Explorations on the future of the book from the Next Generation Paper Project

How to cite:

For guidance on citations see FAQs.

© [not recorded]

Version: Proof

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online’s data policy on reuse of materials please consult the policies page.
EXPLORATIONS ON THE FUTURE OF THE BOOK FROM THE NEXT GENERATION PAPER PROJECT

by EMILY CORRIGAN-KAVANAGH, CAROLINE SCARLES, DAVID FROHLICH, GEORGE REVILL, MEGAN BEYNON, JAN VAN DUPPEN

INTRODUCTION

Traditional notions of the book usually portray it as a physical embodiment of text (either annotated or printed) on pages; ‘it is not a book unless the sheets are bound together’. Yet as digital text formats become increasingly commonplace, physical properties of the book remain historically enduring and culturally embedded criteria by which people engage with longer form texts. Drawing on preliminary findings from the EPSRC funded project Next Generation Paper (NGP) exploring augmented book technology, this paper introduces the ‘a-book’ and examines ways that core book properties, physicality, discourse, mutability, and temporality, could develop through synergies of print and digital that it affords. Book history, using historical study of communication through print, shows how examining book production and content can lead to greater understandings of large-scale societal communication. The a-book evidentially open new research within book history practices, such as how original and subsequent book versions with evolving digital components, editable by multiple users and publishers throughout

---

1 We would like to thank travel writer Kirsty Fergusson for collecting additional digital material when writing the Cornwall Guide, and colleagues at Bradt Travel Guides for their contribution to this work, including Adrian Phillips, Rachel Fielding, Anna Moores, Carys Homer and Ian Spick. We would also like thank our fellow team members and colleagues on NGP, Dr Haiyue Yuan, Prof Miroslaw Bober, Dr Radu Sporea, Dr Brice Le Borgne and Prof Alan Brown for their hard work and contribution to the project so far.


3 A broad use of the term to describe physical printed books with links to additional multimedia content, such as websites, video, audio, originally introduced to describe a laboratory note-book prototype by Wendy E. Mackay et al., ‘The Missing Link: Augmenting Biology Laboratory Notebooks’ UIST’02, 4, 27-30 Oct, 2002, 41-50, at p. 41.

lifecycles, are to be identified, studied and archived. A deeper discussion on this topic is beyond this paper’s scope, however, its mention is significant to position it as an introduction to an emerging field with implications for book history practices, encouraging future scholarship within this area.

Returning to book properties mentioned, books understood as objects with bound pages are physical in appearance and through tactile engagement, such as turning of pages. Books have also historically supported recorded discourse through humankind’s tendency to construct narrations around society’s accomplishments, discoveries and fantasies. For example, before capabilities for mass produced printed books were invented, manuscripts were created during two distinctive periods, ‘The Monastic’ (approximately 400 CE to the twelfth century) and ‘Secular Age’ (from the end of the twelfth century to late fifteen century); in Western Europe, the former mainly focused on diligent copying of religious texts and some ancient Latin works by monastic scriptoriums and the latter saw a significant increase in secular works, encouraged by the formation of university libraries and book copying workshops in the later twelfth and early thirteenth century to address growing student requirements. An increase in public literacy from surfacing middle classes also created a demand for books on informational (i.e. science, law) and leisure based topics (i.e. novels) during this time. Moreover, the book can be said to be mutable through tears and marks evidencing its handling, mistakes found in text replications and additional annotations added. More recently, book content can be reinterpreted and reproduced into new forms with greater ease that illustrate alternative perspectives to its original through new technology advances and authorship accessibility. The book can also be said to be synonymous with temporality through the materials it uses and the reading practices it affords; for example,

7 Finkelstein and Mc Cleery, An Introduction to Book History, p.67.
8 Ibid.
the use of paper, papyrus, or palm leaf can provide indications of its geographical and historical origin. Furthermore, its text can support and encourage different types of reading experiences of fictional and lived temporalities through imaginary, and biographical accounts that can be read at different durations to their temporal representations in a linear or fragmented fashion.

