading. Early studies were often focused on comparing digital with paper reading [e.g. 1; 6; 10; 18]. Later, research also looked at e-reading on single devices, including e-readers [27], tablets [19; 26], and smartphones [16]. Most recently, more attention has been paid to e-reading across devices [e.g. 12]. Unfortunately, the research here is focused on *active*

reading practices in work or educational settings. There are also some critiques of the design of e-reading technologies [14; 20; 28]. The concern here is to improve on e-reader usability for learning and knowledge work.

The humanities also have a great deal to say about the nature of reading, but very little to say about the role of technology. In literary theory, reading, the reader, and the text are usually conceptualized as abstract entities removed from the historically variable social context from which they emerge. The disregard of the embodied, situated, and material nature of reading has been critiqued by Littau [13]. Mangen [15] elaborates on this point arguing that the immateriality of digital texts prevents us from getting immersed in the way a print book would. Her argument seems to hold for particular pieces of literary hypertext rather than properties inherent to digital technology. The reading of digital media alongside print has also been given attention in the digital humanities under the names of *close*, *hyper*, and *machine* reading, but more as tools for textual scholarship rather than as a leisure activity [9]. The approach is predominantly analytical, critical or speculative, as opposed to empirical.

Empirical approaches to leisure reading can be found in the social science literature. Reading for pleasure, or ludic reading, has been extensively studied by Nell [17]. He defines 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’. Scales [24] found leisure reading habits to be determined by gender, race and education. While leisure reading is often associated with fiction reading, it has been shown to be motivated by a range of factors, including reading as part of the self, to improve reading efficacy, for social recognition, and to do well in other realms, such as work or education [25]. Closer to our concern of understanding the situated everyday practices of e-reading is Rouncefield and Tolmie’s work on e-reading at home [23]. They take an in-depth look at the social nature of bedtime reading, as well as highlighting e-reading as a material, social, and situated practice. Related to this, Follmer et al [7] and Raffle et al [22] have deployed digital reading applications to support bedtime reading with children. These studies give us a good starting point but are limited in focus on the home as a setting and single device use.

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 *contexts* 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 contexts in which they are naturally used.

3 Method

We 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 contexts. 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.

3.1 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 Table 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).

Table 1. Participant: age, gender, and device type (e-Reader (e.g., Smartphone, Tablet, Laptop).

Participant	Age	Gender	Device Used for Reading			
P1	50+	male	e-Reader	smartphone	tablet	
P2	50+	female	e-Reader			
P3	18-29	male	e-Reader		tablet	
P4	30-39	male	e-Reader			
P5	18-29	male			tablet	
P6	40-49	female	e-Reader			
P7	30-39	female	e-Reader			
P8	50+	male	e-Reader			laptop
P9	50+	female	e-Reader			
P10	30-39	male	e-Reader			
P11	30-39	female	e-Reader	smartphone		
P12	18-29	female	e-Reader			
P13	30-39	female	e-Reader	smartphone		laptop
P14	18-29	male	e-Reader	smartphone		
P15	18-29	male		smartphone		laptop
P16	18-29	male		smartphone	tablet	

3.2 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 behaviors 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 behaviors 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 participant¹ among those keeping photo diaries. Audio recordings were partially transcribed and analyzed for emergent themes. Where relevant, photographs were used to complement the analysis of the interview data.

4 Findings

Our 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.

¹ This average appears low as some participants documented recurring events, such as a nightly bedtime reading, only once rather than each individual instance of it (as requested). The minimum number of photos taken per participant was three, with a maximum of 22.

4.1 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 1: 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 1). P1 and p15 also bemoaned the fact that visual information was lost on the black and white display, particularly if color 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.

4.2 Managing the E-Reading Process

In this section we 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. Low-priced e-books (under three pounds) would be bought without much deliberation by most participants (9 out of 16). 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 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 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 we 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 2). 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.