Using these core book components to explore the impact of the a-book on future book development, we begin by introducing some general technological developments that have influenced these, before explaining the form of a-books being developed on the NGP project. This provides a springboard for then considering the effect of a-books on each property individually, prior to a general discussion of implications for the future of the book. Drawing on early analysis of fourteen one-to-one reading evaluation studies where participants were introduced to and interviewed on how they might use the a-book, we theorise that the a-book could alter: book physicality by encouraging a dedication of print to timeless content that provides tactile navigation and organisation of agile information; discourse through collective reading interactions and personalisation capabilities afforded by virtual and material components; mutability using editable features to transform curated print content into visual markers for storing personal accounts; and temporality through digital facilities that enable capture and curation of multiple user temporality signifiers that can be shared, reinterpreted and modified by subsequent viewers.

DIGITAL DEVELOPMENTS

With twenty-first century new technological advances, such as the internet and growth of smart devices, the notion of the book as a physical artefact has evolved considerably. Notable developments include digital text, electronic books (e-books), and, more recently, augmented books

---

9 Paper was originally developed in China and didn’t start to spread to other regions until the eighth century. Prior to this, commonly used materials included papyrus (e.g. Egypt and other Mediterranean societies), parchment (e.g. Europe), and palm leaf (e.g. India and East Asia) as discussed by Nicholas A. Basbanes, On Paper: The Everything of Its Two-Thousand-Year History, (New York, 2013), p. xi, p. 4, p. 9.

10 Electronic products, such as televisions, mobile phones devices and computers, that can be connected to and share data with other devices or networks through Bluetooth, Wifi etc.
(a-books). A-books introduce additional sensory aspects to reading; they achieve this presently mainly using complementary audio and/or video, accessed by either interacting with the pages (e.g. Listen Reader)\(^{11}\) or using specific specialised equipment (e.g. barcode scanner or electronic pen) to activate supplementary associated media (e.g. Books with Voices\(^{12}\) and Leapfrog Tag Reading System).\(^{13}\) QR codes\(^{14}\) are also commonly employed to augment other forms of printed content such as magazines, brochures, leaflets and newspapers, linking readers to web-based videos and related online sites, encouraging fragmented multimedia reading.

Looking back to the thirteenth century, authorship of book discourse had a completely different connotation by today’s digital world standards. Authors could have several tasks such as replicating, translating and producing manuscripts,\(^{15}\) generally remaining anonymous,\(^{16}\) practices viewed by authorities of the time to be reserved primarily for ecclesiastical institutions.\(^{17}\) It wasn’t until the late fifteenth century that the invention

\(^{11}\) An augmented book with additional music and audio corresponding to the page content on display as they are turned and introduced by Maribeth Back et al. ‘Listen reader’, Proceedings of the SIGCHI conference on Human factors in computing systems - CHI ‘01, 31 Mar-4 Apr, 2001, 23–29.

\(^{12}\) A book with readable barcode markings next to interview transcriptions on the page that allow corresponding video clips to be viewed on an accompanying Personal Digital Assistant (PDA) when scanned and was first proposed by Scott R. Klemmer et al., ‘Books with Voices: Paper Transcripts as a Tangible Interface to Oral Histories’, CHI 2003, Vol. 5, 5-10 Apr, 2003, 89-91.


\(^{14}\) A type of 2D barcode that can be scanned using the camera on a smartphone, as explained by Beat Signer, Fundamental Concepts for Interactive Paper and Cross-Media Information Spaces (Norderstedt, 2008), p. 21.

\(^{15}\) Wogan-Browne et al., The Idea of the Vernacular: An Analogy of Middle English Literary Theory 1280–1520, at pp. 4–5.

\(^{16}\) Judson Boyce Allen, The friar as critic: literary attitudes in the later Middle Ages (Vanderbilt, 1971) p. 59.

of the Gutenberg printing press supported mass production of books,\(^{18}\) enabling greater quantity and diversity of texts to be made publicly available.\(^{19}\) The digital age has advanced this even further. Readership autonomy continues to increase through new online crowdfunded publishing streams (e.g. Kickstarter)\(^{20}\) and web-based platforms that enable multimedia diary entry-like practices such as Twitter, Facebook, Instagram, and personal blog posts. Readership autonomy is defined here as the growing independence of readers to select what they read from official and unofficial published sources; to compile narratives from multiple avenues; and to have agency in the breadth and source of their own readers through platforms they choose to publish or post material on or offline. Related outputs on social media, such as status-up-dates and accompanying images, can also provide depictions of subjective time open to temporal reinterpretations by masses of online readers. ‘Social media’ in this instance refers to a group of internet-hosted applications that support the generation/provision of user-created content, emerging from the philosophical and technological beginnings of Web 2.0—when Internet participants transitioned from passive to co-creators of online platforms through evolving usage and responsive modification from original providers.\(^{21}\)

Through practices of co-creation between traditional publishers and end-users in the mutual generation of published content,\(^{22}\) these developments are broadening the physical forms book content can take, the discourses and temporalities it depicts, the way it can mutate, as well as its temporality through platforms supporting additions of multimedia

---

19 Finkelstein and Mc Cleery, *An Introduction to Book History*, p.46.
20 An online community that allows various creators, including writers, advertise projects to the public through a bespoke website and ask for voluntary donations to realise their projects, such as publications.
22 Online Fan Fiction is a significant example of this, where readers evolve outputs from mass culture into popular culture by merging elements of primary texts with novel fabrications, as stated by Clinton D. Lanier and Hope Jensen Schau, ‘Culture and Co-Creation: Exploring Consumers’ Inspirations and Aspirations for Writing and Posting On-Line Fan Fiction’, *Research in Consumer Behavior*, Russell Beck and Jr, John Sherry, ch 15., (Amsterdam, 2007), 321-342, at p. 323.
content, online publishing, copying, modification, and reinterpretation, heightening intertextuality. Co-creation in this context denotes ‘joint creation and evolution of value with stakeholder individuals, intensified and enacted by platforms of engagement’\(^{23}\) and intertextuality is used in reference to how previous literary systems and themes shape perceived meanings and generation of new texts.\(^{24}\)

**NEXT GENERATION PAPER**

NGP aims to expand contemporary book and text media approaches further by embedding the physical book within wider transformative digital networks. It does this by exploring new augmented paper technologies using visual recognition technology - referred to as 2G paper- or touch sensitive sensors embedded in the paper - named 3G paper. Resulting a-books contain additional weblinks, digital images, audio and video content. The term ‘a-book’ will now be used to refer to NGP’s concepts only from this point onwards. Although the technology will expectedly have far reaching applications, this project is initially investigating its usage within travel and tourism by prototyping an augmented Cornwall travel guide published by Bradt Travel Guides.\(^{25}\) A travel guide was chosen as it is still widely printed and utilised alongside digital sources and its varied interactivity (i.e. planning, reminiscing, exploring)\(^{26}\) provides many opportunities for different augmentation experiments (e.g. utilisation of video, audio and online content) that could have transferable findings to other book formats, novels, children’s books and educational texts for example, in future research.

2G paper does not require specialised equipment or printed alternations to the page; 2G guide appears as an ordinary paper book, but supplementary digital content can be viewed by taking a picture of its pages using a smartphone with a custom app installed (see Fig. 1), allowing the technology to be available for immediate public consumption.

---

25 Bradt Travel Guides was founded in 1974 and is now one of the world’s leading publishers of travel guides for tourists.
The 3G guide contains wiring in the spine and touch sensitive buttons embedded in the cover representing different media content (e.g. audio, video, websites); when pressed, these buttons activate associated digital content for opened pages on a device with the app installed (see Fig. 2).

This approach is in its early stages and not ready for public consumption due to the innovative of the technology and current costs of production. It does, however, illustrate new possibilities for the creation and consumption of future books.

Additionally, the a-book offers personalisation features afforded by the accompanying app that allow personal and found audio/visual content to be linked to official book text, supporting extended uses of the guide as a type of travel diary—to be returned to in later sections.
NGP progress to date has included the completion of an ethnography study with twenty-two travellers exploring current media practices of tourists when planning, engaging in and reminiscing about holidays, the development of a fully working 2G a-book and partial 3G a-book and fourteen face-to-face reading evaluation studies of the 2G a-book. Emerging ethnography findings were employed to further enhance and direct the a-book’s design and results from the evaluation studies are currently being used to theorise the a-book’s expected influence on traveller practices and reading more generally.