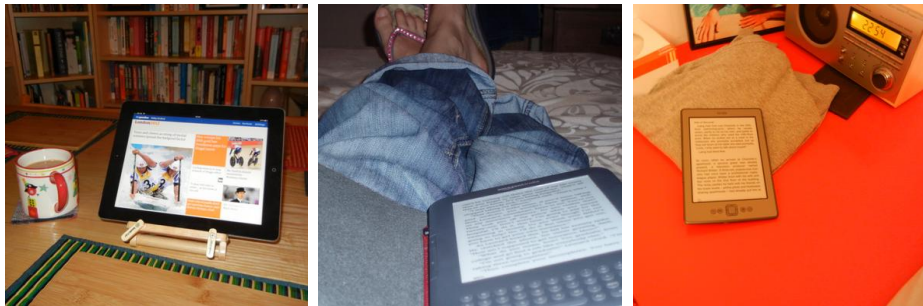


Figure 2: Routine e-reading at home: (1) during breakfast, (2) after work, (3) before bed.

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 wait-

ing 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.

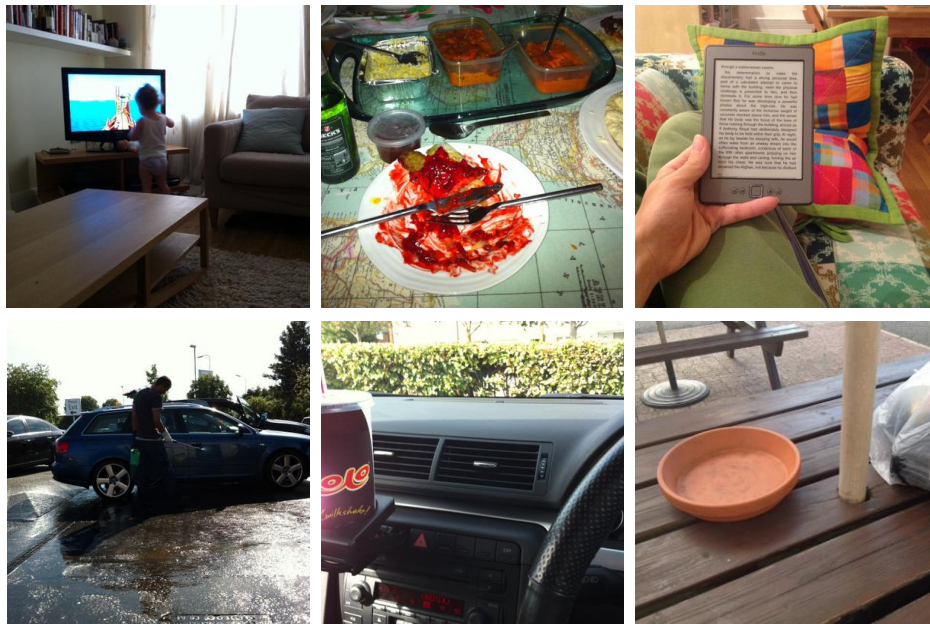


Figure 3: Opportunistic e-reading at home (top) and out and about (bottom): while (1) watching the children, (2) eating alone, (3) dinner is cooking, (4) the car is being washed, (5) having lunch at work in the car, (6) the sun is out at the pub.

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 to him 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.

4.4 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 Kin-

dle 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. 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 if 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.*

5 Discussion and Implications

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 shareability. What we see in people's practices and orientations surrounding e-books is a shift in emphasis from the book as artifact 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.

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 artifacts 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 artifact 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.

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 book stores and libraries. The experience online is much more restrictive as people have to rely on information presented to them by the main content providers. We 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 loca-

tion 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.

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 finger tips, 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. We 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.

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. We 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.

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 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.

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 behaviors 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, we 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, we 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.

6 Conclusion

In this paper, we 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 e-books occupy a niche among people's paper based leisure reading practices. In making choices about what technology (including 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 our findings we suggest to move away from conceiving of e-books as artifacts 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 us 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.