In the rest of the paper, we draw on these current learnings to offer insights on how the a-book might further develop mentioned book components, and shape future research plans. Each is placed briefly in its historical context. A final discussion speculates on how the a-book broadens book capabilities through recording, and sharing of experiences as part of a larger multimedia network.

PHYSICALITY OF THE (A-)BOOK

Book physicality has always been influenced by technology available and reading practices of the time. Until the 1500s and beyond, literacy was mostly confined to elite groups in Western Europe and textual production was intended for reading aloud, such as in public spaces to those who couldn’t, rather than solitarily; manuscripts contained written codes requiring a decoder to understand its intended audience delivery. Before paper’s invention, early manuscripts included strips of papyrus with hand writing glued together, forming scrolls or *volumen*. Around 100 CE, the codex, a compilation of bound pages, began to replace volume, within Christian society at least, becoming the main form of manuscripts in Europe by 400CE. Notably, the introduction of the printing press in the fifteenth century greatly improved the efficiency of book creation processes. The subsequent century saw further developments in

---

27 By 1800 the majority of adults in North-western Europe could read and write, as outlined in David Vincent, *The rise of mass literacy: reading and writing in modern Europe*, (Cambridge: Polity Press, 2000).


production techniques with the introduction of copperplate etchings for pictorial elements and black-letter and italic typefaces.\textsuperscript{31} With these advances and increased demand of books from growing public literacy, the physical appearance of the book and its text continued to change into what we recognise today.

With the digital revolution of the late twentieth century, book physicality continues to evolve. For example, digitalisation of text and accessibility to multimedia formats, such as video, sound and digital imagery, has led to additional afforded interactions and sensory stimulations (e.g. a-books with additional audio and video links), varying physical appearances (e.g. e-books displayed on tablet devices that have no paper pages), or minimal to none (e.g. audio books). Physical books can now be produced through online crowdsourcing as opposed to official publishing houses and digital copies of content can be reproduced and distributed online as digital documents instead of being sold as printed artefacts.

Arguably these contemporary developments, such as introduction of digital text and media, have created a dichotomy of reading experiences between digital and printed texts where these two mediums are generally consumed separately. For example, previous research exploring habits of expert readers describes online platforms as mainly supporting discontinuous fragmented reading, whereas printed media appears to facilitate continuous immersive reading, including imaginary when fictional text is involved.\textsuperscript{32}

If we consider the traditional book as a physical artefact with bound pages depicting visual and/or textual practical or leisure-based narrative, the a-book expands this format to include physical pointers to additional digital media, while retaining its original appearance and functionality. A-books also utilise a range of digital media (i.e. websites, video, audio, imagery) rather than focusing on audio and/or video alone, distinguishing NGP from previous augmented book concepts. Notable augmented books illustrating this are previously mentioned Books with


Voices[^33] and the Listen Reader[^34] and Interactive Newsprint. Using 2G paper specifically, any pre-existing publication can have multimedia content added to its pages without any modifications to its appearance or handling.

NGP a-books employ interactive paper, seemingly ordinary paper that is connected to additional digital content through visual recognition technology or touch sensitive sensors, allowing complementary digital and print aspects to be consumed simultaneously (e.g. video can be played while reading a passage) (see Fig. 3).

![Fig. 3 NGP interactive paper in use](image)

Furthermore, a digital recording facility allows users to capture personal video, audio, imagery or found weblinks to the app or to particular book pages; when an additional piece of content is recorded and added to a page, it will appear on the screen of the app when a picture of the physical book page is taken or searched through it—page numbers can be spoken, typed into the app or selected by pressing a current image on slideshow as well. Fig. 4 illustrates the app’s homepage with annotated features.

Fig. 4 NGP app with labelled functions

Fig. 5 shows an image of the app display when a page is selected through any of the previously mentioned methods. [insert Fig. 5 here]
The content highlighted in a darker colour illustrates the types of content available for that page and the ‘+’ symbol in the top righthand corner allows participants to select and record content they wish to add.

The 2G a-book also supports both physical and digital annotation; users can still write on pages as normal and additional multimedia content can be linked to them. Finally, users can digitally, as well as physically, bookmark pages in the a-book. When a page is selected through the app displaying its digital content, individuals can press the bookmark icon to bookmark the page (see bottom of Fig. 5) and a shortcut to the page will then appear under the bookmark icon on the app’s homepage (see Fig. 4). Through these additions, the physical book, while supporting tactile annotation, bookmarking and navigation, is expanded to also contain links to complementary virtual and modifiable digital content, creating a stable platform for volatile information—in this context, a physical navigational tool for collectively planning holidays and gathering and sharing digitised travel memories with others. Accordingly, the a-book approach could alter the type and format of content to be printed or made physical as changeable details (e.g. opening hours, timetables of transport) can be digitally linked to visual markers (i.e. timeless text and/or imagery or objects)—such as museum booklet with visual and descriptive text hotlinks to online content of temporary displays that appears on a local device through interaction with the print.

DISCOURSE OF THE (A-)BOOK

Early manuscripts in Western Europe generally only contained discourse from and/or approved by a voice-of-authority whether it be a supernatural being, or a powerful official organisation such as the Church or State. Medieval manuscripts were reproduced by teams of scribes (usually monks) with specified roles (e.g. scriptor, compilator) mainly in ecclesiastical institutions.36 Authors were generally seen more as ‘reproducers, compilers, annotators, or commentators’ that copied approved texts by Church and State.37 In the centuries that followed after the invention of the printing press, authorship slowly began to signify professional status, moving from a patronage model to independent

practice between 1630–1880 where the author’s signature, indicating authenticity, could increase commercial value. Interpretations of emerging discourses have also changed, as texts are now understood as open and dynamic systems rather than self-contained units of meaning, interdependent of the cultural and historical background of the reader. Reading is recognised as an active process where there are many determinants to a text’s perceived meaning, which can in turn support future novel reconceptualisations.

Books are now more easily authored from a range of persons with and without formalised writing skills, or expertise that have access to the internet through facilitating channels for co-creation previously mentioned. This has notably led to contemporary society experiencing information-overload and uncertainty in the validity of publications on and offline as pluralism is increasingly facilitated by these new opportunities. By preserving and employing what appears to be an ordinary published printed book, the NGP a-book attempts to present readers with a tactile navigation tool for evolving information, where trustworthy discourse is presented in the main book text and personalisation features allow insertion of additional information sources and personal reflections from readers own experiences. In this manner, the a-book becomes a hybrid of both professional and amateur content and virtual and material engagements that can be shared with and modified by others, supporting co-creation and intertextuality of future series. The physical book remains unchanged, but the digital content attached to each page, accessed through the app, can continuously be added to by the reader. Included online content (e.g. weblinks to opening hours, map locations) can also be updated by the publishers or other relevant suppliers, such as small businesses, improving the overall longevity and reliability of the book. Specific to travel guide books, initial

results from the reading evaluation also suggest that the a-book could be more suitable for collective reading interactions because of its links to complementary digital content and tactile interaction with a physical book. For example, the physical book can be passed from person to person while corresponding video, audio, digital slideshows or websites can be viewed and/or listened to simultaneously on a local device (i.e. a large screen), encouraging a type of multi-media co-reading practice when planning for and reminiscing about holiday experiences. Similarly, this type of engagement could encourage a-books that contain a multitude of evolving discourses from several users collectively viewing, editing and contributing to its content.