References

1. Adler, A., Gujar, A., Harrison, B., O'Hara, K., Sellen, A. A Diary Study of Work-Related Reading: Design Implications for Digital Reading Devices. In Proc. CHI 1998, ACM Press (1998), 241-248.
2. Birkerts, S. The Gutenberg Elegies: The Fate of Reading in an Electronic Age. Faber and Faber, 1994.
3. Bolter, J.D. Writing Space: Computers, Hypertext, and Remediation of Print. Lawrence Erlbaum Associates, 2001.
4. Book Industry Study Group (2012). <http://www.bisg.org/publications/>
5. Darnton, R. The Case for Books. Public Affairs, 2009.
6. Dillon, A. (1992). Reading from paper versus screens: A critical review of the empirical literature. Ergonomics, Vol. 35(10), 1297-1326.

7. Follmer, S., Ballagas, R., Raffle, H., Spasojevic, M., Ishii, H. People in Books: Using a FlashCam to Become Part of an Interactive Book for Connected Reading. In *CSCW 2012*, ACM Press (2012), 685-694.
8. Gomez, J. *Print is Dead: Books in our Digital Age*. Macmillan, 2008.
9. Hayles, K. *How We Think: Digital Media and Contemporary Technogenesis*. University of Chicago Press, 2012.
10. Hillesund, T. Digital Reading Spaces: How Expert Readers Handle Books, the Web and Electronic Paper. In *First Monday*, Vol 15, 4-5, 2010.
11. Kratky, A. Re-thinking Reading in the Context of New Wave of Electronic Reading Devices. In *HCITOCH 2010*, LNCS 6529, 1-11, 2011.
12. Lindberg, S. and O'Brien, H. The Use of eReading Devices in Academic Environments. In *iConference 2012*, ACM Press (2012), 473-474.
13. Littau, K. *Theories of Reading*. Polity, 2006.
14. MacFayden, H. The Reader's Devices: The Affordances of eBook Readers. In *Dalhousie Journal of Interdisciplinary Management*. Vol 7, 2011.
15. Mangen, A. Hypertext Fiction Reading: Haptics and Immersion. In *Journal of Research in Reading*, 31, 4, 404-419, 2008.
16. Marshall, C.C. and Ruotolo, C. Reading-in-the-small: a study of reading on small form factor devices. *Proceedings of DL'02*, ACM (2002), 56-64.
17. Nell, V. The Psychology of Reading for Pleasure: Needs and Gratifications. In *Reading Research Quarterly*, Vol 23, 1, 1988, 6-50.
18. O'Hara, K. and Sellen, A. A comparison of reading paper and on-line documents. *Proceedings of CHI'97*, ACM (1997), 335-342.
19. Pearson, J. Buchanan, G. Real-time Document Collaboration Using iPads. In *BooksOnline '10*, ACM Press (2010), 9-13.
20. Pearson, J., Buchanan, G., Thimbleby, H. HCI Design Principles for eReaders. In *BoosOnline '10*, ACM Press, 2010.
21. Pew Internet Center, (2012). <http://libraries.pewinternet.org/subjects/e-readers/>
22. Raffle, H., Revelle, G., Mori, K., Ballagas, R., Buza, K., Horii, H., Kaye, J., Cook, K., Freed, N., Go, J., Spasojevic, M., Hello is Grandma there? Let's Read! Story Visit: Family Video Chat and Connected e-Books. In *CHI 2011*, ACM Press (2011), 1195-1204.
23. Rouncefield, M. and Tolmie, P. *Digital Words: Reading and the 21st Century Home*. In Harper, R. (ed.) *The Connected Home: The Future of Domestic Life*. Springer, 2011.
24. Scales, A., Rhee, O. Adult Reading Habits and Patterns. In *Reading Psychology*, 22:3, 175-203.
25. Schutte, N. and Malouff, J. Dimensions of Reading Motivation: Development of an Adult Reading Motivation Scale. In *Reading Psychology*, 28:5, 469-489.
26. Sheppard, D. Reading with iPads - the Difference Makes a Difference. In *Education Today*, 2011, 12-15.
27. Thayer, A., Lee, C.P., Hwang, L.H., Sales, H., Sen, P., and Dalal, N. The imposition and superimposition of digital reading technology: the academic potential of e-readers. *Proceedings of CHI'11*, ACM (2011), 2917-2926.
28. Warren, J. Innovation and the future of e-books. In *The International Journal of the Book*, Vol 6, 1, 2009.