MUTABILITY OF THE (A-)BOOK

For more than fifteen hundred years, the creation and conception of the book as a weighty page-bound volume created from materially stable materials such as papyrus, vellum, or thick paper indicates its historical role as an enduring, and stable repository for texts and images. Yet the process by which medieval manuscripts were produced by scribes of monastery scriptoria, from the sixth century until printing overtook this around the late fifteenth century, led to some modifications to the text as they were copied. Manuscripts were never completely identical, being subject to different interpretations and/or grammatical and spelling errors as they went through several individuals and stages of production to obtained their type, ornamentation and binding, and could therefore hardly be considered stable platforms of information. Writing on early parchment scrolls and codex forms was also originally illustrated as continuous sentences, which could lead to misinterpretations of the text without grammatical signs to signify pauses and sentence breaks. In addition, the practice of glossing medieval legal, religious and theological texts by providing marginal notes concerning interpretation were themselves an important means for elaborating, clarifying and

46 Martin, The History and Power of Writing, pp. 54-59.
transmitting knowledge. Additionally, the creation of palimpsests, of reusing writing material by scratching out or erasing and annotating a new text over an old, was a widely used technique for reusing book pages.

Consequently, book mutability is not historically novel but the way its content can be modified and reconceptualised beyond its traditional physicality (i.e. compilation of bound pages) has certainly expanded with the introduction of digital technologies. The a-book format preserves the foundational structure of the book with its original printed content that can then be embellished with digital alterations, expanding on the idea of user generated marginal notes and synergising physical representations with editable virtual elements. In this case, the reader may use the physical book as an initial platform to source places of interest etc. before then conducting their own online searches and saving relevant sites, or self-recorded or found images, video and/or audio to the book through the app. Recording features may also be used to capture significant moments and personalise the digital book content with authentic experiences of the user. This enables dynamic updating by foundational authors as well simultaneously alongside the opportunity for readership authoring and personalising of content/additional content. Through this, it aims to bridge the gap between digital and print to create a synergy of novel reading interactions that utilises both mediums simultaneously, situated as part of a polymedia environment. Polymedia refers here to the rise and presence of various communication opportunities that are used interconnectedly by individuals to maintain interpersonal relationships.

Utilising the fluid and intuitive nature of our interaction with books, the a-book could present a dynamic platform for end-user engagement as they build and rewrite places in relation to their own motivations and travel preferences. To this extent, the a-book format supports the capacity for digital media to encourage and embrace strategies of shared, reworked and co-created information enrolling and engaging authors

50 Ibid.
and users together through more or less asynchronous networks linking public and individual on and off-line presence. In terms of digital culture, this is understood through the concept of convergence culture where, for example, networks of information and narratives unfold across a range of media formats and platforms. Mutability beyond the book’s physicality towards user reading practices is also an emerging theme from early reading evaluation findings. Encouraged by the book’s tactility, enabling a physical sharing with complementary multimedia that can be played on several devices simultaneously, the a-book appears to support more social and interactive reading experiences where users can explore a multitude of sensory content from the same volume while also editing and personalising elements together collectively.

**TEMPORALITY OF THE (A-)BOOK**

As previously mentioned, the book can be indicative of particular points in history through its material components, form, textual presentation, and subject matter. It can portray made-up and real accounts of temporalities, that can be experienced differently through varying interpretations or reading speeds. Furthermore, traditional books representing fictional or nonfiction narrative text generally encourage a linear reading experience where start and finish points are indicated through its design and delivery. Reference books and travel guides are among the exceptions to this, encouraging more asynchronous reading interactions through dedicated sections to specific topics; users can explore these parts at any time without incurring misunderstandings of book’s content overall. This portrays a similarity with identified online digital reading habits, such as *discontinuous fragmented reading.* The a-book could then be said to further accentuate this interaction by supporting digital annotation and linking that takes the user temporally away from the main printed text.

Moreover, the a-book, as a dynamic platform for engagement, allows users to record snapshots in time through its previously described mutable capabilities, by linking video, image or audio of their holiday

---


experiences to specific pages or to the app’s homepage. The a-book, in this way, facilitates visual and performative practices of tourists in which they use photography for example to construct their understandings of place through a selective authoring of their experiences.53 Through assemblage of personalised digital content on one platform by a travelling group, the a-book could house several temporal experiences of various users, facilitating co-creation of conceptualising holiday moments. This coupled with the updateability of original digital media, such as curated weblinks, video and audio content by publishers, creates an evolving temporality where the physical book comes to signify a nexus of fluctuating digital narratives.

Relatedly, the next stages of NGP will involve creating a series of augmented photobooks using holiday material recorded by individuals on the a-book. Appearing as ordinary photobooks, these will have additional personalised audio, images and videos linked to pictures on the physical pages, assembled through a generic version of the app on a smartphone. The a-book therefore also provides a convenient means of capturing digital media to later create augmented photobooks. For example, multimedia can be recorded to specific pages that relate to the places they were captured, providing a means of categorising content and identifying their origin. Augmented photobooks also allow users to curate previous travelling experiences at different paces and/or sequences and to emphasise highlights. Recorded videos can played at different speeds while related still images are viewed simultaneously. Snapshots of a fleeting experiences can be accompanied by ambient music in a relaxed manner, and images, video and audio can be modified (i.e. cropped or shortened) and presented in a personalised sequence. Although previously mentioned social media, such as Facebook and Instagram, already support this in a way—through uploading of edited imagery and video with commentary and map location information—the a-book allows users to connect these to a physical artefact such as a guide book or photobook, creating a more tactile and physically interactive engagement while sharing experiences with others. Consequently, the physicality, and agile content of the a-book appears to generate both a static and dynamic platform that captures and facilitates readings of varying temporal states and virtual narratives.

WHAT IS THE FUTURE OF THE (A-)BOOK?

The a-book broadens the affordances of the traditional physical book by converging it with professional and personal multimedia narratives. The 2G version makes this easily accessible by using nonspecialised, integrated equipment (i.e. smartphone app and camera) to access and record content. This supports transferability of the technology to other contexts beyond travel guides, the most promising currently being personal book generation, and education. As part of NGP future goals, the current specialised app will be converted into a generic one that will allow users to record and connect audio/visual content to their own books, either self-generated or purchased, creating their own augmented texts. These could include augmented cookbooks with demonstration videos and/or audio narration of the different steps attached to relevant pages, or photographs or postcards illustrating snapshots of a place with related audio or video linked to it. This will expectedly continue to broaden the physical forms, included discourses, mutability and temporalities that book and/or a-book content could encompass with greater user uptake and resulting experimentation.

In relation to education, future iterations of this technology could be applied to textbooks to promote learning by facilitating communication, including media contributions, of different education groups (i.e. using weblinks to online platforms), and a range of learning approaches through associated multimedia—visual, aural, and kinesthetic in particular. Video demonstrations and additional audio explanations of discussed theories or concepts could be connected to relevant page sections and extra digital images or documents could be provided to either show scaled-up aspects of diagrams or issue digital tests or exercises.

Through these developments, it is expected that the a-book will provide a tactile interface for agile information; containing primarily timeless elements with updatable material being introduced as required through digital data. Consequently, book content might be represented in smaller formats and/or take on more varied appearances beyond the bound page structure. Examples could include large folded-up sheets containing all page contents; separate loose pages housed in a box without numbering; or long strips organised into a concertina or scroll. Moreover, diversity of discourses and the temporal and intertextual nature of the a-book could continue to grow as stakeholders, such as
publishers and readers, engage with it through acts of co-creation, using updateable digital and personalisation features to refashion it towards emerging societal needs.

The e-book, attempting to provide a digital encapsulation of a physical book, could be said the a-book’s most apparent competitor. However, unlike the e-book, the a-book embraces our intuitive interaction with the physical book, employing it as the primary platform for engagement that can be passed from person to person while converging it with digital capabilities and networks. This seemingly supports more social and interactive reading styles, at least in the domain of travel books, where planning, exploring and reminiscing activities are more readily accessible to a multitude of users through its virtual and material characteristics. This also arguably supports richer reading experiences, where individuals can curate and engage with additional digital narratives alongside relevant immersive or skim reading activities (e.g. planning a holiday). This isn’t to predict that a-books will replace physical books or e-books and other screen based digital content, or all reading practices will become more sociable endeavours, but rather the a-book approach will expand reading experiences and related affordances that are currently on offer. What is the future of the book? The answer may lie in the a-book.